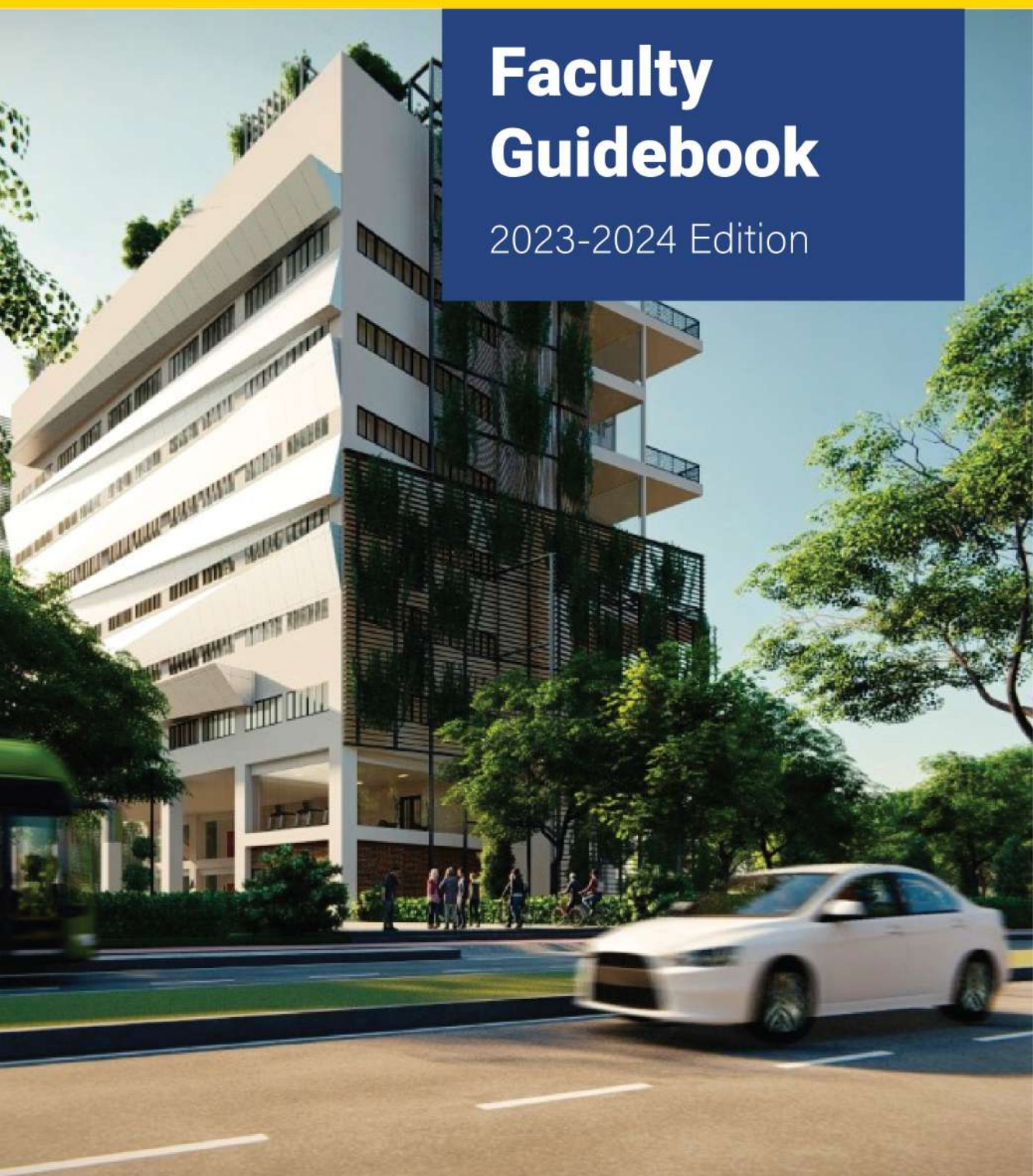
UNIVERSITAS INDONESIA

FAKULTAS TEKNIK

Faculty Guidebook

2023-2024 Edition



FACULTY OF ENGINEERING

UNIVERSITAS INDONESIA

ACADEMIC GUIDEBOOK

2020 - 2024

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Faculty of Engineering Universitas Indonesia

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PREFACE

Welcome to FTUI !

On behalf of the Faculty of Engineering Universitas Indonesia (FTUI). I would like to extend our warmest welcome to all students joining us this year. Our faculty is one of the largest faculty in the Universitas Indonesia and is proud to call ourselves one of Indonesia's leading education and research institutions. With the support of our faculty members, we provide an excellent learning and research environment for our students.

This 2023 Academic Guidebook is intended for all students of the Undergraduate Program (Regular, Non Reguler, International), Master Program, Professional Program, and Doctoral Program, to be used during their study at the Faculty of Engineering Universitas Indonesia. The curriculum, syllabus, and academic staff are listed, as well as all support information provided for you. The information contained within this book is also helpful for those considering continuing their study in the engineering field at the Universitas Indonesia.

Continuing the previous Academic Guidebook, we have refined the curriculum design based on the spirit of the Industrial Revolution 4.0 and the concept of "Merdeka Belajar Kampus Merdeka". The curriculum was designed based on the Outcome Based Education (OBE) system. The international standard engineering education outcome has been set in intended to prepare our graduates to be able to compete not only at the national or regional level but also in the global labor market.

In this guidebook, you will also find general information on FTUI and our Department/Study Program. It contains the education system, the academic regulations, the curriculum, and the syllabus of the subject taught in all our programs. In this guidebook, we are also proud to inform that starting the Academic Year 2023/2024, we opened the Professional Engineer Program (PPI) for the Recognition of Past Learning (RPL). This is a formal education program that uses work experience as the basis for continuing education for equality with certain qualifications. In addition, starting the Academic Year 2023/2024, FTUI will open the Master Program by Research. This program is a development of the existing Master Program by Course. This program is opened to provide learning opportunities for the community broad range, both from graduate students, and academics, to practitioners who already have research experience.

Lastly, I would like to convey my gratitude and appreciation to our stakeholders and the curriculum team for their contributions to the renewal curriculum. My sincere thank goes to all faculty members who have helped with the compilation of this academic guidebook, especially the Vice Dean for Academic, Research, and Student Affairs, the Vice Dean for Resources, Venture, and General Administration, the Associate Dean for Academic, the Heads and Vice Heads of Department, the Head of Study Programs, and the committee members. With the spirit of FTUI Entrepreneur Vision #ExcellentImpactful, let us deliver our graduates to be the best engineers in their field wherever they are.

Depok, November 2023
Faculty of Engineering Universitas Indonesia

Prof. Dr. Heri Hermansyah, ST., M.Eng., IPU

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CHAPTER 1

PROFILE OF FTUI

Profile of FTUI & Departments

History of FTUI

The history of the Faculty of Engineering of Universitas Indonesia (FTUI) began with a request made by a group of young engineers belonging to the Society of Engineers of Indonesia (PII) to the first President of the Republic Indonesia, Bung Karno, for the renovations of heavily damaged main roads in Jakarta. At that time Jakarta was preparing for GANEFO, an important International Sports Event. This bid was welcomed by President Soekarno. The young engineers were granted permission to start the renovations under a condition that all work had to be completed within two weeks. Headed by Ir. Bratanata, Ir. Roosseno, Ir. Sutami, and Ir. A.R. Soehoed, the project was completed on time.

After successful accomplishment of the road renovation project, these young engineers with their iron will felt that there was more that they could do to serve their country. But what? Then they thought of a brilliant idea: "Why not establish an engineering faculty in Jakarta as an alternative to the one in Bandung? This way those residing in the country's capital would not need to travel far to Bandung for an engineering education".

During the ceremonial event of Lenso dancing at the Pembangunan Building (formerly known as the Pola Building) to welcome the GANEFO guests of honor, the young engineers brought their idea to President Soekarno to which he responded by inviting them to the Presidential Palace the next day. During the meeting in the Presidential Palace, the President wholeheartedly approved of the idea and even directly appointed Prof. Ir. Rooseno as the first Dean of the Faculty of Engineering. The President also instructed that the new Faculty of Engineering would be part of Universitas Indonesia under the leadership of its Rector, dr. Syarief Thayeb.

The Establishment of Faculty of Engineering UI

Once dr. Syarief Thayeb served as the Minister of Higher Education and Science, he issued the Decree No. 76 dated July 17, 1964 regarding the establishment of the Faculty of Engineering. The Faculty of Engineering was officially established in Jakarta without any official ceremony or celebration under the banner of Universitas Indonesia as the youngest faculty. Thus, the history of the Faculty of Engineering of Universitas Indonesia began with its first three Study Programs and their respective Heads of Study Programs: Ir. Sutami as the Head of the Civil Engineering Study Program, Ir. Ahmad Sayuti as the Head of the Mechanical Engineering Study Program, and Ir. K. Hadinoto as the Head of the Electrical Engineering Study Program.

The Metallurgy and Architecture Study Programs were opened the following year with Dr.Ing. Purnomosidhi H. and Ir. Sunaryo S. as their respective Heads of Study Programs. Ir. Roosseno as the Dean was assisted by Ir. Sutami as the Vice Dean for Academic Affairs, Ir. Slamet Bratanata as the Vice Dean for Administration and Finance, and Dr. Ing Purnomosidhi H. as the Vice Dean for Student Affairs and Alumni. In its early activities in 1964, the Faculty of Engineering of UI was supported by 30 lecturers and 11 non-academic employees offering a 32-course subject curriculum. The first class of the Faculty of Engineering of UI consisted of 199 students. In five and a half years, 18 of them had successfully completed their studies and graduated as certified engineers.

In 1985, the Gas Engineering study program (originally under the Metallurgy Study Program) joined the Chemical Engineering study program (originally under the Mechanical Study Program) and formed the Gas and Petrochemical Engineering Study Program with Dr. Ir. H. Rachmantio as its first Head of the Study Program. The Industrial Engineering Study Program, was opened in 1999 with Ir. M. Dachyar, M.Sc. as its first Head of the Study Program. The Biomedical Engineering Study Program as the youngest study program in the Faculty of Engineering of UI, was opened in 2018 with Dr. Basari S.T., M.Eng. as the first Head of Study Program. The term "major" was later changed into "department", and it is still used today.

Vision and Mission of FTUI

FTUI Vision

To become a globally excellent and competitive engineering institution, through efforts to educate the nation's life to improve people's welfare, thereby contributing to the development of Indonesian society and the world.

FTUI Entrepreneur Vision #ExcellentImpactful

Establishing FTUI Entrepreneurs with Excellent Impact through Productivity-Based Multidisciplinary Collaboration Towards Excellent and Globally Competitive FTUI.

FTUI Mission

1. To provide wide, fair and good quality engineering education,

2. To organize Tridharma engineering activities that are of high quality and relevant to national and global challenges,
3. To create engineers who are highly intellectual, virtuous and able to compete globally.
4. To create academic climate in engineering that can support the realization of UI's vision.

FTUI Three Strategies for 2022-2026

1. Empowering Engineering Entrepreneurship,
2. Impactful Research and Innovation,
3. Modernization of Engineering Education

FTUI 11 Priority Programs for 2022-2026

1. Organization of Multidiscipline Engineering
2. Reverse Engineering Center
3. Engineering Seed Funds and Grants
4. Engineering Revenue Recognition
5. Database Engineering Networks
6. Organization of Strategic Engineering Education
7. Virtual Engineering Education Facility
8. Engineering Professional Program
9. Partnership and Collaboration Package
10. International Academic Recognition

UI and FTUI Administration

UI

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Vice Rector for Academic and Student Affairs

Vita Silvira, S.E., MBA.
Vice Rector for Finance and Logistics

drg. Nurtami, Ph.D., Sp,OF(K)
Vice Rector for Research and Innovation

Prof. Dr. Ir. Dedi Priadi, DEA
Vice Rector for for Human Resources and Assets

dr. Agustin Kusumayati, M.Sc., Ph.D
University Secretary

FTUI

Dean: Prof. Dr. Heri Hermansyah, ST., M.Eng., IPU

Prof. Dr. Ir. Yanuar, M.Eng., M.Sc.
Vice Dean for Academic Research and Student Affairs

Prof. Ir. Mahmud Sudibandriyo, M.Sc., Ph.D.
Vice Dean for Resources, Venture and General Administration

Dr. Nyoman Suwartha, S.T., M.T., M.Agr.
Associate Dean for Academic

Dr.rer.pol. Romadhani Ardi, S.T., M.T.
Associate Dean for Student Affairs, Research and Community Engagement

Dr. Ajib Setyo Arifin, S.T., M.T.
Associate Dean for Human Resource and General Administration (Facilty)

Tikka Anggraeni, S.Sos., M.Si., CPR.
Associate Dean for Public Communication and General Administration

Dr.-Ing. Ir. Dalhar Susanto
Associate Dean for Cooperation, Venture, and Alumni

Prof. Dr. Ir. Winarto, M.Sc.
Head of Academic Quality Assurance Unit

Dr. Muhamad Sahlan, S.Si., M.Eng.
Head of Entrepeneur Innovation Unit and Head of Reverse Engineering Center

Prof. Dr. Ir. Harinaldi, M.Eng.
Head of Education Modernization and Internationalization Unit

Prof. Dr. Ir. Widodo Wahyu Purwanto, DEA.
Head of Interdisciplinary Engineering Education and Research Unit and Head of Master Study Program in Energy Systems Engineering

Departments

The following are list of Head of Department, and Vice Head of Department:

Civil Engineering:
- Ayomi Dita Rarasati, S.T., M.T., Ph.D
- Andyka Kusuma, S.T., M.Sc., Ph.D.

Mechanical Engineering:
- Dr. Agus Sunjarianto Pamitran, ST., M.Eng.
- Dr.-Ing. Mohammad Adhitya, S.T., M.Sc.

Electrical Engineering:
- Dr. Eng. Arief Udhiarto, S.T., M.T., IPM
- Dr. Abdul Halim, M.Eng

Metallurgical & Materials Engineering:
- Dr. Deni Ferdian, S.T., M.Sc.
- Dr. Ahmad Zakiyuddin, S.T., M.Eng.

Architecture:
- Dr. Ir. Achmad Hery Fuad, M.Eng.

- Kristanti Dewi Paramita, S.Ars., M.A., Ph.D.

Chemical Engineering:
- Dr. Bambang Heru Susanto, ST., MT
- Dr. Dianursanti, S.T., M.T

Industrial Engineering:
- Dr. Komarudin, ST., M.Eng
- Dr. Zulkarnain, ST., MT.

Study Programs

Professional Program for Engineers
- Prof. Dr. Fitri Yuli Zulkifli, M.Sc.

Energy Systems Engineering
- Prof. Dr. Ir. Widodo Wahyu Purwanto, DEA

Urban & Regional Planning
- Dr.-Ing. Ova Chandra Dewi, M.Sc.

Board of Professors
- Prof. Dr. Ir. Budi Susilo Soepandji
- Prof. Dr.-Ing. Ir. Bambang Suharno
- Prof. Dr. Ir. Sutanto Soehodo, M.Eng
- Prof. Dr. Ir. Bondan T. Sofyan, M.Si
- Prof. Dr. Ir. Tommy Ilyas, M.Eng
- Prof. Ir. Triatno Yudo Harjoko, M.Sc., Ph.D
- Prof. Dr. Ir. Irwan Katili, DEA
- Prof. Dr. Ir. Abimanyu Takdir Alamsyah, MS
- Prof. Dr. Ir. I Made Kartika, Dipl. Ing.
- Prof. Dr. Ir. Widodo Wahyu P, DEA
- Prof. Dr. Ir. Raldi Artono Koestoer
- Prof. Dr. Ir. M. Nasikin, M.Eng
- Prof. Dr. Ir. Bambang Sugiarto, M.Eng
- Prof. Dr. Ir. Anondho W., M.Eng
- Prof. Dr. Ir. Yanuar, M.Eng
- Prof. Dr. Ir. Setijo Bismo, DEA
- Prof. Dr. Ir. Tresna P. Soemardi
- Prof. Dr. Ir. Slamet, M.T
- Prof. Dr. Ir. Budiarso, M.Eng
- Prof. Dr. Ir. T. Yuri M. Zagloel, M.Eng.Sc
- Prof. Dr. Ir. Yulianto S. Nugroho, M.Sc
- Prof. Ir. Sutrasno Kartohardjono, M.Sc., Ph.D
- Prof. Dr.-Ing. Nandy Putra
- Prof. Dr. Ir. Yusuf Latief, MT
- Prof. Dr. Ir. Djoko Hartanto, M.Sc
- Prof. Dr. Ir. Dedi Priadi, DEA
- Prof. Dr. Ir. Dadang Gunawan, M.Eng
- Prof. Dr. Ir. Harinaldi, M.Eng
- Prof. Dr. Ir. Bagio Budiardjo, M.Sc
- Prof. Dr. Ir. Djoko M Hartono, SE., M.Eng
- Prof. Dr. Ir. Eko Tjipto Rahardjo, M.Sc
- Prof. Dr. Ir. Muhammad Anis, M.Met
- Prof. Dr. Ir. Harry Sudibyo
- Prof. Ir. Isti Surjandari Prajitno, MT., MA., Ph.D
- Prof. Ir. Rinaldy Dalimi, M.Sc., Ph.D
- Prof. Dr. Ir. Danardono Agus S, DEA
- Prof. Dr. Ir. Rudy Setiabudy, DEA
- Prof. Dr. Ir. Nji Raden Poespawati, MT
- Prof. Dr. Ir. Iwa Garniwa, MK., MT
- Prof. Dr. Ir. A. Herman Yuwono, M.Phil.Eng
- Prof. Dr. Ir. Muhammad Idrus Alhamid
- Prof. Yandi A. Yatmo, S.T., M.Arch., Ph.D
- Prof. Dr. Ir. Riri Fitri Sari, M.Sc.MM
- Prof. Dr. Ir. Adi Surjosatyo, M.Eng
- Prof. Dr. Benyamin Kusumoputro, M.Eng
- Prof. Ir. Widjojo Adi Prakoso, M.Sc., Ph.D
- Prof. Dr. Ir. Kalamullah Ramli, M.Eng
- Prof. Dr. Ir. Winarto, M.Sc
- Prof. Dr. Ir. Eddy S. Siradj, M.Sc
- Prof. Dr. Ing. Ir. Misri Gozan, M.Tech.
- Prof. Dr. Ir. Johny Wahyuadi Mudaryoto
- Prof. Dr. Ir. Nelson Saksono, MT
- Prof. Dr. Ir. Anne Zulfia, M.Sc
- Prof. Paramita Atmodiwirjo, S.T., M.Arch., Ph.D.
- Prof. Ir. Mahmud Sudibandriyo, M.Sc., Ph.D
- Prof. Dr. Ir. Gandjar Kiswanto, M.Eng
- Prof. Dr. Heri Hermansyah, S.T., M.Eng.
- Prof. Dr.-Ing. Ir. Dwita Sutjiningsih, Dipl.HE
- Prof. Dr. Ir. Sigit P. Hadiwardoyo, DEA
- Prof. Dr. Ir. Fitri Yuli Zulkifli, ST., M.Sc
- Prof. Dr. Kemas Ridwan Kurniawan, ST., M.Sc
- Prof. Dr. Ir. Asep Handaya, M.Eng
- Prof. Dr. Ir. Sunaryo
- Prof. Dr. Ario Sunar Baskoro S.T., M.T., M.Eng.
- Prof. Dr. Ir. M. Dachyar, M.Sc.
- Prof. Dr. Rachmat Nurcahyo
- Prof. Ir. Kamarza Mulia, M.Sc., Ph.D.
- Prof. Dr. Ir. Engkos Achmad Kosasih, M.T
- Prof. Dr.-Ing. Nasruddin
- Prof. Ir. Warjito, M.Sc., Ph.D.
- Prof. Dr. Ir. Muhamad Asvial, M.Eng
- Prof. Dr. Ir. Wahyu Nirbito, MSME
- Prof. Dr. Akhmad Hidayatno, S.T., MBT
- Prof. Dr. Eng. Ir. Sri Harjanto
- Prof. Dr. Ir. Setyo Sarwanto Mursidik, DEA
- Prof. Dr. Ir. Retno Wigajatri Purnamaningsih, MT
- Prof. Dr. Ir. Anak Agung Putri Ratna, M.Eng
- Prof. Mohammad Ali Berawi, ST, MEng.Sc, PhD
- Prof. Dr. Ir. Heru Purnomo, DEA.
- Prof. Ir. Evawani Ellisa, M.Eng., Ph.D.
- Prof. Dr. Ir. Praswasti Pembangun Dyah Kencana Wulan, M.T.
- Prof. Dr. Muhammad Suryanegara, S.T., M.Sc.
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- Prof. Dr. Ir. Rini Riastuti, M.Sc.
- Prof. Ir. Dewi Tristantini, M.T., Ph.D.
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- Prof. Dr. Ir. Hendri D.S. Budiono, M.Eng.
- Prof. Dr. Ir. Andy Noorsaman, DEA
- Prof. Dr. Ir. Imansyah Ibnu Hakim, M.Eng.
- Prof. Ir. Abdul Wahid, M.T., Ph.D.
- Prof. Dr. Ir. Donanta Dhaneswara, M.Si
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    Nanyang Technological University, Singapore, Nanomaterial dan Biomedical Engineering
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    INRETS (French National Institue for Transport and Safety Engineering), Transport and Safety
14. **Prof. Chia-Fen Chi,**
    Dept. of Industrial Engineering, National Taiwan University Science and Technology, Industrial Management
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    Dept. of Artificial Complex Systems Engineering, Hiroshima University, Japan, Artificial Complex System Engineering
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    Faculty of Built Environment and Engineering, Queensland University of Technology, Australia.
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    Delft University of Technology, Dutch
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    (Printed Antenna, Small Antenna, Medical Application of Antenna, Evaluation of Mutual Influence between Human Body and Electromagnetic Radiations), Chiba University, Japan.
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22. **Prof. Philippe Lours,**
    École nationale supérieure des mines d'Albi-Carmaux, (France) Superalloys, aerospace material

Academic Programs at FTUI

FTUI consists of seven Departments and t**hirteen Undergraduate Study Programs:**

1. Civil Engineering
2. Environmental Engineering
3. Mechanical Engineering
4. Naval Architecture and Marine Engineering
5. Electrical Engineering
6. Computer Engineering
7. Metallurgical & Materials Engineering
8. Architecture
9. Interior Architecture
10. Chemical Engineering
11. Bioprocess Engineering
12. Industrial Engineering
13. Biomedical Engineering

Twelve Master Programs:

1. Civil Engineering
2. Mechanical Engineering
3. Electrical Engineering
4. Metallurgical and Material Engineering
5. Architecture
6. Chemical Engineering
7. Industrial Engineering
8. Biomedical Technology
9. Energy System Engineering
10. Environmental Engineering
11. Urban & Regional Planning
12. Materials Integrity Management

Seven Doctoral Programs:

1. Civil Engineering
2. Mechanical Engineering
3. Electrical Engineering
4. Metallurgical and Material Engineering
5. Architecture
6. Chemical Engineering
7. Industrial Engineering

and two Professional Program:

1. Professional Program for Engineers
2. Professional Program for Architect

Accreditation of FTUI Academic Programs

The National Board of Accreditation for Higher Education (BAN-PT) has awarded the following accreditation level for all study program in the Faculty of Engineering:

for Bachelor Programs:

1. Civil Engineering :
   Excellent
2. Mechanical Engineering :
   Excellent
3. Electrical Engineering :
   A
4. Computer Engineering :
   Excellent
5. Metallurgical & Material Engineering :
   Excellent
6. Architecture :
   Excellent
7. Chemical Engineering :
   Excellent
8. Industrial Engineering :
   Excellent
9. Naval Architecture & Marine Engineering :
   Excellent
10. Environmental Engineering :
    Excellent
11. Architecure Interior :
    Excellent
12. Bioprocess Engineering :
    Excellent
13. Biomedical Engineering :
    Good

Accreditation for Master Program is as follows:

1. Civil Engineering :
   A
2. Mechanical Engineering :
   A
3. Electrical Engineering :
   A

4. Metallurgical and Materials Engineering : A
5. Architecture : A
6. Chemical Engineering : Excellent
7. Industrial Engineering : Excellent
8. Biomedical Technology : B
9. Energy System Engineering : Very Good
10. Environmental Engineering : Good
11. Urban & Regional Planning : Good
12. Materials Integrity Management : Good

Accreditation for Doctoral Program is as follows:

1. Civil Engineering : Excellent
2. Mechanical Engineering : Excellent
3. Electrical Engineering : A
4. Metallurgical and Materials Engineering : Excellent
5. Architecture : A
6. Chemical Engineering : Excellent
7. Industrial Engineering : Excellent

In 2008 & 2010, the Departments of Mechanical Engineering, Civil Engineering, Electrical Engineering, Metallurgical and Materials Engineering, Architecture and Chemical Engineering have been accredited by the Asean University Network (AUN),

In 2013 Departments of Industrial Engineering have been accredited by the ASEAN University Network (AUN).In 2016 Department of Civil Engineering have been re-accredited by AUN. In 2017 Technology Bioprocess and Naval Architecture & Marine Engineering Study Program have been accredited by AUN. In 2017 Department of Chemical Engineering have been accredited by JABEE (Japan Accreditation Board for Engineering Education) & in 2018 Chemical Engineering & Bioprocess Engineering Study Program have been accredited by IABEE (Indonesian Accreditation Board for Engineering Education).

In 2018 Environmental Engineering Study Program have been accredited by AUN In 2019 Computer Engineering Study Program have been accredited by AUN

Undergraduate Regular Class Program

The Undergraduate Program in Universitas Indonesia focuses on producing graduates with the following qualifications:

- Having knowledge of the basic science and skill in particular field of study.
- Being able to implement the science, knowledge and skill acquired in accordance with their respective field of study.
- Being able to keep abreast the development and growth of science and technology.

The aim of Undergraduate Program in FTUI is to produce graduates with competencies set by the Accreditation Board for Engineering and Technology (ABET) and Washington Accord Based as follow:

- Being able to implement the basic science, the basic science of engineering, and technology.
- Being able to design and conduct experiments and data analyses.
- Being able to design system and its components.
- Understanding the professional responsibility and ethics.
- Being able to work together in a multidiscipline group.
- Being able to identify, formulate and solve engineering problems.
- Being able to communicate effectively.
- Having broad knowledge and understand of the technological impacts of their projects in both local and global scale.
- Having the motivation and ability to learn continously.
- Having knowledge of the latest engineering problems.
- Being able and skilled in using the latest engineering methods.
- Producing graduates from the Architecture Study Program with the competence in accordance to the National Architectural Accrediting Board (NAAB).

Besides ABET, FTUI has also received accreditation from the IABEE (Indonesian Accreditation Board for Engineering Education) based on the IABEE Criteria. IABEE Common Criteria (CC) are established as a framework to perform accreditation of higher education programs. These CC comprise of elements that must be fulfilled by the Study Program to be accredited. And the criteria are as follows:

- Programs to be accredited are four-year engineering Bachelor Programs or other higher education programs which IABEE considers as equivalent.
- The Program is not restricted to single Programs operated by a Department or Faculty. A Program may be formed and/or operated by multiple Departments / Faculties. Programs may include matriculated learning activities outside of its home campus, in conjunction with other higher education institutions.
- In cases where a Program is offered as Non Reguler classes, evaluation by IABEE shall encompass all Non Reguler classes. In cases where multiple Programs of the same nomenclature are offered in multiple locations by the same Program-Operating Institution (such as Programs established according to the Program Studi di Luar Kampus Utama (PKSDU) scheme as defined by the Indonesian Ministerial Regulation of Peraturan Menteri Riset, Teknologi, dan Pendidikan Tinggi No. 1/ 2017), evaluation by IABEE shall treat the Non Reguler Programs as separate entities.
- The Program shall define the profile of autonomous professionals to be fostered, and define the knowledge, skills, and attitudes as Learning Outcomes that graduates are expected to master upon completion of their study.
- The Program should promote self-reliance, welfare, advancement, fairness and justice for the national and global community in general, based on science, technology, culture and sustainable utilization of natural resources.
- The Program is required to design the curriculum systematically to ascertain the achievement of Program Learning Outcomes. Student and faculty should be aware of these Learning Outcomes.
- The Program must disclose its Learning Outcomes to the public. The Program is also required to engage in continual improvement and at the same time to consider the sustainability of operation.
- Common Criteria consist of 4 elements, following the management approach of PDCA (Plan-DoCheck-Act) continual improvement cycle. Criterion:
  1. describes the orientation of the graduate competence,
  2. explains the learning implementation,
  3. explains the assessment of the expected Learning Outcomes,
  4. explains the continual improvements.
- In addition to these Common Criteria, Program seeking for accreditation shall fulfill also the Category and Discipline Criteria, as well as eligibility requirements and accreditation policies stipulated in the Rules and Procedures of Evaluation and Accreditation (RPEA).

Undergraduate Non Reguler Class Program

To improve the capacity usage for educational purposes, Universitas Indonesia has opened the Undergraduate Non Reguler Class Program. This program is provided with the same facilities and curriculum as those provided for the Undergraduate Regular Program. However, only eight out of thirteen study programs are available for future students to choose from.

The classes are held in FTUI Depok from morning to late evening, different from the classes of the regular program which are held from morning to early evening.

The Undergraduate Non Reguler Program allows all high school graduates from any years to register to the program. This differs from the Undergraduate Regular Program which limits registration to students with a maximum graduation time of three years. This arrangement makes this program available to all high school graduates from any years to pursue their Bachelor's degree.

Unlike the students of the Undergraduate Regular Program, the students of the Undergraduate Non Reguler Program are required to pay full education fees in accordance with the listed fees. This means that they are not allowed to apply for Biaya Pendidikan Berkeadilan (BOP-B), i.e. a cost reduction program allocated to their Regular Program classmates. The graduation requirements and accreditation for the Undergraduate Regular Program also apply to the Undergraduate Non Reguler Program.

International Undergraduate Program (Double-Degree & Single Degree)

Since 1999, the Faculty of Engineering has established an international undergraduate program

in engineering (the double-degree program) with the following renowned Australian higher education institutions: Queensland University of Technology (QUT), Monash University, Curtin University of Technology, Deakin University, and the University of Queensland. Students can also continue their studies to the University of Duisburg Essen (UDE), Germany. Graduates from this international undergraduate program will be awarded both a Bachelor of Engineering degree from our University partner and a Sarjana Teknik degree from the Faculty of Engineering of UI when they return to FTUI and fulfill certain requirements. The double degree cooperation with QUT involves the study programs of Civil Engineering, Mechanical Engineering, Electrical Engineering, and Architecture. The double degree cooperation with Monash University involves the study programs of Metallurgical and Materials Engineering and Chemical Engineering. The double degree cooperation with Curtin University involves the study programs of Chemical Engineering, Architecture, Metallurgical and Materials Engineering, and Electrical Engineering, with other study programs to follow. The double degree cooperation with the University of Queensland involves the study programs of Civil Engineering, Mechanical Engineering, Electrical Engineering, Chemical Engineering, and Metallurgical and Materials Engineering. The double degree cooperation with UDE involves the study programs of Electrical Engineering and Metallurgical and Materials Engineering. This international undergraduate program provides high quality engineering education in the international level.

Before continuing their studies at our partner university, students should fulfill the minimum English proficiency in accordance with our partner university's requirement as stated in the Dean's Decree No. 740/D/SK/FTUI/IX/2018.

Since 2011, students have also had a choice to continue their final two years at FTUI as part of the newly opened Single Degree International Program. The undergraduate single degree international program was launched as a result of an increasing demand to provide an international quality education locally. Students in this program are not obligated to continue their last four semesters of studies at one of our partner universities like their classmates who wish to pursue a double degree. However, students of the single degree program are required to study abroad for at least one semester at an overseas university with academic link or cooperation with Universitas Indonesia. The list of universities can be found here: http://international.ui.ac.id/international-engagement.html. The aims are to widen the international perspective of the students, to provide students with the experience of studying in an overseas university, to enhance students' language capability, and to enhance students'

Before finishing their study, students should fulfill the minimum English proficiency level as the set forth in. Dean's Decree No. 3 year 2019: achieved a minimum IELTS score of .0 with no bands lower than 5.5 or TOEFL iBT score of 75 with no bands lower than 17.

Undergraduate Non Reguler Class Program (Diploma Track)

The Undergraduate Non Reguler Program (Diploma Track) at FTUI was initiated in 1993 and it was named the Extension Program. At the beginning, the program was offered only by four Study Programs (Civil, Mechanical, Electrical, and Metallurgy Engineering). In 1995 the program was also opened by the Chemical Engineering Study Program (Gas and Petrochemical Engineering), followed by Industrial Engineering in 2002. Starting in 2011, the Undergraduate Extension Program of FTUI was closed. However, the faculty still provides future FTUI students that are graduates from the Diploma Program with the opportunity to continue their education at FTUI Undergraduate Program. Students are now able to apply through the Undergraduate Non Reguler Program (Diploma Track) by using the Credit Transfer System. The number of credits acknowledged will be decided by their respective Departments.

The Undergraduate Non Reguler Program is a full time academic program where students are expected to be full time students in campus. This is due to the schedule set for the program which starts from morning to afternoon. There are six Study Programs available to choose from: Civil Engineering, Mechanical Engineering, Electrical Engineering, Metallurgy and Materials Engineering, Chemical Engineering, and Industrial Engineering.

Professional Program

Professional Program for Architects

This one-year professional program is intended to provide graduates who have the ability to design with necessary professional skills and competence based on policies (code compliance) to be qualified architects. Graduates of this program may work in various fields within the construction industry as an executive architect or construction supervisor. Graduates may also work as researchers and lecturers at educational institutions associated with the field of architecture. Besides that, graduates may also choose

to work in the fields of urban design, real estate, building maintenance, housing and settlements, and the environment, as well as becoming assessors for project feasibility studies or building managers. They might also work in the industry of building materials and elements or in the government sector and take charge of projects related to urban design, building, and development in the area of built environment.

Professional Program for Engineers

The aim of this Professional Program for Engineer is to fulfill the need for graduates with high competence in engineering, in accordance with the Engineer Law.

The Professional Program for Engineer aims to produce engineers with the following characteristics:

- Having an understanding of an engineer's code of ethics and engineer's code of conduct
- Having the necessary technical skills of an engineer, including consultation service, pre-design creation, licensing process, the development of design and completion of various technical and bidding documents.
- Having a sound understanding of code of compliances, including those related to providing service to clients, complying with current regulation, and dealing with various engineering problems such as those related to building construction and mechanical or electrical engineering

The Professional Program for Engineers Study Program is a higher education program which students may take after completing their undergraduate program in order to improve their engineering skills. Completing the Professional Program for Engineers is a prerequisite to acquire the title of an Engineer and to submit an application for professional certification. This program is a continuation of the existing undergraduate program in which graduates are expected to possess certain academic abilities: critical thinking (analytical and synthetic) and the ability to perform creative design. The undergraduate program is designed to be completed in 4 years (8 semesters) with 144 credits. To fulfill the requirements for obtaining the title of an Engineer, a graduate is required to pursue a further professional education for a minimum period of 1 year with 24 credits to complete. The composition of the curriculum of the Professional Program for Engineers is 84% engineering practices, including internship in any industry, case studies, and problem solving, and 16% face-to-face classroom lectures.

In the Ministry of Research, Technology, and Higher Education's Regulation, it is stated that the Professional Program for Engineers is a higher education program as a continuation of the undergraduate Bachelor's program designed to improve students' engineering competency. Graduates of this Professional Program for Engineers Study Program will be awarded with an Professional Engineer Certificate from the university and is entitled to use the professional engineering degree "Ir."

A person with a Professional Engineer Certificate is eligible to take the Professional Engineer Competence Examination held by a professional certification institution. Engineers that have passed this Professional Engineers Competence Examination will be awarded a Certificate of Competence as a professional engineer. Certificate of Competence is an important document which enables an individual to work as an Engineer, and this is also a requirement for obtaining the Engineer Registration Certificate issued by Persatuan Insinyur Indonesia (PII), an Indonesian professional engineers' association.

Master Program

The Master's Degree Program of the Faculty of Engineering, Universitas Indonesia, was opened in 1992 with four study programs: Civil Engineering, Mechanical Engineering, Electrical Engineering, and Metallurgical Engineering. In 2000, the faculty opened the Master's Degree Program for Chemical Engineering (from the Gas Engineering Study Program in the Metallurgical Engineering Department), Industrial Engineering (from the Industrial Management Study Program in the Mechanical Engineering Department), and Architecture.

Each Study Program in the Master's Degree Program is led by a Head of Study Program held ex-officio by the Head of the Department. Each Department has one or more specializations to provide in-depth and more specific engineering knowledge for each student of the said study program.

Types of Classes for Master Program:

- Regular Class Program is held full time from Monday – Friday in FTUI Campus, Depok.
- Special Class Program is held at specific with the following details:
    - Special Class program for Metallurgical & Materials Engineering: Saturday (08.00 am– 07.00 pm) in FTUI Campus, Depok.
    - Special Class program for Industrial Engineering: Friday (05.00 pm – 09.00 pm) and Saturday (08.00 am – 05.00 pm) in FTUI Campus, Salemba.

- Special Class program for Energy System Engineering, Biomedical Technology, and other Special Class program: Monday – Friday (05.00 pm – 09.30 pm) in FTUI Campus, Salemba.

- Research Class Program is held full time from Monday – Friday in FTUI Campus, Depok.

Doctoral Program

FTUI Doctoral program was officially opened in 2000 with two study programs: Civil Engineering and Electrical Engineering Doctoral Programs. This was followed by the inclusion of the Opto-electrotechnique and Laser Application study programs into the Postgraduate Program of FTUI. The Mechanical Engineering study program was officially opened in 2006, while the Metallurgical and Materials Engineering and Chemical Engineering Doctoral Programs were opened in 2007.

In 2009, the Department of Architecture opened the Architecture Doctoral Program. In 2011, the Opto-electrotechnique and Laser Application study programs were closed and merged into the Electrical Engineering study program. Department of Industrial Engineering opened the Industrial Engineering Doctoral Program in 2014. Each Doctoral study program is led by a Head of Study Program which is held ex-officio by the Head of the relevant Department at the Faculty of Engineering UI. FTUI Doctoral study programs have one or more focuses of study to provide more specific knowledge of a particular engineering field for all students of the program.

Department of Civil Engineering

General

The Department of Civil Engineering Universitas Indonesia has several study programs in the goal to become a center of knowledge and technology in Civil Engineering and Environmental Engineering and to play an important role in global market. Civil Engineering is the oldest engineering discipline and encompasses many specific areas. Civil engineering can be described as the application of engineering to civil society. It applies the principles of engineering to meet society's fundamental needs for housing, building, transportation, sanitation, and other necessities of a modern society. The engineers deal with the design, construction, and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings. Civil engineering education is to prepare students to be master planners, designers, constructors, and managers of various civil engineering works. The graduates can work in all levels: in the public sector from municipal to national governments, and in the private sector from individual homeowners to multinational companies in responding to current challenges such as construction and maintenance of facilities and infrastructure, climate change, natural disasters, traffic congestion and urban development.

Environmental engineering is defined as the branch of engineering concerned with the application of scientific and engineering principles for protection of human populations from the effects of adverse environmental factors; protection of environments, both local and global, from the potentially deleterious effects of natural and human activities; and improvement of environmental quality. Tasks of environmental engineers include evaluation of environmental quality of water, air, and soil by developing strategies and methods, design of facilities or programs, evaluation of results and assessment of the economics and efficiency of processes. The Environmental Engineering Study Program provides graduates with professional and competence in planning, designing, constructing, and managing environmental infrastructure for: drinking water treatment, liquid and solid waste management, drainage, environmental sanitation, water resources, air pollution, pollution prevention, and environmental impact assessment.

The Civil Engineering Department, previously known as the Civil Engineering Study Program, was established together with the Faculty of Engineering of Universitas Indonesia (FTUI) on July 17th, 1964. During its initial stage of development, the Civil Engineering Department of FTUI offered only one study program, i.e. Civil Engineering, with two majors: structural engineering and water resources engineering. In response to the demand and development of science and technology, the study program was then expanded to cover four additional majors, i.e. transportation engineering, geotechnical engineering, sanitary engineering, and construction management. With the improvement of human resources and facilities, the two-level Postgraduate Programs of Master's Degree (S2) and Doctoral Degree (S3) were established in 1992 and 2001, respectively. In 2006, the Department established the undergraduate program of Environmental Engineering. Previously, Environmental Engineering is one of the majors in Civil Engineering. There are eight specializations for Master's Degree Program and Doctoral Program in Civil Engineering, consisting of structural engineering, geotechnical engineering, water resources management, transportation system and engineering, construction management, environmental engineering, project

management, and infrastructure management.

To maintain its quality, the Department has been regularly accredited by the National Accreditation Board (Badan Akreditasi Nasional Pendidikan Tinggi or BAN-PT) since 1998. Civil Engineering Study Programme and Environmental Engineering Study Programme, both have reached the highest grade of "Unggul" and Civil Engineering Magister Study Programme and Civil Engineering Doctoral Study Programme have reached grade "Unggul". The Environmental Engineering Study Program was accredited nationally in 2010. The undergraduate program of Civil Engineering was accredited internationally in 2001 by the Joint Board of Moderators of the Engineering Council consisting of the Institution of Structural Engineers (ISE), Institution of Civil Engineers (ICE), and Chartered Institution of Building Service Engineers of the United Kingdom. However, due to changes in their policy, reaccreditation was discontinued. In 2008, the undergraduate program of Civil Engineering was assessed by the ASEAN University Network – Quality Assurance Program (AUN-QA). In order to maintain the quality of education in the Department, AUN-QA reassessment was conducted in 2015. The Environmental Engineering S1 program assessment was performed by the ASEAN University Network (AUN) in 2018, and the formal results are being processed by AUN. In 2019, Civil Engineering and Environmental Engineering undergraduate programs are accredited with general accreditation by IABEE (Accreditation Board for Engineering Education).

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Vision

"To become a center of knowledge and technology in Civil Engineering and Environmental Engineering and to play an important role in global market"

Missions

- To improve the quality of graduates in mastering Civil and Environmental Engineering knowledge with solid foundation, and to provide them with internationally standardized environmental insight
- To actively contribute ideas through research including direct involvement in community service that is oriented to the development of facilities and infrastructure in the Civil and Environmental Engineering discipline, as well as reflecting upon the balanced relationships between human beings and nature.
- To shape and build students that can demonstrate strong leadership and independent personality, along with the ability to socialize, communication effectively and uphold profession ethics.

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Department of Mechanical Engineering

General

The Department of Mechanical Engineering was previously known as the Mechanical Engineering Study Program. The department was established at the same time as the Faculty of Engineering of Universitas Indonesia on November 27th, 1964 in Salemba, Jakarta. Currently there are two study programs within the department, which are the Mechanical Engineering Study Program and the Marine Engineering Study Program. The mechanical engineering study program provides its students with the knowledge which focuses on Energy Conversion, Product Design, Manufacturing Process, and also the fundamentals of the industrial operations and managerial system. The Marine Engineering study program provides its students with the knowledge which focuses on ship design, ship manufacturing process, ship maintenance, ship machinery installation, and also marine rules and laws. The graduates of the mechanical engineering program have worked in several areas, such as the automotive industry, oil and gas industry, heavy duty engine industry, educational institutions, research institutions, and other industries. The Department of Mechanical Engineering organizes several academic programs, which consist of Bachelor's Degree (Regular, Non Reguler, and International classes), Master's Degree, and Doctoral Degree. Since August 2007, the Department of Mechanical Engineering has received the ISO 9001: 2000 for the quality management system in the Mechanical Engineering Study Program. In 2011, the Department of Mechanical Engineering once again received the ISO 9001: 1008 for the quality management system. Certification by international agencies is part of the Department's commitment to maintaining a high-quality management, as well as ensuring and enhancing academic quality and stakeholders' satisfaction. The Mechanical Engineering Study Program also received the highest academic accreditation level as required by the National Accreditation Board in 2005, with the last achievement of "Unggul or Excellent" ranking in 2021. In 2008, the Department of Mechanical Engineering also gained international recognition in the form of accreditation by the ASEAN University Network (AUN). In 2018, the Department of Mechanical Engineering gained international recognition again in

the form of General Accreditation by the Indonesia Accreditation Board for Engineering Education (IABEE). This again shows the commitment of the Department of Mechanical Engineering to offering international education and to achieving excellence in its areas of study, as clearly specified in the Department's vision, missions, and goals.

A nation's development very much depends on the development of its human resources. Included in these resources are people who set the direction, determine the goals, implement those goals, and develop their own lives as an integral part of the nation. By having good human resources, the nation is expected to be able to lead its members to prosperity and affluence. Therefore, the development of human resources becomes the key to national development. Higher education in Indonesia is part of the National Education System which aims to develop the intellectual life of the nation by developing its human resources and carrying out three main activities referred to as the "Tridharma", which consist of these obligations:

- To Provide higher level education
- To Conduct scientific research
- To perform the Community service

In order to develop human resources for the welfare of the whole nation, the Department of Mechanical Engineering has determined those three main activities as the main goals and reference when conducting its academic activities. In terms of education, the goal is to produce graduates who are able to analyze and synthesize the characteristics of mechanical systems, to design and plan systems and mechanical equipment, to manage production installations, to analyze and solve various scientific problems, to work together in teams, and to develop their personality and knowledge. Those graduates are also expected to demonstrate commendable intellectual attitudes, as well as being able to apply systematic, logical, and integrated ways of thinking. In terms of research, the Department of Mechanical Engineering has set itself a goal to contribute to and play an active role in the development of mechanical science and technology as well as continuously improving its educational process by taking account of new inputs. Moreover, in terms of community service, the Department aims to share beneficial ideas and to ensure direct involvement in quality improvement and enhancement of community and industry. To answer the demand for graduate academic programs that include character building, leadership, as well as academic and professional excellence in the field of Mechanical Engineering at all levels of education (Bachelor's, Master's, and Doctoral), the Department of Mechanical Engineering has developed a competency-based academic curriculum which is implemented by means of student-centered learning and teaching activities. According to such curriculum, research activities become a major aspect in the Doctoral Degree.

The 2020 curriculum has been designed in such a way as to integrate Bachelor's, Master's, and Doctoral education schemes, so it is possible for a student with an excellent academic record to take courses normally offered in a higher level (i.e. Master's and Doctoral) by adhering to the credit transfer regulation and taking the Fast Track Program.

More detailed information about each of the courses offered by the Mechanical Engineering and Naval Architecture and Marine Engineering Study Programs, about the main academic competence, and about other supporters of the graduates of each study program are given in the following section.

Contact

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Vision

"To Become the center of the excellent research and education services in Mechanical Engineering"

Mission

"To conduct research and research-based education for the development of science and technology in the field of mechanical engineering, and to conduct research and education and use it to improve the quality of life and humanity"

Staffs of The Department Of Mechanical Engineering

Dr. Agus Sunjarianto Pamitran, ST., M.Eng.
Head of Department

Dr.-Ing. Mohammad Adhitya, S.T., M.Sc.
Vice Head of Department

Dr. Agus Sunjarianto Pamitran, ST., M.Eng
Head of Mechanical Engineering Study Progr.am

Dr. Muhammad Arif Budiyanto, S.T., M.T.
Head of Naval Architecture and Marine Engineering Study Program

Dr. Radon Dhelika, B.Eng, M.Eng
Assistant to Vice Head for Academic Affairs

Achmad Riadi, ST., M.Eng., Ph.D.
Assistant to Vice Head for HR and Facility

Dr.-Ing. Ridho Irwansyah, S.T., M.T.
Assistant to Vice Head for Cooperation, Alumni and Industry

Dr.Eng. Arnas Lubis, S.T., M.T.
Assistant to Vice Head for Research and Community Engagement

Agung Shamsuddin, ST., MS.Eng., PhD.
Venture Coordinator / Director of P2M

Head of Laboratory

Prof. Dr. Ir. Wahyu Nirbito, MSME
Head of Mechanical and Biomechanic Design Laboratory

Prof. Dr. Ir. Danardono A.S., DEA, PE
Head of Mechanical Technology Laboratory

Ahmad Syihan Auzani, S.T., M.T., Ph.D.
Head of Thermodynamics Laboratory

Prof. Dr. Ir. Imansyah Ibnu Hakim, M.Eng.
Head of Heat Transfer Laboratory

Dr.-Ing. Ridho Irwansyah, ST., MT.
Head of Fluid Mechanics Laboratory

Agung Shamsuddin, ST., MS.Eng., PhD.
Head of Manufacture and Otomatization Laboratory

Prof. Dr.-Ing Ir. Nasruddin, M.Eng
Head of Air-conditioning Engineering Laboratory

Head of Research Cluster- Kelompok Ilmu (KI)

Prof. Dr. Ir. Yulianto S. Nugroho, MSc., Ph.D.
Head of Research Cluster of Energy Conversion

Prof. Dr. Ir. Gandjar Kiswanto, M.Eng.
Head of Research Cluster of Design, Manufacture and Automation

Prof. Dr. Ir. Yanuar, M.Eng., M.Sc
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Board of Professor

1. **Prof. Dr. Ir. M. Idrus Alhamid**
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PART-TIME (NON-TENURED) FACULTY

1. **Prof. Dr. Ir. Bambang Suryawan**
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2. **Prof. Dr. Ir. Budiarso, M.Eng.**
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3. **Prof. Dr. Ir. I Made Kartika Dhiputra, Dipl-Ing**
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4. **Dr. Ir. Budihardjo, Dipl.-Ing.**
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7. **Dr. Ir. Gatot Prayogo, M.Eng.**
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Department of Electrical Engineering

General

The Department of Electrical Engineering, the Faculty of Engineering, Universitas Indonesia was established at the same time as the Faculty of Engineering on July 17th, 1964, even though the classes had started since October 17th, 1964. At the beginning of its establishment, the Department of Electrical Engineering (DTE) was named “Jurusan Listrik”, consisting of two fields of studies: (1) Electrical Power and (2) Electronics and Telecommunication. In 1984, the name “Jurusan Listrik” was changed into “Jurusan Elektro”,

which was renamed the Department of Electrical Engineering in 2004. Initially there were five streams available in this Department, namely (1) Electrical Power Engineering, (2) Electronics Engineering, (3) Telecommunication Engineering, (4) Control Engineering, and (5) Computer Engineering. Since 2006, the Computer Engineering stream has become a new study program: the Computer Engineering Study Program (CESP) within the Department. In 2016, DTE added a new specialization, i.e. Biomedical Engineering. In 2017, based on the Rector's Decree No. 0230/SK/R/UI/2017, the master's degree Program in Biomedical Technology, which was previously held under the University's Postgraduate Program, was transferred under DTE. In 2018 DTE has opened the Undergraduate Study Program on Biomedical Engineering.

Objective

To produce the graduates who be able to provide solutions to the problems in the field of electrical engineering in accordance with professional ethics.

Vision

To become an independent and leading educational institution of electrical engineering that be able to provide solutions to the problems and challenges at the national and global levels.

Missions

The mission of the Department of Electrical Engineering is alignment to the mission of the University of Indonesia which are to:

1. Deliver education that based on the concept of good university governance to produce graduates who are knowledgeable, internationally minded, and have an entrepreneurial spirit.
2. Organize facilities, funding, and participation in applied research and new findings that can provide solutions to national and global problems.
3. Apply appropriate sciences and technologies in community service activities that match with the needs of the communities and industries.
4. Use advanced information technologies in carrying out efficient administration services for stakeholders.

The Targets

Bachelor of Electrical Engineering

1. Able to design components, systems or processes to meet the need for solutions to technical problems within realistic limits, considering aspects, including legal, economic, environmental, social, political, health and safety, as well as their sustainability potential.
2. Able to plan task units within existing limits as part of the process of completing engineering activities.
3. Able to formulate complex engineering problems, and then apply effective methods and tools to solve them.
4. Able to investigate experimental data designed to solve complex problems.
5. Able to identify the need for lifelong learning, including access to knowledge related to relevant current issues.
6. Able to solve complex problems in the field of electrical engineering by applying modern engineering methods, skills, and tools as well as information technology.
7. Able to apply knowledge of mathematics, physics, information communication technology (ICT) and engineering to solve complex problems in the field of electrical engineering.
8. Able to communicate effectively both orally and in writing.
9. Able to play an effective role in a multi-disciplinary team, with integrity, critical thinking, creative, innovative to achieve individual and collective goals.
10. Able to be responsible to the community and fulfill professional ethics in carrying out engineering activities.

Bachelor of Computer Engineering

1. Able to make intelligent, and safe computer technology system designs based on community needs in various fields of life.
2. Able to make information network design.
3. Able to make hardware designs for computer-based systems.
4. Able to make software designs for computer-based systems.
5. Able to design algorithms for specific problems and implement them into programming.
6. Able to solve computer engineering problems by applying the basic principles of mathematics, physics, and data analytic.
7. Able to use the language both spoken and written in the Bahasa Indonesia and English for academic or non-academic activities.

8. Have integrity and are capable of critical thinking, creative, and innovative and have the intellectual curiosity to solve problems at the level of the individual and the group.
9. Able to utilize information communication technology.
10. Able to provide alternative solutions to problems that arise in the environment, society, nation, and country.
11. Able to identify varieties of entrepreneurial efforts that are characterized by innovation and self-reliance based on ethics.

Bachelor of Biomedical Engineering

1. Able to design hardware and software needed in biomedical engineering.
2. Able to design biomedical engineering principles according to Health standards and regulations.
3. Able to design technology based on medical information/data related to the condition of human physiology.
4. Able to handle general and specific problems in biomedical engineering.
5. Able to apply the basic principles of mathematics, chemistry, physics, and health-safety in solving Biomedical Engineering problems.
6. Able to think critically, creatively, and innovatively and have an intellectual curiosity to solve problems at the individual and group level.
7. Able to identify varieties of entrepreneurial efforts that are characterized by innovation and self-reliance based on ethics.
8. Able to use the language both spoken and written in the Bahasa Indonesia and English for academic or non-academic activities.
9. Able to provide alternative solutions to problems that arise in the environment, society, nation, and country.
10. Able to utilize information communication technology.

Master of Electrical Engineering

1. Able to generate scientific work effectively, both oral and written.
2. Able to provide recommendations in the field of electrical engineering as solution to society based on professional ethics.
3. Able to develop themselves for continuous learning, following the development of science, technology, and relevant contemporary issues in the field of electrical engineering.
4. Able to evaluate data by applying data analysis and processing methods.
5. Able to formulate problem solving in the field of electrical engineering using appropriate research methods.
6. Able to develop innovative technology for electrical engineering industries in the era of Industrial Revolution 4.0.

Majoring in Power and Smart System

1. Able to specify technical and non-technical aspects in the industries of electric power generation and utilization based on smartgrid.
2. Able to recommend strategies to improve efficiency, service quality, and power quality in electric power systems based on smartgrid.
3. Able to integrate new and renewable power generation with smart grid system.
4. Able to assess strategies and risk mitigation in the development of power systems that are reliable, safe, and environmentally friendly.

Majoring in Telecommunication and Smart Wireless System

1. Able to evaluate the latest technology in the field of telecommunications technology and smart wireless systems.
2. Able to design systems and /or devices for smart wireless telecommunications systems.

Majoring in Electronic and Intelligent Embedded System

1. Able to design electronic/photonic devices and/or complex electronic systems.
2. Able to implement complex smart embedded systems to contribute to solving problems in the engineering field.

Majoring in Cyber Security and Future Internet

1. Able to design a comprehensive information and network security system that meets the security standards.
2. Able to evaluate the appropriate security incidents handling and forensic methods of digital data.
3. Able to evaluate the development of computer and future Internet technologies.

Majoring in Automation and Data Analytic Engineering

1. Able to design control systems for industrial application.
2. Able to develop smart automation systems based on data engineering.
3. Able to design integrated automation system.

Majoring in Data Engineering and Business Intelligence

1. Able to design processing engineering, analysis, and data visualization which is efficient and scalable.
2. Able to develop aspects of leadership in the digital economic ecosystem (digital leadership).

Majoring in Telecommunication Management

1. Able to develop policy recommendations and strategies for ICT and telecommunication industries that support the digital economy.
2. Able to develop innovative and visionary nature in the telecommunications and ICT industry in the digital economy era.
3. Able to evaluate technical aspects that support the telecommunications and ICT business infrastructure in the era of industrial revolution 4.0 and digital economy.
4. Able to evaluate laws, policies and regulations oriented towards technological convergence and reinforcement of digital economy.
5. Able to design technoeconimic-based industrial strategies and regulatory policies.
6. Able to develop wise and objective leadership aspects in the national telecommunications and ICT sector (vendors, operatorsm regulators)

Majoring in Power and Energy Management

1. Able to formulate technical, non-technical and economic aspect in the management of generation and utilization of electric power and primary energy industries.
2. Able to recommend strategies to improve efficiency, service quality and power quality in the management of electric power systems.
3. Able to integrate the the management of new and renewable energy power plants with the electric power grid system.
4. Able to recommend strategies and risk mitigation in the development of power systems that are reliable, safe, and environmentally friendly.

Majoring in Information Network Security Management

1. Able to design a comprehensive physical network infrastructure that meets high security principles.
2. Able to recommend information security management in the concept of new technologies for Indonesian national development.
3. Able to evaluate information network security based on technological rules, laws and applied regulations.

Master of Biomedical Engineering

1. Able to design innovative models of biomedical systems through biomedical engineering principle.
2. Able to compile independent scientific work systematically.
3. Able to formulate a professional management concept for biomedical engineering field.
4. Able to formulate the safety and security that meet the standard and regulation of medical equipment.

Majoring in Biomedical Instrumentation and Medical Imaging

1. Able to design biomedical instrumentation.
2. Able to develop biomedical sensor.
3. Able to design biomedical automation system.
4. Able to design medical imaging technique.

Majoring in Medical Informatics

1. Able to develop Hospital Information System.
2. Able to design e-Health and telemedicine system.
3. Able to design Biomedical Information System.
4. Able to develop decision support system and artificial intelligent

Majoring in Clinical and Hospital Engineering

1. Able to organize problem solving in biomedical technologies.
2. Able to design hospital management.
3. Able to formulate the standard, regulation, and safety of medical equipment's in medical facilities.
4. Able to design Clinical and Hospital technology

Electrical Engineering Staffs

Dr. Eng. Arief Udhiarto, S.T., M.T.
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Dr. Eng. Arief Udhiarto, S.T., M.T.
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Vice Head of Department:

Dr. Muhammad Salman, ST., MIT
Head of Computer Engineering Study Program

Dr. Basari, S.T., M.Eng.
Head of Biomedic Engineering Study Program

Head Of Laboratory

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Ir. Agus R. Utomo M.T.
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Board of Professors

1. **Prof. Dr. Ir. Harry Sudibyo S, DEA.,** harisudi@ee.ui.ac.id (Ir., Universitas Indonesia, 1979; DEA., Univ. Paris VI, 1984; Dr. Ing., Univ. Paris VI, France, 1987; Prof., UI, 2007) Micro-electronics & VLSI design.
2. **Prof. Ir. Rinaldy Dalimi, M.Sc, Ph.D.,** rinaldy@ee.ui.ac.id (Ir., Universitas Indonesia, 1980; M.Sc., Michigan State Univ., USA, 1989; Ph.D., Virginia Tech., USA, 1992; Prof., UI, 2007) Electrical power system analysis, energy management.
3. **Prof. Dr. Ir. Eko Tjipto Rahardjo, M.Sc.,** eko.tjipto@ui.ac.id (Ir., Universitas Indonesia, 1981; M.Sc., University of Hawaii, USA, 1989; Ph.D, Saitama University, Japan, 1996; Prof., UI, 2005) Electromagnetic, antenna and wave propagation, microwave.
4. **Prof. Dr. Drs. Benyamin Kusumoputro, M.Eng.** kusumo@ui.ac.id (Drs., Fisika ITB, 1981; M.Eng., Tokyo Inst. Tech., Japan, 1984; Dr., Tokyo Inst. Tech., Japan, 1993; Prof., UI, 2004) Computation intelligence, robotics.
5. **Prof. Dr. Ir. Rudy Setiabudy, DEA,** rudy.setiabudy@ui.ac.id (Ir., Universitas Indonesia, 1982; DEA, INPG Grenoble, France, 1987; Dr., Montpellier II USTL, France, 1991; Prof., UI, 2008) Electrical material technology, electrical measurement.
6. **Prof. Dr. Ir. Dadang Gunawan, M.Eng,** dadang.gunawan@ui.ac.id (Ir., Universitas Indonesia, 1983; M.Eng., Keio University, Japan, 1989; Ph.D., Tasmania University, Australia, 1995; Prof., UI, 2004) Signal processing and compression, multimedia communication.
7. **Prof. Dr. Ir. NR. Poespawati, MT.,IPM** nyi.raden@ui.ac.id (Ir., Universitas Indonesia, 1985, MT., Universitas Indonesia, 1997, Dr., Elektro FTUI, 2004; Prof., UI, 2008) Solar cell devices, laser.
8. **Prof. Dr. Ir. Retno Wigajatri Purnamaningsih, MT,** retno.wigajatri@ui.ac.id (Ir., ITB, 1985; MT., Opto PPSUI, 1992; Dr., Universitas Indonesia, 2006, Prof., UI, 2021) Photonic devices, Opto-electhronic Sensor System
9. **Prof. Dr. Ir. Anak Agung Putri Ratna, M.Eng** anak.agung@ui.ac.id, ratna@eng.ui.ac.id (Ir., Universitas Indonesia, 1986; M.Eng., Waseda University. Japan., 1990; Dr., FTUI, 2006) Computer network, web-based information system.
10. **Prof. Dr. Ir. Iwa Garniwa, MK., MT.** ir.iwa@ui.ac.id (Ir., Universitas Indonesia, 1987; MT., Universitas Indonesia, 1998; Dr., Elektro FTUI, 2003; Prof., UI, 2009) High voltage and current, electrical materials.

11. **Prof. Dr.-Ing. Ir. Kalamullah Ramli, M.Eng.** kalamullah.ramli@ui.ac.id (Ir., Universitas Indonesia, 1993; M.Eng., Univ. of Wollongong, Australia, 1997; Dr.-Ing, Univ. Duisburg-Essen, Germany, 2003, Prof., UI, 2009) Embedded systems.

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13. **Prof. Dr. Ir. Riri Fitri Sari, M.Sc., MM., IPM,** riri@ui.ac.id (Ir., Universitas Indonesia, 1994; M.Sc., Sheffield, 1998; PhD., Leeds Univ., UK, 2004, Prof., UI, 2009) Software engineering, active networks, pervasive computing.

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1. **Prof. Dr. Fumihiko Nishio,** fnishio@faculty.chiba-u.jp (Fundamental Research Field of Remote Sensing: Snow and Ice), Center for Environmental Remote Sensing (CEReS), Chiba University, Japan.

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4. **Prof. Dr.-Ing. Axel Hunger,** axel.hunger@uni-due.de (Adaptive e-Learning, adaptive instructional systems, e-course and its applications, pedagogical analyses of on-line course), University of Duisburg Essen, Germany.

5. **Prof. Dr. Koichi Ito,** (Printed Antenna, Small Antenna, Medical Application of Antenna, Evaluation of Mutual Influence between Human Body and Electromagnetic Radiations), Chiba University, Japan.

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Board Of Emiritus Faculty

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2. **Prof. Dr. Ir. Bagio Budiardjo, M.Sc.,** bbdui@ee.ui.ac.id (Ir., Universitas Indonesia, 1972; M.Sc., Ohio State Univ., USA, 1980; Dr., Elektro FTUI, 2002; Prof., UI, 2005) Computer architecture, protocol engineering, pervasive computation.
3. **Prof. Dr. Ir. Djamhari Sirat, M.Sc.,** djsirat@ee.ui.ac.id (Ir., Universitas Indonesia, 1972; M.Sc., UMIST; PhD, UMIST, UK, 1985) Telecommunication regulation.
4. **Dr. Ir. Ridwan Gunawan, M.T.,** ridwan@eng.ui.ac.id (Ir., Universitas Indonesia, 1978; MT., Universitas Indonesia, 1994; Dr., Universitas Indonesia, 2006) Electrical power transmission and reliability.
5. **Dr. Uno Bintang Sudibyo,DEA** uno@ee.ui.ac.id (Ir., Universitas Indonesia, 1972; DEA, INPG Grenoble, France, 1987; Dr., Univ. Montpellier II USTL, France, 1991) Electrical power conversion.
6. **Wahidin Wahab,** wahidin.wahab@ui.ac.id (Ir., Universitas Indonesia, 1978; M.Sc., UMIST, 1983; PhD, UMIST, UK, 1985) Control engineering, robotics & automation.
7. **Ir. Endang Sriningsih, MT,** endangs@ee.ui.ac.id (Ir., Universitas Indonesia, 1976; MT., Universitas Indonesia, 1995) Digital system

Part-Time Faculty

1. **Diyanatul Husna,** ((ST., Universitas Indonesia, 2015; MT., Universitas Indonesia, 2016) Network Security, Big Data
2. **Sylvi Febriana Rachmawati Irnadiastputri,** sylvi.febriana@ui.ac.id (B.Eng., National University of Singapore, 2018; M.Eng., National University of Singapore, 2022) Biomechanics, computational biology.

Department of Metallurgical and Materials Engineering

General

Department of Metallurgical Engineering was originally established as a study program under the Faculty of Engineering, Universitas Indonesia, in 1965. Due to the lack of qualified lecturers and infrastructure, the first academic activity was only attended by 25 students. For almost 6 years since 1969, the department had stopped accepting new students and focused on performing activities for existing students. In 1975, the department began to accept students again, and in the same year had its first seven graduates. Ever since, the department has been progressively conducting and developing its academic activities.

As science and technology progress, especially in engineering materials-based industries, and in consideration of the availability of resources within the department, the Department of Metallurgical Engineering consolidated its resources and identified the need to add the word “materials” to its name. The idea came to fruition on November 5th, 2002, when the Rector of Universitas Indonesia issued a decree which officially recognized the Department of Metallurgical and Materials Engineering as one of the departments within the Faculty of Engineering.

The curriculum in Metallurgical and Materials Engineering is structured to address problems associated with various metallurgical aspects, as well as material design and processing, to meet the specific needs of various industries. Emphasis is given on the basic sciences and principles of engineering, as well as the applications of these principles to metallurgical and material behaviors. Students are expected to develop a solid base in chemistry, physics, and mathematics, which are applied in various engineering courses. By attending metallurgical and materials engineering courses, students may establish a firm base in the major areas of metallurgical and materials science as well as in the major areas of engineering materials explored in the courses, including materials properties and selection, computational methods, and capstone design. Students gain in-depth experience in other engineering disciplines through coordinated technical elective sequences.

In 2018, the department has totally graduated almost 2500 graduates with a degree in bachelor of engineering, 200 graduates with a degree in master of engineering, and 30 graduates with a doctoral degree. At the beginning of first semester of 2018/2019, the department has actively 500

undergraduate students from regular and Non Reguler program, 57 students from undergraduate international program, 71 master students, and 24 doctoral students. Considering the high demand to produce qualified graduates and following current trends toward the global competition, Department of Metallurgical and Materials Engineering is committed to continuously improve its academic activities including teaching and learning process as well as research activities. As a part of national education system, which has the objective to develop the intellectual life of the nation through human resources development by conducting three main activities known as tridharma ("three duties"), the department is committed to carry out higher level educations, to conduct scientific research, and to provide community services. During its development stage, the Department of Metallurgical and Materials Engineering has achieved several milestones, such as:

- Grade A Accreditation for Undergraduate Program from National Accreditation Board, Ministry of National Education (Year 2018 – 2023).
- Establishment of master (1995) and doctoral (2008) programs.
- Grade A Accreditation for Master Program from National Accreditation Board, Ministry of National Education (Year 2019 - 2024)
- Grade A Accreditation for Doctoral Program from National Accreditation Board, Ministry of National Education (Year 2017 - 2022)
- Establishment of "Dual-degree" International Program with Monash University (2003); Queensland University of Technology, Australia; and Duisburg Essen, Germany
- Grant awards from the Government of Republic Indonesia for:
    - Internal Improvement for non-metallic field competence - PHK-A4 (2004)
    - Improvement for external and regional competence – PHK-A2 (2004-2006)
    - Internationalization of academic and research activities in information technology, energy and nonmaterial – PHKI (2010-2013)
- Establishment of Center for Materials Processings and Failure Analysis (CMPFA), a special task unit to support the materials engineering community and industry (2001).
- Intensive academic and research collaborations with international institutions, such as Monash University (Australia), Kagoshima University (Japan), Nanyang Technological University (Singapore), Yeungnam University and KITECH (Korea) (since 2006).
- Materials Testing Laboratory in CMPFA was accredited SNI-ISO 17025 (accredited since 2011, renewed until 2024)

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Vision

In line with the vision and missions of Universitas Indonesia and the Faculty of Engineering, the vision of the Department of Metallurgical and Materials Engineering is "To be a research-based center of excellence, as well as referral center and solution provider for problems in the field of metallurgical and materials engineering in national and global levels."

Mission

To achieve that vision, Department of Metallurgical and Materials Engineering have the following missions:

- To providing broad access to education and research for the public and industry
- To produce high quality graduates with strong academic background and comprehensive skills in process technology, material engineering and design, who are capable of undertaking active and dynamic role in national, regional and international arenas
- To perform quality *Tridharma* (three duties) relevant to national and global challanges.
- To create conducive academic environment to support the vision of Department of Metallurgical and Materials Engineering

Staff Of The Department Of Metallurgical And Materials Engineering

Dr. Deni Ferdian, S.T., M.Sc.
Head of Department

Dr. Ahmad Zakiyuddin, S.T., M.Eng.
Vice Head of Department

Head Of Laboratory

Prof. Dr. Muhammad Chalid, S.Si., M.Sc.Eng.
Head of Chemical Metallurgy Laboratory

Dr. Ir. Sotya Astutiningsih, M.Eng
Head of Physical Metallurgy Laboratory

Ir. Rahmat Saptono, M.Sc., Ph.D
Head of Mechanical Metallurgy Laboratory

Prof. Dr. Ir. Donanta Dhaneswara, M.Sc
Head of Processing Metallurgy Laboratory

Prof. Dr. Ir. Myrna Ariati, M.Si
Head of Metallography & Heat Treatment Laboratory

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Board Of Professor

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6. **Prof. Dr. Ir. Dedi Priadi, DEA.,** dedi@metal.ui.ac.id (Prof.,Ir, UI ; D.E.A. & Dr, Ecole des Mines de Paris - France), Metal Forming.
7. **Prof. Ir. Muhammad Anis, M.Met., Ph.D.,** anis@metal.ui.ac.id (Prof., Ir, UI ; M.Met &Ph.D, University Sheffield - UK), Welding Metallurgy and Metallurgy Physic.
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10. **Prof. Dr. Eng. Ir. Sri Harjanto,** harjanto@metal.ui.ac.id (Ir, UI, Dr. Eng, Tohoku University - Japan), Chemical Synthesis of Materials, Mineral & Waste Materials Processing, Extractive Metallurgy.
11. **Prof. Dr. Ir. Rini Riastuti, M.Sc.** riastuti@metal.ui.ac.id (Ir, UI ; M.Sc, University of Manchester Instute of Science & Tech., -UK, Dr, UI), Electro-Cemical & Corrosion.
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International Adjunct Professors

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7. **Jaka Fajar Fatriansyah,**
(S.Si; M.S; UGM, Dr. Tohoku University, Japan) Soft Materials

8. **Nofrijon Sofyan,**
nofrijon@metal.ui.ac.id (Drs, Universitas Andalas; M.Si, UI; M.Sc, Auburn University - USA; Ph.D, Auburn University - USA), Nanomaterial, Electronic Ceramic

9. **Rahmat Saptono,**
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10. **Reza Miftahul Ulum,**
S.T., M.T. Univ. Indonesia, Dr.-ing. Universitat Duisberg Essen, Germany, Extractive Metallurgy

11. **Sotya Astutiningsih,**
sotya@metal.ui.ac.id (Ir, UI; M.Eng, Katholieke Universiteit Leuven - Belgium; PhD, UWA – Australia), Mechanical Metallurgy & Geo-polymer.

12. **Wahyuaji Narottama Putra**
(ST, MT, Ph.D Candidate of Nanyang Technological University - Singapore) Electrical Material

13. **Yudha Pratesa,**
yudha@metal.ui.ac.id (ST, UI; MT, UI), Biomaterial, Material Degradation & Protection, Chemical Metallurgy

14. **Alfian Ferdiansyah,**
alfian@metal.ui.ac.id (ST., Universitas Indonesia; MT., Universitas Indonesia; Dr.-Ing, Freiburg University -Germany) Solar cell materials and renewable energy

15. **Adam Febriyanto Nugraha**
adamf.nugraha@gmail.com (ST, UI; Ph.D., Korea Institute of Science and Technology - Korea) Polymer Materials.

Part-Time Faculty

1. **Prof. Ir. Sutopo, M.Sc., Ph.D,**
sutopo@metal.ui.ac.id (Ir, UI ; M.Sc & Ph.D, University of Wiscounsin - USA), Composite Material & Thermo-metallurgy.

2. **Yunita Sadeli,**
yunce@metal.ui.ac.id (Ir, UI; M.Sc, University of Manchester Instute of Science & Tech., - UK, Dr, UI), Corrosion & Total Quality Management.

Department of Architecture Engineering

General

Department of Architecture at the Universitas Indonesia (formerly known as Architectural Engineering Major) was established in 1965 under the UI Faculty of Engineering (FTUI) in Jakarta (established a year earlier through Presidential Decree No. 76 dated July 17, 1964). In the early days,

education at the FTUI Architectural Engineering was done through a system of per-level or per- year full professional education. The average completion time was 7 years with an Engineer (Ir.) degree. Then in 1978, the Semester Credit System (SKS) went into effect with a minimum number of acquired semester credit units of 160 credits. The average duration of the study was five years, and the title was still Engineer (professional education). Since 1996, a four-year bachelor's education program was implemented with a total of 144 credits, producing an academic degree Bachelor of Engineering (ST). In the same year, after 31 years of existence, Architecture Program of Study at UI received its decree by the Directorate General for Higher Education No. 215/DIKTI/ KEP/1996 dated July 11, 1996.

In 2000, Department of Architecture streamlined the 1996 curriculum by publishing the 2000 Curriculum along with the application of problem-based learning method, collaborative and student-centered learning. The 2000 Curriculum stated clearly, that the direction for bachelor's architecture education is pre-professional. In the same year, Master of Architecture program was established with 2 streams, namely Architectural Design and Urban Design. Over the years, the master's program has grown into 6 streams, in addition to the two already mentioned earlier, the specialization program of Urban Housing and Settlements, Real Estate, History and Theories of Architecture and Urbanism and Building Technology and Sustainability were established. At this time, through the new curriculum (2012 Curriculum), the six specializations were streamlined into three which are:

- Creative process stream: Architectural Design, Urban Design, Property Development
- Humanities stream: History and Theories of Architecture, Urban Housing and Settlement
- Technology and sustainability stream: Architecture and Technology

In 2004, Architectural Engineering Major changed to Department of Architecture. The degree for its graduates was also altered from Bachelor of Engineering (ST) to Bachelor of Architecture (S.Ars) for the bachelor graduates and Master of Architecture (M.Ars) for the master's. From 2000 until 2012, the Department of Architecture went through several changes in Curriculum and thus the curriculum is integrated and emphasize several points:

1. Referring to the National Education System based on Competence.
2. Flexibility in following the development of science and technology.
3. Curriculum that responses in fulfilling the demands of professionals within national, regional and also international level.
4. The core of the curriculum is in respect to the profession of architect in collaboration with IAI, and refers to UIA as the international standards.

In 2008 a new study program, Interior Architecture Undergraduate Program is opened, which emphasizes the interiority aspects of the design in architecture. The opening of this Interior Architecture study program allows the opportunity to explore and develop the field of interior architecture in Indonesia.

In 2009 a PhD program and a one-year program of Professional Program of Architect (PPAR) are set. PhD program is intended to strengthen the Department of Architecture as a leading architectural research-based institution. PhD student's research is focused on two areas: major research areas (research based on architectural issues) and minor research area (related to specialized area of study) in which PhD program students have the opportunity to take courses outside the discipline of architectural discipline to specifically support the knowledge, thoughts, and methods of its major. The learning process is conducted through the exploration of the width and depth aspects of knowledge about the studied issues. Meanwhile, for PPAR, the education is carried in a year to complete graduates with the actuality of professional architecture practice. Graduates of PPAR are also allowed to transfer the credit in UI to continue for a master degree in architecture.

Department of Architecture has also commenced an International Class (KKI) of undergraduate degree in architecture, with single degree program (only one semester abroad), or a double degree program (4 semesters in UI and the rest abroad). This program is in collaboration with leading universities in the world such as the Queensland University of Technology (QUT), Curtin University (Australia) and University of Florida. In addition, undergraduate students who have excellent academic achievements are able to attain a Fast-Track program (4 years bachelor + 1 year master), a total of 5 years, to accomplish a Master Degree in Architecture.

The Department of Architecture UI has an A accreditation from the Higher Education BAN, Indonesian Ministry of Research and Higher Education The Undergraduate Program Department of Architecture and Interior Architecture program has been also assessed by the ASEAN University Network (AUN). Both Master and PhD program of Department

of Architecture also has an A accreditation from the Higher Education BAN, Indonesian Ministry of Research and Higher Education. For more profiles of FTUI Department of Architecture can be viewed at the website: http://architecture.ui.ac.id.

Vision

Establishing a high-quality Architecture Education Institution that receives national and international recognition, to foster future leaders who are critical, knowledgeable, and creative thinkers, with sensibility to local wisdom and environment sustainability.

Mission

Establishing the Architecture Education institutional system with excellent quality, adaptive, and inclusive towards the implementation of teaching, research and community engagement in higher education.

Department of Architecture Staffs

Dr. Ir. Achmad Hery Fuad, M.Eng.,
Head of Department and Coordinator of Graduated Program

Kristanti Paramita, S.Ars., M.A., Ph.D.,
Vice Head of Department

Dr. Rini Suryantini, S.T., M.Sc.,
Coordinator of Interior Architecture Program

Ir. Hendrajaya Isnaeni, M.Sc., Ph.D.,
Coordinator of Professional Program

Head of Laboratory

Widyarko, S.Ars., M.Ars.
Head of Fabrication Laboratory and Wood-working Workshop

Dr. Ferro Yudistira S.T., M.Ars.
Head of Photography Laboratory

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Professor

1. **Prof. Ir. Antony Sihombing, MPD., Ph.D**
   (Ir., Architecture, Universitas Indonesia; MPD., Urban Design, University of Melbourne, Australia; Ph.D., Urban Design, University of Melbourne, Australia) Urban Architecture; Urban Housing and Settlements.
2. **Prof. Ir. Evawani Ellisa, M.Eng, Ph.D.**
   (Ir., Architecture, Universitas Gadjah Mada; M.Eng., Environmental Engineering, Osaka University, Japan; Ph.D, Architecture, Osaka University, Japan) Urban Design; Urban Architecture
3. **Prof. Kemas Ridwan Kurniawan, M.Sc., Ph.D**
   (S.T., Architecture, Universitas Indonesia; M.Sc., Architectural History, University of College London, UK; Ph.D, Architectural History, University of College London, UK) Architectural Theory and History; Heritage in Architecture
4. **Prof. Paramita Atmodiwirjo, ST., M.Arch., M.A.(Ed.), Ph.D.**
   (ST. Architecture Universitas Indonesia; M.Arch. Univ. of Sheffield, UK, Ph.D Architecture, Univ. of Sheffield) Architectural Design, Architecture and well-being; Interior Architecture.
5. **Prof. Yandi Andri Yatmo, M.Arch., Ph.D**
   (S.T., Architecture, Universitas Indonesia; Dip. Arch., Architecture Univ.Of Sheffield; M.Arch, Architecture, Univ. of Sheffield; Ph.D, Architecture,Univ. of Sheffield) Architectural Design; Design Theory and Method.

Board Of Emeritus Faculty

1. **Prof. Dr. Ir. Abimanyu T. Alamsyah, M.Si.**
   (Ir., Architecture Universitas Indonesia; M.Si, Perencanaan Pengembangan Wilayah dan Perdesaan, Institut Pertanian Bogor; Dr., Environmental Sciences, Universitas Indonesia) Urban and Regional Planning; Coastal Architecture
2. **Prof. Dr. Ir. Emirhadi Suganda, M.Sc.**
   (Ir., Architecture, Universitas Indonesia; M.Sc., Asian Institute of Technology (AIT) Bangkok, Thailand; Dr., Ilmu Lingkungan, Universitas Indonesia, 2007) Project Management; Building Technology
3. **Prof. Ir. Gunawan Tjahjono, Ph.D., M.Arch,**
   (Ir. Architecture Universitas Indonesia; M.Arch., Architecture, University of California Los Angeles, USA; Ph.D., Architecture, University of California Berkeley, USA, 1989); Theory and Methods in Architecture; Architecture and Urban Design

Full-Time Faculty

1. **Dr. Ir. Achmad Hery Fuad, M.Eng,**
(Ir., Architecture, Universitas Indonesia; M.Eng., Architecture Urban Design, Waseda University, Japan; Dr., Perancangan Architecture, Universitas Indonesia) Urban Design; Urban Architecture.

2. **Ahmad Gamal, S.Ars., M.U.P., Ph.D.**
(S.Ars., Architecture, Universitas Indonesia; MSc, London School of Public Relation; M.U.P, Urban & Regional Planning, University of Illinois Urbana Champaign, USA; Ph.D., Urban & Regional Planning, University of Illinois Urbana Champaign, USA) Urban dan Regional Planning; Property in Architecture.

3. **Arif Rahman Wahid, S.Ars., M.A.**
(S.Ars., Architecture Interior, Universitas Indonesia; M.A., Narrative Environments, University of the Arst London, UK) Interior Architecture; Narrative Environment

4. **Coriesta Dian Sulistiani, S.Ars., M.Ars.**
(S.Ars., Architecture, Universitas Indonesia; M.Ars, Perancangan Architecture, Universitas Indonesia) Interior Architecture; Building Technology

5. **Dr.-Ing. Ir. Dalhar Susanto**
(Ir., Architecture, Universitas Diponegoro, Semarang; Dr.-Ing., Urban Housing, University of Stuttgart, Germany) Building Technology; Urban Housing and Settlements.

6. **Diandra Pandu Saginatari, S.Ars., M.Ars.**
(S.Ars., Architecture, Universitas Indonesia; M.A., Art Space and Nature, The University of Edinburgh, UK) Architectural Design; Architecture and Ecology.

7. **Dita Trisnawan, S.T., M.Arch., STD.**
(S.T., Architecture, Universitas Gajah Mada, Yogjakarta; M.Arch, Suburb and Town Design, University of Miami, USA) Urban Architecture; Urban Design.

8. **Elita Nuraeny, S.Ars., M.A.**
(S.Ars., Architecture Interior, Universitas Indonesia; M.A., Architectural History, The Bartlett School of Architecture, UCL) History and Theory of Architecture; Interior Architecture.

9. **Enira Arvanda, S.T., M.Dipl. Ph.D.**
(ST, Architecture Universitas Indonesia; Master, Instituto Europeo di Disain, Milan, Italy; Ph.D., Monash Art, Design & Architecture) Interior Architecture, Urban Interior.

10. **Dr. Ferro Yudhistira, S.Ars., M.Ars.**
(S.T., Teknik Architecture, Universitas Sriwijaya, Palembang; M.Ars, Architecture, Universitas Indonesia; Dr., Perancangan Architecture, Universitas Indonesia) Architectural Design; Computational Design.

11. **Ir. Finarya S.Legoh, M.Sc., Ph.D.**
(Ir, Architecture, Universitas Indonesia; M.Sc., Room Acoustics Architecture, University of Salford, United Kingdom; Ph.D, Room Acoustics, University of Salford, United Kingdom) Building Physics; Building Technology.

12. **Ir. Hendrajaya Isnaeni, M.Sc., Ph.D.**
(Ir., Architecture, Universitas Indonesia; M.Sc., Environmental Psychology, University of Surrey, UK; Ph.D, Architecture, University of Melbourne, Australia) Architectural Design

13. **Ir. Herlily, M.Urb.Des.**
(Ir., Architecture Universitas Indonesia; M.Urb. Des, Architecture, University of Sydney, Australia) Urban Architecture, Urban Studies.

14. **Joko Adianto, S.T., M.Ars., Ph.D.**
(ST, Architecture Universitas Trisakti; M.Ars, Architecture Universitas Indonesia), Urban Housing and Settlements; Urban Studies.

15. **Kristanti Paramita, S.Ars., M.A., Ph.D.**
(S.Ars, Architecture, Universitas Indonesia; M.A, Architecture University of Sheffield, UK; Ph.D, Architecture, University of Sheffield, UK) Architectural Design

16. **Mikhael Johannes, S.Ars., M.Ars.**
(S.Ars, Architecture, Universitas Indonesia; M.Ars, Universitas Indonesia, Universitas Indonesia Architectural Design) Architectural Design; Computational Design.

17. **Dr. Miktha Farid Alkadri, S.Ars., M.Ars.**
(S.Ars, Architecture, Universitas Indonesia; M.Ars., Perancangan Architecture, Design Informatics, TU Delft, Netherlands) Building Technogoly; Building Performance.

18. **Mochammad Mirza Yusuf Harahap, S.Ars., M.Des.**
(S.Ars, Architecture Interior, Universitas Indonesia; M.Des., Design, Monash University, Australia) Interior Architecture.

19. **M. Nanda Widyarta, B.Arch., M.Arch.**
(B.Arch, Architecture, University of Oklahoma, USA; M.Arch, Histories and Theories of Architecture, AA School of Architecture London, UK) History and Theory in Architecture, Art History.

20. **Nevine Rafa, S.Ars., M.A.**
(S.Ars, Architecture, Universitas Indonesia; M.A., Interior Design, University of Westminster, UK). Interior Architecture.

21. **Dr.-Ing. Ova Candra Dewi, S.T., M.Sc.**
(S.T., Architecture, Universitas Indonesia; M.Sc., Urban Management, Technische Universitat Berlin; Dr.-Ing, Bioconversion and Emission Control, Technische Universitat Hamburg, Germany) Building Technology; Architecture and Sustainability.

22. **Dr. Rini Suryantini, S.T., M.Sc.**
(S.T., Architecture, Universitas Indonesia; M.Sc., Regional Science, Institute for Regional Science & Planning University of Karlsruhe (TH), Germany; Dr., Perancangan Architecture, Universitas Indonesia) Architectural Design, Architecture and Ecology.

23. **Rossa Turpuk Gabe Simatupang, S.Ars., M.Ars.**
(S.Ars, Architecture, Universitas Indonesia; M.Ars, Permukiman dan Perumahan Kota, Universitas Indonesia).Urban Housing and Settlements.

24. **Widyarko, S.Ars., M.Ars.,**
(S.Ars, Architecture Universitas Indonesia; M.Ars, Universitas Indonesia).Building Technology and Materials.

25. **Dr.-Ing. Yulia Nurliani Lukito Harahap, S.T., MDesS.**
(S.T., Architecture, Universitas Indonesia; M.Des.S, Architektur, RWTH Aachen University, Germany; Dr.-Ing, Design Studies, Harvard University) History and Theory in Architecture, Heritage and Architecture.

Part-Time Faculty

1. **Agus Danang Ismoyo, S.T., MALD.**
(S.T., Architecture Universitas Indonesia; M.ALD., Architectural Lighting Design, Hochschule Wismar, Germany) Architectural Lighting.

2. **Ir. Achmad Sadili Somaatmadja, M.T.**
(Ir., Architecture Universitas Indonesia; M.Si, Environmental Sciences Universitas Indonesia) Building Technology.

3. **Amira Paramitha, S.Ars., M.Ars.**
(S.Ars., Architecture Universitas Indonesia; M.Ars., Perancangan Perkotaan, Universitas Indonesia). Architectural Design, Urban Architecture.

4. **Ir. Azrar Hadi, Ph.D.**
(Ir., Architecture, Universitas Indonesia; Ph.D., Construction, Man & Economics, Universiti Teknologi Malaysia)Project Management, Property in Architecture.

5. **Cahyo Wilis Candrawan, S.T., M.Arch.**
(S.T., Architecture, Universitas Indonesia; M.Arch., Architecture, Washington University in St.Louis, USA). Architectural Design.

6. **Ir. Endy Subijono, MPP., Ar.**
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7. **Intan Chairunnisa, S.Ars., M.Ars.**
(S.Ars., Architecture, Universitas Indonesia; M.Ars., Architecture and Sustainability, Universitas Indonesia). Building Technology.

8. **Joice Sandrasari, S.T., M.Arch.**
(S.T., Architecture, Universitas Tarumanegara); M.Arch., Perancangan Pencahayaan, Hochschule Wismar, Germany). Architectural Lighting.

9. **Nina Dwi Handayani, S.Sn., M.Ars.**
(S.Sn., Perancangan Interior, Institut Teknologi Bandung; M.Ars., Perancangan Architecture, Universitas Indonesia). Architectural Design; Interior Architecture.

10. **Dra. Ratna Djuwita Chaidir, Dipl. Pschy.**
(Dra., Psychology Universitas Indonesia; Dipl. Pschy, Daarmstaat, Germany) Architectural Psychology.

11. **Rizki Dwika Aprilian, S.Ars., M.Ars.**
(S.Ars., Interior Architecture, Universitas Indonesia; M.Ars., Architectural History Theory and Criticism, Institut Teknologi Bandung). History and Theory in Architecture.

12. **Ruth Kartika Purnasasmita, S.Ars., M.Ars.**
(S.Ars., Architecture, Universitas Indonesia; M.Ars., Architectural Design, Universitas Indonesia). Architectural Design.

13. **Ir. Siti Utamini**
(Ir. Architecture, Bandung Institute of Technology) Architectural Design.

14. **Ir. Sukisno, MS.**
(Ir., Architecture, Universitas Gajah Mada; MSi, Environmental Sciences, Universitas Indonesia) Building Technology.

15. **Dr. Ir. Toga H. Pandjaitan, A.A. Grad. Dipl.**
(Ir., Architecture Universitas Indonesia; A.A. Grad. Dipl., Environment and Energy Studies, Architectural Association Graduate School,

UK; Dr., Architecture, Universitas Indonesia) Building Technology; Building Physics; Ethnic Architecture .

16. **Vania Dwi Amanda Surya, S.Ars., M.Ds.** (S.Ars., Interior Architecture Universitas Indonesia; M.Ds., Interior Design, Institut Teknologi Bandung). History and Theory in Interior Architecture; Interior Architecture.

17. **Zafira Rahmatul Ummah, S.Ars., M.Ars.** (S.Ars., Arsitektur Universitas Indonesia; M.Ars., Perancangan Arsitektur, Universitas Indonesia). Architectural Design, Spatial Design.

Department of Chemical Engineering

General

Department of Chemical Engineering Universitas Indonesia was first established under the name Department of Gas Engineering in 1981. There were two study programs which were developed almost simultaneously in 1981. Initially, the Gas Engineering Study Program was established under the Metallurgy Department to meet the needs of engineering graduates in the field of gas liquefaction. In the same year, the Chemical Engineering Study Program was established under the Department of Mechanical Engineering. This Study Program is aimed at meeting the shortage of workers in the development of industries in the field of Chemical Engineering in Indonesia.

In 1985, the two study programs were combined into the Department of Gas and Petrochemical Engineering, which offered a chemical engineering study program with an emphasis on courses in gas and petrochemical technology. Starting in the academic year 1985/1986, the Department of Gas and Petrochemical Engineering has received first semester students through the New Student Registration Selection (SIPENMARU). In collaboration with PERTAMINA, the Study Program received some assistance in the form of limited education funds, teaching staff who have industry experience, on-the-job training for students as well as visits to related industries.

The Department of Gas and Petrochemical Engineering was initially grouped into the Gas and Petrochemical Engineering Study Program in 1989 but was then grouped into the Chemical Engineering Study Program (PSTK) in 1996. Based on the Statute of the UI-BHMN, the term study program was changed to a department in 2003, and in 2006 the Department of Gas and Petrochemical Engineering changed to the Department of Chemical Engineering. While for the postgraduate level, the Master's Program in Chemical Engineering, the Master's Program in Natural Gas Management, and the Doctoral Program in Chemical Engineering are each inaugurated in 2002, 2004, and 2007. In order to enhance the role of the department in the era of biotechnology and life sciences, Bioprocess Engineering Study Program (PSTB) was opened in 2008.

The primary mission of the Department of Chemical Engineering is to provide the highest quality education so that graduates have the necessary knowledge, skills, and experience in researching the latest topics in the field of chemical engineering and bioprocess engineering.

To date, the Department of Chemical Engineering has 36 permanent academic staff members and about 913 undergraduate and graduate students. The Department of Chemical Engineering has now become one of the leading chemical engineering departments in Indonesia, with excellent accreditations from the National Accreditation Board of Indonesia (BAN), ASEAN University Network (AUN), Japan Accreditation Board for Engineering Education (JABEE), and Indonesian Accreditation Board for Engineering Education (IABEE).

Department of Chemical Engineering offers five academic programs: undergraduate program (regular, Non Reguler, and international), Master's program (regular course and gas management course at Salemba campus), and doctoral program. The department has been adhering to competency-based principles, starting from the application of the 2000 curriculum to the recently updated 2020 curriculum. The current standards of graduate competencies are based on those recommended by ABET and the Bologna Process and on feedback from graduates and industry representatives, aiming at producing graduates who are well-educated and able to contribute effectively to their communities wherever they choose to live and work.

The Department of Chemical Engineering is conducting international classes in collaboration with three Australian universities: Monash University, Curtin University, and the University of Queensland. Students in this international class spend their first four semesters at UI and the subsequent four semesters in Australia. At the end of their study, students will get a "Sarjana Teknik" (Bachelor of Engineering) degree from UI and a Bachelor of Engineering degree from the partner university. Since 2011, international program students may choose to enroll in a single-degree program at UI, following a curriculum that is

equivalent to the regular undergraduate curriculum.

The department has also established a double-degree Master's program with the National Taiwan University of Science and Technology (NTUST) and Curtin University. In this double-degree program, students spend their first year at UI and the second year at NTUST or Curtin University. After their studies, students will be awarded a Master of Engineering degree from NTUST or Curtin University.

The 2020 curriculum has been more streamlined and integrated, allowing students to take elective courses previously only available for particular study programs (PSTK or PSTB) or available for a particular academic level (undergraduate or graduate). This means that students could choose the courses that are more suitable to their interests. For those who qualify, there is a fast-track program that allows undergraduate students to obtain both Bachelor's and Master's degrees in ten semesters instead of the regular twelve semesters.

Chemical Engineering Master's program has also prepared a particular curriculum for those without any educational background in chemical engineering. By adopting this specific curriculum, applicants with a non-chemical engineering degree are recommended to take chemical engineering undergraduate core courses to master the fundamentals of chemical engineering before taking the more advanced graduate core courses. Graduates of doctoral programs are expected to contribute to the development of science by conducting independent research, usually under the supervision of a qualified professor.

As one of the departments in the Faculty of Engineering, Universitas Indonesia, the Department of Chemical Engineering has taken part in research collaboration with the theme of sustainable chemical and bioprocess engineering for energy and product development". This research theme is supported by four research groups: chemical and natural product design, sustainable energy, industrial bioprocess engineering, and chemical process intensification. These research activities, which are conducted in the Chemical Engineering Department, receive a lot of government funding to support students who wish to take part in the project.

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Vision

Becoming a superior and competitive Chemical Engineering Department, through efforts to educate the nation's life to improve people's welfare, thus contributing to the development of Indonesian and world society.

Mission

- Providing broad and fair access, as well as quality education and teaching in Chemical and Bioprocess Engineering;
- Organizing quality Tridharma activities that are relevant to national and global challenges;
- Creating graduates of Chemical and Bioprocess Engineering who are of high quality, noble character, and able to compete globally;
- Creating an academic climate that can support the realization of the vision of the Department of Chemical Engineering

Chemical Engineering Staffs

Dr. Bambang Heru Susanto, S.T., M.T.

Head of Department

Dr. Dianursanti, S.T., M.T.

Vice Head of Department

Dr. Bambang Heru Susanto, S.T., M.T.

Head of Chemical Engineering Study program

Dr. Tania Surya Utami, S.T., M.T.

Head of Bioprocess Engineering Study program

Dr. Ir. Yuliusman, M.Eng

Coordinator of Special Subjects (Internship, Undergraduate Thesis, Master Thesis)

Ir. Riezqa Andhika, S.T., Ph.D.

Head of Academic Venture (UPPM)

M. Ibadurrahman, Ph.D.

Assistant to the Head of the Department of Student Affairs, Alumni, and Cooperation

Rahma Muthia, Ph.D.

Assistant to the Head of Academic Affairs

Retno Wahyu Nurhayati, Ph.D.

Health, Safety, Security and Environment Coordinator

Head Of Laboratory

Prof. Ir. Kamarza Mulia, M.Sc., Ph.D.

Head of Chemical and Natural Product Design Laboratory

Dr. Eva Fathul Karamah, ST, MT

Head of Chemical Process Intensification Laboratory

Prof. Dr. Ir. Praswasti PDK Wulan, MT, IPU.

Head of Sustainable Energy Laboratory

Apriliana Cahya Khayrani, S.TP., M.Eng., Ph.D.

Head of Bioprocess Engineering Laboratory

Ir. Rita Arbianti, M.Si

Head of Basic Chemical Process Laboratory

Prof. Ir. Abdul Wahid, M.T, Ph.D.

Head of Chemical Process System Laboratory

Dr. Ir. Sukirno, M.Eng

Head of Basic Process and Operation Laboratory :

Dr. Kenny Lischer, ST. MT

Head of Services Laboratory

Board of Professors

1. **Prof. Dr. Ir. Widodo W. Purwanto, DEA,**widodo@che.ui.ac.id (Ir, ITS; DEA and Dr, ENSIGC-INP Toulouse, France): Sustainable energy.
2. **Prof. Dr. Ir. Mohammad Nasikin, M.Eng,** mnasikin@che.ui.ac.id (Ir, ITS; M.Eng, Tokyo Institute of Technology, Japan; Dr, UI): Catalysisi and Heterogenous catalyst
3. **Prof. Ir. Sutrasno Kartohardjono, M.Sc, PhD,** sutrasno@che.ui.ac.id (Ir, UI; MSc, UTM, Malaysia; PhD, University of New South Wales, Australia): Gas absorption and desorption in hollow fiber membrane contractor, utilization of hollow fiber membrane for efficient biomass production.
4. **Prof. Dr. Ir. Setijo Bismo, DEA,** bismo@che.ui.ac.id (Ir, ITB; DEA and Dr, ENSIGC Toulouse, France): Ozone and plasma technology.
5. **Prof. Dr. Ir. Slamet, MT,** slamet@che.ui.ac.id (Ir, UGM; MT, UI; Dr, UI): Photocatalysis.
6. **Prof. Ir. Dr.-Ing. Misri Gozan, M.Tech,** mgozan@che.ui.ac.id (Ir, UI; M.Tech, Massey University, New Zealand; Dr.-Ing, TU Dresden, Germany): Environmental bioprocess engineering, waste to energy.
7. **Prof. Dr. Ir. Heri Hermansyah, M.Eng, IPU.** heri@che.ui.ac.id (ST, UI; M.Eng and Dr, Tohoku University, Japan): Reaction process engineering, bioprocess and biocatalysis.
8. **Prof. Ir. Mahmud Sudibandriyo, M.Sc., Ph.D,** msudib@che.ui.ac.id (Ir, ITB; M.Sc and PhD, Oklahoma State University, USA): Thermodynamics adsorption & coalbed methane.
9. **Prof. Dr. Ir. Nelson Saksono, MT,** nelson@che.ui.ac.id (Ir, UI; MT, UI; Dr, UI): Elelctrolysis Plasma Technology
10. **Prof. Dr. Ir. Asep Handaya Saputra, M.Eng.** sasep@che.ui.ac.id(Ir, UI; M.Eng and Dr, Tokyo Institute of Technology, Jepang): Composite material, natural gas transportation.
11. **Prof. Ir. Kamarza Mulia, M.Sc., Ph.D,** kmulia@che.ui.ac.id(Drs, ITB; M.Sc, Colorado School of Mines, AS; PhD, Colorado School of Mines, AS): Controlled release of drug and bioactive compounds, fluid phase equilibria, teaching-learning methods.
12. **Prof. Ir. Dewi Tristantini, M.T., Ph.D.** detris@che.ui.ac.id(Ir, UGM; MT, ITB; PhD, Chalmers University, Swedia): Process catalysis.
13. **Prof. Dr. Ir. Dijan Supramono, M.Sc.** dsupramo@che.ui.ac.id(Ir, ITB; M.Sc, UMIST, Inggris):Fluid mechanics in combustion.
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Department of Industrial Engineering

General

Industrial Engineering Education in Universitas Indonesia offers unique blends of skills and knowledge in designing, improving, and installing complex integrated systems of people, materials, information, equipment and energy to deliver value to its users.

Our graduates are developed to have a strong problem-finding and problem-solving capabilities using quantitative techniques, process-based systems thinking and design-oriented approaches. With an integration of engineering and management science principles, our graduates are welcome almost in any industrial sectors. You will find our graduates in the service sectors such as banking, government, health sector, consulting, quality management, technology services and others. In the manufacturing sector, our graduates have roles in operations/productions, human resources, maintenance, logistics and distributions.

Our research focuses on the problems faced by our urban communities, due to the facts that UI's location is in the first urban city of Indonesia, our capital city of Jakarta. We want to make sure that we can continuously contribute in developing a sustainable city that are balanced in economic growth, social inclusiveness and environmentally conscious.

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Vision

"To be at the forefront of Industrial and Systems Engineering education in Indonesia through excellent and sustainable value-adding research and innovations"

Mission

Providing an excellent industrial engineering education, supported with internationally recognised competitive research, and community engagement activities that are adaptive, beneficial and professional to support Indonesia's sustainable development.

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Dr. Zulkarnain, ST., MT.
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CHAPTER 2

ACADEMICS SYSTEM AND REGULATION

Academic System and Regulation

General

Teaching and Learning Activities

One semester is the activity time consisting of 16-18 weeks of lectures or other scheduled activities, including various additional activities such as 2-3 week assessment. These teaching and learning activities are in the form of classes, lab, studio, exams, quizzes, assignments, presentations, seminars, research, practical work, industrial visits, and a thesis.

Semester Credits Units (SKS)

Education in FTUI is provided in a variety of ways, including lectures, assignments (e.g., calculation tasks, planning, designs), practical work, seminars, lab, studio, and research for thesis writing. All educational activities that must be undertaken by a student to earn a bachelor's degree are contained within the academic loads and measured in semester credit units (SKS).

- Semester Credit is the measurement of the learning experience obtained by students in each semester.
- One Semester Credit in lecture, responses, and tutorials includes face-to-face study time for 50 (fifty) minutes per week per semester; structured learning activities with structured assignments for 60 (sixty) minutes per week per semester; and independent study session for 60 (sixty) minutes per week per semester.
- One Semester Credit of seminar or other similar subjects includes face-to-face study time for 100 (one hundred) minutes per week per semester, independent study session of 70 (seventy) minutes per week per semester.
- One Semester Credit in practical training, studio, workshop, on the field training, research and community services, and/or other similar subjects for 170 (one hundred and seventy) minutes per week per semester.
- One Semester Credit of online learning is 170 (one hundred seventy) minutes per week per semester.
- One semester is an effective learning process for at least 16 weeks of lectures or other scheduled activities and additional activities. Also included in the schedule is one week of midterm examination and another one or two weeks of final examination.
- To earn a bachelor's degree, a student must complete all educational activities with a total academic load of 144 credits spread into 8 (eight) semesters. Undergraduate students with an average study load of about 18-20 credits per semester are expected to undergo a week of a minimum of 18-20 hours of scheduled interactions with a lecturer, 18-20 hours of structured activities, and 18-20 hours of independent learning activities.

Subjects

Subjects in the FTUI's undergraduate curriculum are grouped into University General Subjects (6,25%), Basic Engineering Subjects (15-20%), Basic Skills Subjects (30-35%), Core Subjects (35-40%). Subjects are categorized as either compulsory subjects and electives. They can be taken across departments or faculties.

Grade Point Average

Grade Point Average or GPA is used to evaluate students' performance either for a particular semester in terms of Indeks Prestasi Semester (IPS) or Semester Performance Index, or, cumulatively for all of the semester up to the most recent one in terms of Indeks Prestasi Kumulatif (IPK) or CGPA. The formula used to calculate either IPS or IPK is as follows:

The calculation is made by multiplying the number of credits and the letter grade for each course, divided by the number of credits.

$$IP = \left(\frac{\sum_{MA} (\text{Bobotnilai} \times \text{sks})}{\sum_{MA} \text{sks}} \right)$$

Semester Grade Point Average (SGPA)

Grade Point Average (GPA/IPK)

If the calculation involves the grade point values of all subjects taken during the educational program period, the result is called the Cumulative Grade Point Average (CGPA), which is used as a basis for study evaluation. Courses taken into account are the ones listed in the Study Plan Form (FRS). CGPA is obtained from the summation of all subjects having a grade of 'C' or higher, from the first semester until the last semester, with the exception of subjects with a letter grade of 'BS', 'I', or 'TK'.

Academic Performance Evaluation

Assessment of academic ability is performed on an ongoing basis by CLO (Course Learning Outcomes). There is at least one CLO derived from the Expected Learning Outcome (ELO) for each subject. Each CLO might be derived into several sub-CLO where each sub-CLO consists of several lecture materials and types of learning evaluations. A student will be assessed on their academic ability if they meet the following requirements:

- The courses taken have been registered and verified by Academic Advisor during the academic registration period.
- The student has fulfilled all of the administrative and academic requirements for the ongoing semester.
- The student has completed all of the required academic assignments.

Grades

At the end of every semester, students can download Semester Grade Record as a report of their academic performance from SIAK NG (https://academic.ui.ac.id/). Assessment of study efficacy is carried out using letters and grade points according to Table 2.1.

The highest grade is 'A' with a grade point of 4.00, and the minimum passing grade of a course is 'C' with a grade point of 2.00. A lecturer may assign an 'Incomplete' (I) grade if a student has not made a reasonable attempt to complete major session assignments or laboratory projects. The lecturer should make a reasonable effort to inform the student as early as possible that an essential part of the session work is incomplete. The 'I' mark should be changed to another

grade within one month; otherwise, it will automatically change to 'E' grade. The 'T' mark is given for no attendance in the exam. The 'BS' mark is given for special lecture (such as internship, seminar, and final project) that has not been completed. These 'BS' courses are not taken into account in the calculation of Semester Study Unit, SGPA, and CGPA.

Table 2.1. Grade Value and Point

Grade Value	Marks	Grade Point
85 – 100	A	4,00
80 - < 85	A-	3,70
75 - < 80	B+	3,30
70 - < 75	B	3,00
65 - < 70	B-	2,70
60 - < 65	C+	2,30
55 - < 60	C	2,00
40 - < 55	D	1,00
00 - < 40	E	0

Length of Study and Academic Load

Undergraduate Program

The academic load students can take proposed by the students for the approval of the Academic Counselor based on their previous Semester Grade Point Average (SGPA) as stated in the Study Plan (FRS). Students must take the entire allocated credits and courses during their first semesters. The minimum academic load for the Undergraduate Program is 144 (one hundred and forty-four) credits, while the maximum academic load is 160 (one hundred and sixty) credits, including the final project. The entire academic load can be completed in a minimum of 7 (seven) semesters and maximum of 12 (twelve) semesters.

As for the second semester, these following rules apply:

- Students can take all credits load allocated for the second semester according to the structure of the applicable curriculum.
- Students can take more credits from the credit load allocated for the second semester if the SGPA obtain in the 1st semester is in accordance with the provision of the maximum credit load amounts shall follow the provision in the Maximum Credit Load Table.

From the third semester onward, the maximum credit load allowed to be taken is determined by the SGPA of the previous Semester (not including the short semester). It follows the provision of Maximum Credit Load as shown in Table 2.2 with respect to course prerequisites (if any). If necessary, the Academic Advisor (PA) can add a maximum of 2 extra credits upon the approval of the Vice Dean.

Master Program

The academic load in the FTUI's Master Program curriculum is set at 40-44 credits after finishing

the Undergraduate Program. The length of study is scheduled for 4 (four) semesters and can be completed in minimum 2 (two) semesters and a maximum of 6 (six) semesters; exclude short semester.

Table 2.2. Maximum study load in a semester for undergraduate program

SGPA	Maximum Credit
< 2,00	12
2,00 – 2,49	15
2,50 – 2,99	18
3,00 – 3,49	21
3,50 – 4,00	24

The student's academic load is proposed by the students for the Academic Counselor (PA) approval based on their last semester SGPA as stated in the Semester Grade List (DNS). Provisions on the academic load are as follows:

- AA semester's academic load is registered by a student as they carry out online registration according to the predetermined schedule. Students are required to take all subjects as allocated in the first-semester curriculum.
- For students with SGPA less than 2.50, a provision stating that the number of credits taken for the following semester does not exceed nine credits is applicable.
- The maximum number of credits that can be taken on the Master Program is 18 (eighteen) credits (for Regular Master Program) per semester.
- Any Exemption from the provisions of academic load should be with the permission of the Vice Dean.

Matriculation for Master

The Matriculation Program is aimed at synchronizing the students' ability to achieve the minimum requirements for continuing education in the Master Program of FTUI. The program is compulsory for students coming from a four-year diploma program (D4) or graduates from a non-linear undergraduate study program.

Matriculation is achieved by taking classes of subjects required by each Faculty/Study Program within the Undergraduate Program curriculum. The maximum allowed credit load for this Matriculation Program is 12 (twelve) credits, which can be completed in 2 (two) semesters (6 credits in the first semester and 6 credits in the second semester). Students are allowed to continue their study in the Master Program only if they pass all matriculation subjects in a maximum 2 (two) semesters with a matriculation GPA of 3.00 (three points zero).

Fast Track (Master – Doctoral Program)

Fast Track (Master – Doctoral Program) is an educational program organized to accelerate students who have excellent academic ability to complete their studies in the Master Program and Doctoral Program in the same field of science within a maximum of 10 (ten) semesters.

To take part in the Master-Doctoral Fast-Track Program, students must fulfill the following requirement:

a. have obtained 18 (eighteen) credits with a minimum GPA of 3.50 (three point five zero) at the end of the second semester.

b. The study period for the Master-Doctoral Fast-Track Program is a maximum of 10 (ten) semesters.

c. Study Load on the curriculum of the Master-Doctoral Fast-Track Program, as follows:

1. For the Master program, that is according to the total credits in the master study program including 12 - 16 (twelve to sixteen) the credits include elective courses taken from the compulsory doctoral program;

2. For the Doctoral program, a minimum of 50 (fifty) credits, including 12 - 16 (twelve to sixteen) credits, are courses that are recognized through credit transfers.

Students who cannot complete their education within 10 (ten) semesters only get a Master's Degree.

Doctoral Program

The academic load in the FTUI's Doctoral Program curriculum is set at 50 credits after finishing the Master Program. The students register a semester's academic load through online academic registration during the predetermined schedule. New students are required to take all subjects as allocated in the curriculum for the first and second semesters. Students must retake any research courses with a 'BS' grade from previous semesters. The students propose students' academic load for each semester for the approval of the Academic Counselor (PA) or the Doctorate Promoter.

The length of study is scheduled for 6 (six) semesters and can be completed in a minimum of 4 (four) semesters and a maximum of 10 (ten) semesters. Students in the Doctoral Program may be granted an extension of maximum 2 (two) semesters if they have never received an extension before, have

achieved a minimum grade of 'B' for research result examination, and have obtained a recommendation from their Promoter and a guarantee that they will complete their study within the granted extension period. The proposal for such extension is regulated in a Rector's Decree based on the proposal of the Dean.

Undergraduate Final Project (Skripsi)

Undergraduate Final Project (Skripsi) is a compulsory course for undergraduate students of FTUI taken to complete their study and earn a degree in engineering. The course is the application of science that has been obtained student has studied, in the form of a scientific paper, engineering design, assembly or models and accessories. It is equivalent to other skills courses and tailored to the scope of each Study Program. The following requirements, both academic and administrative, must be met before students are allowed to start writing their undergraduate thesis:

- The Undergraduate final project has been registered in the Study Plan Form Form [FRS]
- Students have obtained a minimum of 114 credits with a minimum of grade of C and have passed all mandatory courses both in the faculty and university level.
- Students have fulfilled all prerequisites set by the Study Program.

Undergraduate Final Project can be taken in both odd and even semesters in the running academic year. On SIAK NG, students must fill out the name of their Skripsi Supervisor and the title of their Skripsi to be verified by the Vice Head of Department. At the end of the semester, the supervisor will announce the Skripsi grade on SIAK NG and change the title of the thesis (if necessary). The completed undergraduate final project must be submitted in the form of a hardcover book, and students must upload their final revision in a pdf file to UI-ana (lib.ui.ac. id/unggah). The undergraduate's final project must be assessed in an undergraduate thesis examination by the Supervisor and examiners assigned by the Head of Department.

Thesis (Master Program)

The thesis is a report of research findings in the form of scientific writing. The thesis topic should be a summary of the subject matter that can be scientifically studied on the basis of theory using a certain method. The thesis should be written in Bahasa Indonesia with English abstract. For Master Program students who are given the opportunity to conduct research and thesis preparation abroad, they are allowed to write the thesis in English with a Bahasa Indonesia abstract while still following the appropriate format stated in the Final Project Writing Guidelines of Universitas Indonesia. Exemption from this rule applies only to Study Programs in collaboration with universities abroad, as stated in the cooperation charter.

Requirements for a student to start writing a Thesis are:

- The student's thesis has been registered in the Study Plan Form (FRS) every semester.
- The Head of Study Program has designated a lecturer to be the student's Thesis Supervisor.

Students are responsible for all thesis research costs. Students can actively meet with any of their lecturers as potential supervisors to request a thesis topic. In addition, in the middle of the second semester, the Head of Study Program can start announcing thesis topics from which the students of the Master Program can choose to prepare their thesis proposal in the form of a seminar. The Head of Study Program will also announce a list of Thesis Supervisors assigned to guide the students in writing and finish the approved topic. The thesis examination committee consists of a committee chair and a minimum of 3 or a maximum of 5 examiners, including the Thesis Supervisor. Responsible for the implementation of the thesis writing is the Thesis Coordinator in each Department. Thesis counseling should be provided by a maximum of two people, the main Supervisor and the second Supervisor. The main Supervisor should be the permanent university lecture holding a Ph.D degree. The second Supervisor is the university permanent lecture or temporary lecturer or expert from national or international institutions holding a Ph.D. or Master's Degree with professional certifications and qualifications equal to level nine (9) of the Indonesian Qualifications Framework (KKNI).

A thesis can be submitted for a thesis examination when it has met the following academic requirements:

- The thesis has been registered in Study Plan Form [FRS] in the said semester
- The thesis has been declared eligible for examination by the Thesis Advisor
- The thesis that has been declared eligible for examination must be submitted to the Department to be listed in the examination schedule determined by the Head of the Study Program.
- Uploading of Summary of Undergraduate Thesis/ Thesis/Dissertation

Dissertation

Dissertation preparation is carried out under the guidance and evaluation of a Promoter with the following qualifications: a full-time university lecturer; a Professor or Doctor with an academic title of Associate Professor; have expertise relevant to the dissertation topic, and within the last 5 (five) years have written at least 1 (one) scientific paper published in an accredited national journal or a reputable international journal or 1 (one) other similar scientific work acknowledged by a team of experts appointed by the Academic Senate of Universitas Indonesia. The Promoter may be assisted by a maximum of 2 (two) Co-promoters from within the University, partner universities, or other institutions in cooperation with the Promoter Team. The Co-promoter must have the following qualifications: a full-time or a part-time lecturer or an expert from another institution; hold a minimum title of Doctor/ Ph.D with an academic title of at least Senior Lecturer, and have expertise relevant to the dissertation topic.

Internship for Undergraduate Student

The internship is an out-of-campus activity that encourages students to apply their scientific knowledge in a real work situation. The requirements for internship are set by each Department, and it accounts for part of the total 144 SKS. Students must find the place to carry out their internship themselves, and Departments will help by issuing a formal letter requesting the on-the-job training position. For the Double Degree Undergraduate Program, students are required to complete internships when they are in partner universities (except in UDE, Germany). For example, in Australia, the internship is one of the requirements set by the Institution of Engineers Australia (IEAust) to obtain an accredited B.E. (Bachelor of Engineering) Degree. The internship is a good opportunity for students to apply their skills and build networks in the industry. It is strongly suggested that students do their internships in partner universities. However, if they cannot do so, they are allowed to have their internship in Indonesia with prior permission from the partner universities.

Supplementary Exam

Students are allowed to take a supplementary examination for midterm and final examinations on the following conditions: sick, grievance, or representing Universitas Indonesia in a competition. Students with a sickness excuse are obliged to submit an application for supplementary exam signed by their parents/guardian and a medical certificate from a doctor or hospital that treats them; students with grievance or death in the family (death of the father, mother, older or younger siblings) are obliged to submit an application for supplementary exam signed by their parents/guardian; students representing Universitas Indonesia in the competition are obliged to submit a Letter of Assignment/Letter of Reference stating the competition in which they represent UI. The supplementary exam can only be taken with written consent from the Vice Dean for Academic, Research, and Student Affairs of Faculty of Engineering Universitas Indonesia.

Credit Transfer

Credit transfer is a recognition process of the number of credits a student may obtain from a university after an evaluation process by a Credit Transfer Team in each Faculty/ Department in the University. Students who have registered and studied at an undergraduate study program or other equivalent education programs, whether in Universitas Indonesia or any other universities or through a student exchange or study abroad program, may apply for a credit transfer, provided that: (i) the transferred credits contain the same material as the courses listed in the curriculum for the Undergraduate Program in FTUI, (ii) the academic record must date back not more than 5 years from the credit transfer application date, (iii) if the academic record is obtained from a university other than Universitas Indonesia, the university should have at least a 'B' accreditation from the National Accreditation Board for Higher Education or other international accrediting agencies. The maximum academic load that can be transferred in the Undergraduate Program is 50% of the total academic load that a student is required to complete in accordance with the curriculum of the Study Program he/ she is currently studying in. The courses transferred will be indicated with a 'TK' mark in the academic transcript.

The credit transfer procedures are as follows: (i) The student submits a letter requesting credit transfer to the Head of the designated Department; (ii) The Head of Department will form a team to recommend which courses the student has previously taken can be transferred; (iii) The recommendation will be sent to the Dean of FTUI; (iv) The Dean of FTUI will issue a Credit Transfer Decree; and (v) The Faculty's Center of Administration will assign a 'TK' mark to all the relevant courses in the student's SIAK NG account.

Credit Transfer for Non Reguler Class Students of Diploma Graduates

As of 2011, all Extension Programs in FTUI are merged into Non Reguler Classes in the Undergraduate Program. For diploma graduates registered as students in these Non Reguler Classes, credits obtained from the previous diploma program will be transferred in blocks of credits equivalent to the

number of the first and second semester credits in their study program. Students begin their study in the third semester by taking a full academic load according to the package provided for the third semester. Afterward, they can take credits according to their SGPA in the following semester.

Study Abroad

There are many opportunities available for undergraduate students, both from Regular and Non Reguler programs to participate in Student Exchange programs abroad, such as in Japan, Korea, Taiwan, Singapore, and many other countries. Student exchange programs generally last for 1-2 semesters and are supported with a full scholarship. Information on Student Exchange program can be obtained from the Universitas Indonesia's International Office, PAU Building 1st floor. Courses taken during the study exchange program are transferrable when they return to Universitas Indonesia. Thus, students are still able to graduate on time.

In addition, Undergraduate students can participate in Double Degree 2+2 International Undergraduate program with FTUI's partner universities. Students participating in this program will spend the last two years studying at the partner university abroad, and he will earn two degrees once he graduates. However, this Double Degree program offers no scholarships. Thus, participating students should ensure their availability of funds. Students participating in classes outside of the university (in the form of Student Exchange, International Undergraduate Dual Degree Program, Sandwich Program, Joint Degree Program, or other university acknowledge program) for at least one semester will be given an "overseas" or study outside of the university status. Before leaving to continue their study overseas, students must ensure that their status in SIAK NG has been change to "overseas", and they are obliged to make payment to Universitas Indonesia in the amount stated in the applied Rector's Decree of "overseas" academic fee. Period of study abroad, either on the Student Exchange program and the Double Degree, is counted as part of the whole study period. The result or grades obtained from this program will not be calculated in determining their GPA and will be given a letter grade of TK in their transcript.

Fast Track (Undergraduate – Master Program)

FTUI students, Regular, Non Reguler, or International Undergraduate Program, with brilliant academic achievements can participate in the Fast Track program. In this program, FTUI's undergraduate students in semesters 7 & 8 are allowed to take several Master's program courses. Courses that can be taken and other requirements are specified by the Study Program in a way that the students can directly pursue a Master program in FTUI and complete the program in 1 year. Thus, the total time needed to complete both undergraduate and master programs is 5 years or 10 (ten) semesters.

The Academic load for the Fast Track Program curriculum is as follow:

1. For the undergraduate program is 144 (one hundred and forty four) credits, including 16-22 credits of elective subjects taken from the main competence subjects of the Master Program.
2. For the Master Program is 40-44 credits including the 16-22 credits from subjects mentioned in point an above and are acknowledge through credit transfer.

If a student is unable to complete his/her Undergraduate Program in 8 (eight) semesters, then the student will be deemed as unable to complete the Fast Track program, making all the subjects of the Master Program he/she has taken will be considered as elective subjects in their completion of the Undergraduate Program and cannot be acknowledged as part of their credit towards continuing to the Master Program.

Requirements and Procedure for Fast Track Registration

Undergraduate students who are interested in participating in the Fast Track Program must fulfill the following requirements:

1. Have a minimum GPA of 3.50 with a total of 120 credits (until 6th semester).
2. Have a minimum Institutional TOEFL/EPT score of 500 (students may use the score from the EPT test they took as a new student in FTUI)
3. Have a high motivation for research

Procedure for Fast Track Program:

1. Fast Track Program is open for all FTUI undergraduate study programs which have the same specialization with the Master programs (for undergraduate study programs that have specialization).
2. Students who are interested in participating in the Fast Track Program are required to fill out the Registration Form.
3. The Fast Track Registration Forms will be evaluated by a team headed by the Head of Department.
4. If the student's application to participate in

the Fast Track scheme is approved, they are required to counsel with his/her academic advisor for the finalization of his/her Undergraduate (S1) and Master (S2) Study Plan Form. The student's Study Plan Form for semester 7 and 8, especially for the undergraduate Elective Course selection must be in accordance with the Compulsory and Elective Courses in their respective Master study program in line with their specialization.

5. Undergraduate thesis and thesis of the student are expected to be of continuous research to maximize knowledge, experience and quality research result.
6. The funds for the Fast Track Program will be borne entirely by the student.

Registration Form for the Fast Track Program for each running Academic Year may be submitted to each Department Secretariat on March each year at the latest.

Fast Track (Undergraduate – Doctoral Program)

Fast Track (Undergraduate – Doctoral Program) is an educational program organized by the University to accelerate students who have an excellent academic performance to complete their studies in the Undergraduate Program and Doctoral program in the same study field at the maximum of 12 (twelve) semesters.

Merdeka Belajar Kampus Merdeka Program

Merdeka Belajar Kampus Merdeka Program is a policy of the Minister of Education and Culture, which aims to encourage students to master various sciences useful for entering the world of work. Merdeka Campus provides an opportunity for students to choose freely several courses they will take. The implementation of Merdeka Belajar – Kampus Merdeka Program in the curriculum starting on 2O2O/2021 Academic Year. The Merdeka Belajar – Kampus Merdeka Program is the right for all undergraduate study programs.

Fulfillment of time and study load for undergraduate students or applied undergraduate programs can be implemented by:

a. follow the entire learning process in the study program to the period and study load; or
b. follow the study program's learning process to fulfill part of the time and learning load, and perform the rest learning process outside the study program.

The student may apply for the following elective courses scheme:

a. Fast-Tack program with a minimum of 24 (twenty-four) and a maximum of 54 (fifty-four) credits of choice focused on elective courses and postgraduate level courses at the same field of science as the field of science at the bachelor level.
b. Major-Minor Program with a minimum of 24 (twenty-four) and a maximum of 54 (fifty-four) credits the choice is focused on one different Study Program (across Study Programs/cross faculties/cross clumps of knowledge).
c. Double Major Program with a minimum of 24 (twenty-four) and a maximum of 54 (fifty-four) credits the choice is focused on one different Study Program (across Study Programs/cross faculties/cross disciplines) plus the rest of the Mandatory courses in the second Study Program to fulfill the minimum Expected Learning Outcome of the second study program.
d. Independent study Choice with a maximum of 54 (fifty-four) Optional credits are used for outside learning activities study program as stated in the Policy Merdeka Learning - Merdeka Campus.
e. The selection of the selected subject application scheme is consulted with the Study Program.

The form of learning activities that can be carried out outside the Study program include:

a. Student Exchange
b. Internship/Work Practice
c. Teaching assistant in education unit
d. Research
e. Humanity project Proyek
f. Entrepreneurial activities
g. Independent Study/Project
h. Building a Thematic Real Work Village/Lecture

The number of hours of learning activities is 45 Hours per week for one credit. Implementation of activities must be accompanied by lecturers advisor. The conversion of activities to credits will be carried out by faculty evaluators and verifiers, based on the number of hours and type/form of activities. The evaluator is a lecturer in the study program from the student or other Study Programs in the Faculty assigned to assist and monitor student activities. Verificators are officials at the Faculty level who are responsible for Education and/or Student Affairs in

charge of perform verification, assign weighting, and propose assessment of student performance in student activities.

Administrative and Academic Registration

Academic Calendar

Administrative and academic schedules in FTUI are set in accordance with the administrative and academic schedules in Universitas Indonesia as follows:

Term 1

- **Administrative registration in Universitas Indonesia**
  July - August
- **Academic registration in Universitas Indonesia**
  August
- **Course period**
  August – January
- **Mid-semester examination**
  October
- **End of Semester Examination**
  December - January
- **Deadline for grade assignment in SIAK-NG**
  January
- **Departmental Judicium**
  1st: October
  2nd: January
- **Faculty Yudicium**
  1st: November
  2nd: January
- **Graduation**
  February

Term 2

- **Administrative registration in FTUI**
  January - February
- **Academic registration in FTUI**
  January - February
- **Course Period and examination**
  February - May
- **Mid-semester examination**
  March - April
- **End of Semester Examination**
  May
- **Graduation**
  August

Short Semester

- **Administrative Registration**
  June
- **Academic Registration**
  May - June
- **Course period**
  June - August
- **Mid-semester Examination**
  July
- **End of Semester Examination**
  August

Note:

*) Schedules are subject to change

Note:

1. Short Semester course period is held for 8 weeks, including mid-semester and final semester examinations.
2. 2 credit courses consist of two 2-hour contact per week, 3 credit courses consist of three times 2-hour contact per week, 4 credit subject consist of four times 2-hour contact per week.
3. For regular undergraduate program: Faculty Basic Courses (Physics, Mathematics and Chemistry) are only available for students who wish to retake the course and have attended required lab activities.
4. A student can take up to a maximum of 12 credits during the short semester.
5. Courses offered are determined by the Department.
6. If the number of students registered for a certain course in the Short Semester does not meet the minimum requirement, then the course will be canceled.
7. Short semester's tuition fee is not included in the normal tuition fee (BOP) and is calculated by the number of credits taken during the short term. Tuition fee for each credit is determined by FTUI.
8. Payment for short semester courses must be made before the payment period is closed. Otherwise, the student's name will be automatically removed and the student is no longer considered as a participant in the short semester.

Registration and Course Guidelines

Before administrative registration takes place, FTUI publishes an academic calendar for one semester listing schedules for courses, mid-term, final-term examinations and other academic activities. The academic calendar and course schedule could be accessed at http://www.eng.ui.ac.id, and SIAK NG.

Administrative Registration

Administrative Registration includes payments of tuition fee and admission fee. Students are responsible for paying fees by the payment deadline. Students who do not complete the registration process by the payment deadline will not be registered at that particular semester will be included toward student's allowed length of study. A 50% penalty will be imposed to students who do not make payment on time. Administrative registration are done by paying the tuition fee through the host-to-host system by the ATM (Automated Teller Machine) or bank teller of banks in cooperation with the Universitas Indonesia.

Academic Registration

Students should do online academic registration; consult with his/her Academic Advisor for approval and signing the Study Plan Form or Formulir Rencana Studi (FRS) during the academic registration period. The main duties of Academic Advisor are:

- Helping and directing students in their Study Plan Form particularly in selecting courses and in solving their academic problems
- Monitoring and evaluating student's academic performance during their period of study.

Students should login to https://academic.ui.ac.id using username and password provided by the Office of Direktorat Sistem & Teknologi Informasi (DSTI) UI. Students could get their username and password at PPMT (Pusat Pelayanan Mahasiswa Terpadu) building. Students could also download course schedules and academic calendar from the website.

After completing the online FRS, students should print the form (3 copies) and meet their PA to discuss, verify and validate the courses taken. Students have to check their FRS after registration period to ensure that the courses taken are correct. Fines will be levied to students for late administrative and academic registration, as per the university or the faculty regulation.

Sanctions

1. Students who do not carry out the administrative registration will receive inactive status as a student in the current semester, which is included as their length of study.
2. Students who do not carry out academic registration are not followed to take part in the academic activities in the relevant semester, which is counted towards their length of study
3. Students who are not active as referred to in points (1) are not charged with tuition.
4. Students who do not carry out the registration and administration of academic registration 2 (two) consecutive semesters, expressed as a university student resigned without notice from the university.

Exception Administrative Registration

When non-active students, by any reason, intend to maintain their status as active students, they have to follow the procedure of administrative registration:

- The students are required to obtain the approval of FTUI by filling out a form available at PAF (Pusat Administrasi Fakultas/Faculty Administrative Center).
- The students must come to the Directorate of Finance UI to obtain the approval for paying the tuition fee after paying the penalty 50% from the tuition fee on the relevant semester.
- The approval will be used by the students for paying the tuition fee manually.
- The students must give the copy of the payment record to the Directorate of Finance UI for verification.

Prerequisite Courses

These courses can only be taken if a student is currently taking or has previously taken and passed the prerequisite course with sufficient grade [not T].

Requirements for Transfer to Partner Universities in Australia for Double Degree Program

Minimum requirement of GPA and English before transferring to Partner University is listed in Table 2.3. Eligible students can continue their study to partner universities in Australia if they fulfill the following requirements:

1. Achieve the minimum GPA as required at the end fourth semester for the 2+2 program;
2. Have passed all required subjects as listed in the Study Program curriculum with minimum C with a total of passed credits consistent with the total number of credits listed in the Study
3. Program curriculum for semester 1-4.
4. Achieve the minimum IELTS or TOEFL scores as

required.

5. If their GPA is less than required, the students must stay at UI and repeat some subjects to improve their GPA, while administratively and academically registered at FTUI.

6. If their GPA meets minimum requirement, but IELTS or TOEFL scores less than minimum requirement, they are suggested to improve their IELTS or TOEFL score in Indonesia and maintain administrative registration at FTUI. Other choice is to take English for Academic Purposes (EAP) at the partner university. Information on duration and schedule of EAP can be found at the partner university's website.

Table 2.3. Minimum requirement of GPA and IELTS or TOEFL for transfer to the Partner Universities

Partner University	Minimum GPA	Minimum IELTS / TOEFL
Queensland Univ. of Technology	3.0	IELTS minimum 6.5 with no band lower than 6
Curtin University		
The Univ. of Queensland		
The Univ. of Sydney		TOEFL iBT in accordance to partner university's requirement
Monash University	3.2	

English Language Requirements for Undergraduate International Program Single Degree

Students of the Undergraduate International Program Single Degree are required to obtain an English certificate in IELTS (International English Language Testing System) or TOEFL iBT (Test of English as a Foreign Language – internet Based Test) with the following minimum score:

Type of Test	Overall Minimum Score	Additional Requirements
IELTS	6.0	No bands lower than 5.5
TOEFL iBT	75	No bands lower than 17

This English Language Certificate is one of the requirements before they may proceed to have their Undergraduate Thesis/ Final Project Exam.

1. Student choose a Partner University
   - Find out list of UI's Partner Universities
   - Information on Study Abroad/ Student Exchange Information from International Office UI through http:// international.ui.ac.id

2. Student contacted the selected partner University for Information on:
   - List of subjects offered and course description
   - List of requirements/documents needed.
   - Application and Tuition Fees.
   - Other Documents needed.

3. Student consulted their Academic Guidance Counselor or the Vice Head of Department to determine the subjects they will take in Partner University that can be credit transferred upon their return.

4. The Head of Department issued a Letter addressed to the Vice Dean stating:
   - Name and Student ID of student participating in the Study Abroad/Student Exchange Program
   - Name of Partner University and length of study of said program
   - List of subjects that the students will take at Partner University.

5. The Vice Dean will assigned the Associate Dean for Academic and Head of PAF to process the student's status to "overseas" or "student exchange and issued a Reference Letter and Academic Transcript for the student.

6. Student prepare the documents needed for their Study Abroad/ Student Exchange:
   - Application Form
   - IELTS/TOEFL iBT
   - Other language requirement
   - Reference Letter and Academic Transcript from the Faculty.

7. Student sends their application documents to Partnery University.

8. Student receives Letter of Offer dan Letter of Acceptance from Partner University.

9. Student makes payment and signed the Letter of Offer

10. Student applies for Student Visa to the Country where the Partner University is located.

11. Departure to Partner University

Procedure for Study Abroad/ Student Exchange to Partner University for Undergraduate International Program Single Degree.

Graduate Predicate

Students are considered to have passed the Undergraduate Program and will earn a Bachelor's Degree (S.T. or S.Ars.) if they are registered as an active student in Universitas Indonesia during said semester, both administratively and academically; have passed all the compulsory courses and acquired a minimum of 144 credits in accordance with the applicable curriculum with 'C' as the lowest grade and completed all 8-semester scheduled academic load within 8-12 semesters; have completed all administrative obligations, including returning all borrowed library and laboratory collections; and have completed all obligations within their study period and/or all assignments given in accordance with the curriculum of the Study Program (including revising Final Project) with a GPA of ≥ 2.00 (two point zero). Honors predicate for a graduate is determined by the student's CGPA as follows: Summa cum laude (3.90-4.00), Cum Laude (3.61-3.89), Very Satisfactory (3.25-3.60), Satisfactory (2.76-3.24). For an undergraduate student to graduate Cum Laude, he/she must finish his/her study within 8 (eight) semesters with minimum GPA 3,51 and without retaking any courses.

Students are considered to have passed the Master Program and will earn a Master of Engineering or Master of Architecture Degree if they have passed all the required 40–44 credits; achieve a ≥ 3.00 GPA with 'C' as the lowest grade; do not exceed the maximum study period; and have met all administrative requirements. The honors predicate for a graduate is determined by the student's CGPA as follows: Summa cum laude (3.95-4.00), Cum Laude (3.76-3.94), Very Satisfactory (3.51-3.75), Satisfactory (3.00-3.50). For a Master Program student to graduate Cum Laude, his/her length of study must not exceed 4 (four) semesters with minimum GPA 3,76 and without retaking any courses.

Students are considered to have passed the Doctoral Program and will earn a Doctoral Degree if they have passed all the required 50 credits; achieve a minimum GPA of 3.00 with minimum 'C' for in-class courses and minimum 'B' for research courses; do not exceed the maximum study period; and have met all administrative requirements. Honors predicate for a graduate is determined by the student's CGPA as follows: Summa cum laude (3.95-4.00), Cum Laude (3.76-3.94), Very Satisfactory (3.51-3.75), Satisfactory (3.00-3.50). For a Doctoral Program student to graduate Cum Laude, his/her length of study must not exceed 8 (eight) semesters without retaking any courses or academic leave (except for a student with outstanding achievement based on the Promoter and examiner team's judgment, the length of his/her study must not exceed 10 (ten) semesters). The mark 'BS' is not counted as course repetition. If a student's GPA is within the 3.76–4.00 range but he/she fails to meet the other requirements, he/she will be awarded a 'Very Satisfactory' predicate.

Academic Performance Evaluation and Dropout Criteria

Undergraduate Program

The university also requires that students maintain satisfactory academic performance during their study at FTUI and meet the following evaluation criteria to be able to continue their studies:

- Attain at least 24 credits with a minimum of C at the end of their second semester;
- Attain at least 48 credits with a minimum of C at the end of their fourth semester;
- Attain at least 72 credits with a minimum of C at the end of their sixth semester;
- Attain at least 96 credits with a minimum of C at the end of their eight semester;
- Attain at least 120 credits with a minimum of C at the end of their tenth semester;
- Attain all required credit with a minimum of C at the end of their twelfth semester;

Or:

- Have the following issues: have an inactive status (empty) for two semesters in a row, thus being declared as "resign" automatically from the status of Universitas Indonesia's student by the Rector's decree on Status Determination.
- It was proven to be in violation of rules or regulations that caused the student to lose his right as FTUI student.
- Deemed unfit to continue their study based on consideration from a team of Medical Doctors appointed by the Head of the University.

Students who still maintain satisfactory academic performance and meet the evaluation criteria to continue their study but would like to resign on their own free will may submit a written application to the Vice Dean with a copy to the Head of the Department.

Master's Program

The Maximum length of study to earn a Master Degree in FTUI is at the latest 6 (six) semesters, starting from registration time to graduation. This

provision also applies to students who enroll in the FTUI Master program with a "probation" status. Students will lose their right to continue the study (dropping out) if:

- Students fail to achieve a 3.00 GPA of at least 9 passed credits (for regular Master Program student) or 12-14 passed credits (for non-regular Master Program student) at the end of the second semesters;
- In the end of the study period evaluation, students fail to achieve the following graduation requirements: registered as an active student in Universitas Indonesia during said semester both administratively and academically; not exceeding the maximum length of study; completed all administrative obligation including the return of all borrowed library and laboratory collection; and complete all obligation of their study period and/or all assignments given in accordance to the curriculum of the Study Program (including revised Final Project) with a GPA ≥ 3,00 (three point zero).
- Students who do not register academically and administratively for two consecutive semesters.
- Proven to be in violation of rules or regulations that caused the student to lose his right as FTUI students.
- Deemed unfit to continue their study based on consideration from a team of Doctors appointed by the Head of the University.

Student who still maintain satisfactory academic performance and meet the evaluation criteria to continue his study but would like to resign on his own free will may submit a written application to the Vice Dean with a copy to the Head of the Department.

Doctoral Program

The Maximum length of study to earn a Doctoral degree in FTUI is 10 (ten) semesters, starting from registration to graduation. **Students of the Doctoral Program (Class and Research)** will lose their right to continue to study (dropping out) if:

- Students do not register academically and administratively for two consecutive semesters, thus automatically being considered to have resigned from UI.
- Students fail to obtain a minimum of 'B' for their research proposal examination or a similar exam at the end of their fourth semester.
- Students fail to complete a minimum of 50% of their research based on the judgment of the Promoter Team by the end of their sixth semester.
- Students fail to complete a minimum of 75% of their research based on the judgment of the Promoter Team by the end of their eighth semester.
- At the end of the study period (ten semesters), students fail to complete 4 points above.
- Students fail to do the following by the end of their study period of ten semesters: producing 1 (one) scientific paper based on research for their dissertation as the main author with an option to work with the Promoter Team as their co-writer that has been accepted to be published in an indexed international journal (8 credits); submitting proof of compliance with the foregoing requirement as part of the requirements for promotion exam, and submitting 1 (one) dissertation and participating in a promotion exam as the final step of the Doctoral Program (6-8 credits).
- Students exceed the maximum length of study (10 semesters).
- Students are proven to be in violation of rules or regulations that causes the students to lose their rights as an FTUI student.

Student who still maintain satisfactory academic performance and meet the evaluation criteria to continue his study but would like to resign on his own may submit a written application to the Dean with a copy to the Head of the Department.

Students of the Doctoral Program (Research) will lose their right to continue to study (dropping out) if:

- Students do not register academically and administratively for two consecutive semesters, thus automatically being considered to have resigned from UI.
- Students fail to obtain a minimum of 'B' for their research proposal examination or a similar exam at the end of their fourth semester.
- Students fail to complete a minimum of 50% of their research based on the judgment of the Promoter Team by the end of their sixth semester.
- Students fail to complete a minimum of 75% of their research based on the judgment of the Promoter Team by the end of their eighth semester.
- At the end of the study period (ten semesters), students fail to complete 4 points above.
- Students fail to do the following by the end of their study period of ten semesters: producing 1 (one) scientific paper based on research for their dissertation as the main writer that is presented at an international scientific conference and published in the proceedings as a full paper (6 credits); producing 1 (one)

scientific paper based on research for their dissertation as the main writer with an option to work with the Promoter Team as their co-writer that has been accepted to be published in an indexed international journal (8 credits); submitting 1 (one) scientific paper that has been accepted to be published in a nationally accredited journal; submitting proof of compliance with the foregoing requirement as part of the requirements for promotion exam; and submitting 1 (one) dissertation and participating in a promotion exam as the final step of the Doctoral Program (6-8 credits).

- Students exceed the maximum length of study (10 semesters).
- Students are proven to be in violation of rules or regulations that causes the students to lose their rights as an FTUI student.

Student who still maintain satisfactory academic performance and meet the evaluation criteria to continue his study but would like to resign on his own may submit a written application to the Dean with a copy to the Head of the Department.

Academic Leave

Students who wish to be away from their academic endeavors at FTUI for one to two semesters, but intend to return to FTUI are eligible for an academic leave of absence. Leave of absence can only be given to a student who has studied at FTUI for at least two semesters, unless under specific circumstances. Academic leave for special circumstances is an academic leave that is given to a student for unavoidable reasons, such as: carrying out state task, undertaking university task, or undergoing medical treatment, which prohibit the said student from participating in academic activities. Academic leave is not counted as part of the length of study.

Procedures of Academic Leave

1. To apply for academic leave, a student must write a letter requesting for academic leave to the Head of Department. Head of Department will give recommendation to Vice Dean based on the student request before the beginning of the administrative registration period of the relevant semester.
2. If the academic leave is approved by the Vice Dean, PAF will change the status of the student to 'academic leave' before the beginning of the administrative registration period of the relevant semester, and the amount of tuition will be automatically changed.
3. The student must pay 25% of tuition during the period of administrative registration of the intended semester.
4. If the student has been granted an academic leave but fails to pay the required tuition during the registration period, the academic leave will be canceled, and the student's status will change to 'inactive' (empty).
5. In the situation as stated above, if the student still insists on making payment after the registration period has passed, the student will be charged a late administrative registration fee in the amount stated in the Rector's Regulation on Academic Fees.
6. If the student fails to pay during the prescribed period of administrative registration, Exceptional Administrative Registration will apply.
7. If the academic leave is proposed not in accordance with point (1) above, or proposed after the semester starts, the student must pay the full amount (100%) of tuition.

Faculty and Department Judiciums

Judicium is a meeting held at both the Faculty and the Department level to decide whether a student has fulfill all academic requirements and may graduate and earn a degree in engineering based on the Department/Faculty Evaluation.

Semester Grade Transcript, Diploma and Academic Transcripts

FTUI Central Administration Office is responsible for issuing Semester Grade Transcript, Diploma and Academic Transcript for all FTUI's graduates. Student Academic History is issued on student's request, while the diploma and academic transcripts are issued only once at the time of the student's graduation. Student Academic History and Academic Transcript contain the names, course codes and grades of all courses that the student have taken during their study period. Also included is the student's Grade Point Average (GPA) which is calculated based on all courses' grades. Diplomas and Academic Transcripts will be handed to all graduates no later than 2 (two) months from the date of graduation.

The Semester Academic Transcript (DNS) gives the information on the student's identity (name, student ID and highest education level), Academic Advisor, Faculty, Study Program, Specialty, Education Level, Subject Code, Subject Title, Credit, Letter Grade, Semester GPA, and GPA. The Semester Academic Transcript can be issued in hard copy form on a

student request as required. A valid DNS is signed by the academic administration official in the Faculty level.

Academic Record chronologically lists all academic activities of a student since the FRS time registered as a student until no longer registered, either due to graduation, expulsion, or resignation. The academic status of a student for each semester is recorded in the Academic Record. The Academic Record is also used as a source of information for the student, Academic Advisor, and Study Program to help the student to achieve success in their study and is issued as required on the student's request and validated by the Vice Dean of the Faculty.

Academic Transcript is given to students that have been declared to fulfill all requirements to graduate from a Study Program in a faculty meeting and contains information on a student identity (name, student ID, place and date of birth), previous education, education level, study program, specialty, list and code number of subjects, letter grade, number of required credits, number of obtained credits, GPA, title of the student's Final Project, diploma number and year of graduation. All subjects taken by the student, including repeated subjects and transfer credit subjects, are included in the Academic Transcript which is issued in two languages, Bahasa Indonesia and English. The Academic Transcript will be given to students with no outstanding tuition fees.

Diploma is given to a student who has been verified in a faculty members meeting to complete all requirements to graduate from a Study Program. Diploma contains information on the personal identity of the diploma holder (name, place and date of birth), academic title, name and signature of the Rector and Dean, issuance date of diploma, date of graduation, student ID, diploma number and signature and photo of the diploma holder. In the event that the diploma is lost or damaged, the diploma holder may request another copy of the diploma. Dean/ Vice Dean/ Director of Academic on behalf of the Rector may signed to validate a copy of diploma. Diploma will be given to students with no outstanding tuition fees.

Offenses and Sanctions

In any courses, no student shall engage in any form of unethical or improper conducts, including but not limited to examination offenses, such as:

1. Utilizing unauthorized materials/notes to enhance performance during on examination.
2. Attempting to observe the work of another student.
3. Taking an examination for another person, or permitting someone else to do so.
4. Collaborating improperly by joint effort on discussion in anyway expressly prohibited by lecturer.
5. When incidents, as enumerated above occurs, the following sanctions may be imposed (as per FTUI regulation):
   - The student may be assigned E for the subject in question
   - The student may be suspended for one semester
   - The student may be dismissed or expelled by FTUI
   - If necessary, a meeting of Panitia Penyelesaian Pelanggaran Tata Tertib (Offence Settlement Committee) (PT32) may be held.

Academic Sanction for Perpetrators of Academic Cheating In Exams

1. Academic sanction in the form of the revocation of the said exam (E grade) for the student caught or proven committing academic offence in the examination process, such as working with any other student, copying any other student's work or giving answer to any other student;
2. Academic sanction in the form of study period revocation (for all subjects) for the said semester for the student caught or proven committing academic offence in examination process such as opening books, notes or any other equipment prepared beforehand;
3. Academic sanction in the form of revocation of study period for the said semester and one semester suspension for the student caught or proven committing academic offence in the examination process due to collaborating with any third party outside of the examination room;
4. Academic sanction in the form of expulsion from the Faculty of Engineering, Universitas Indonesia, for the student caught or proven committing academic offence in the examination process by substituting any other examinee or by having someone else to take their place;
5. Academic sanction in the form of expulsion from the Faculty of Engineering,

Universitas Indonesia, for the student caught or proven committing academic offence in the examination process for planning and carrying out the plan to help any other examinee;

6. Other academic offence will be handled through a hearing by the Offence Settlement Committee (Panitia Penyelesaian Pelanggaran Tata Tertib (P3T2)), Faculty of Engineering, Universitas Indonesia;

7. Student is entitled to submit an appeal to the Faculty Academic Senate with the help of their Academic Advisor and the Vice Dean for Academic, Research, and Student Affairs, Faculty of Engineering, Universitas Indonesia..

Academic Sanction on Plagiarism and Act of Fraud in the Completion of Final Project

Plagiarism is an act of stealing ideas or thought already available in written and/or someone else's writing and used them as if it is our own ideas, thoughts and/ or writing thus causing harm/loss to the original owner both material or non material, this plagiarism can be in the form of using a word, phrase, sentence, paragraph, or even a chapter of someone else's writing or book, without stating the source. Included in this is the auto plagiarism.

Auto Plagiarisme is an act of using an idea or thought repeatedly in writing or using someone's own writing in parts or whole without stating the origin published source as if those ideas or thoughts are a new idea, thought and/or writing.

Plagiarism criteria used as a based to decide a sanction focuses on the amount of idea or phrase stolen and how similar the writing in phrase, sentence, paragraph, section, chapter, and the writing as a whole. A work can be considered plagiarism if based on the verification result on the writing contained a similarity level of 35% or more with the original work. To prevent plagiarism, student is obligated to check their final work using software of anti plagiarism provided by the Faculty or University before submitting their work to their advisor/promoter/co-promoter. If such software is unavailable, student is required to check existing list of research in connection to the topic of their research and state such research in their reference of research. Student caught and proven of committing plagiarism is entitled to an appeal tried in the Study Program level to the Faculty which the Faculty will later passed on to the university through the P3T2 to be verified and processed.

In case of an active student, early sanction can be in the form of delaying the final project examination or delaying the graduation status for student who has been declared passing the final project examination. Student that has been declared as a graduate but have not received their diploma, with the approval of the Rector, the Dean may hold said student diploma while await the Rector's final decision. Academic sanction on plagiarism for active student is established through the Dean's decree based on the proposal by the Head of the Study Program or recommendation from the Faculty in one month at the latest since the date of the proposal letter was accepted by the Dean. For graduate student is established through the Rector's Decree based on the P3T2 recommendation. The heaviest academic sanction given can be in the form of cancellation of the student final project (for active student) with the obligation to write a new final project with new topic, while for graduate student the sanction is in the form of revocation of academic titles.

The act of fraud in the writing of Final Project, Essay as Exam Substitute, or Assignment, includes the usage of other person's service/ replacement/ consultant/ or other service to complete assignments in the name of said student and other manipulative act of fraud. This act does not include the usage of service for data collecting, survey, and data processing for the completion of final project of student. Sanction given to the perpetrator of said act of fraud in the completion of final project is established throught the Dean's decree issued in one month at the latest since the proposal letter from the Head of Study Program is received by the Dean. The heaviest academic sanction given can be in the form of cancellation of the student final project (for active student) with the obligation to write a new final project with new topic, while for graduate student the sanction is in the form of revocation of academic titles. Active students who consciously act as a ghost writer in writing the final works for other students will be given the equivalent of student academic sanction given to the perpetrators of acts of fraud.

Academic Regulation Of The Universitas Indonesia

List of Academic Regulations at Universitas Indonesia can be accessed via http://respository.ui.ac. id. Below is a list of Decrees that functioned as reference for education program at Universitas Indonesia

General:

1. Decree of the Board of Trustees Universitas Indonesia Number: 008/SK/MWA-UI/2004 on the Amendment of Board of Trustees' Decree

Number: 005/SK/ MWA-UI/2004 on the Code of conduct on Campus Life in Universitas Indonesia

Education

1. Decree of the Rector Universitas Indonesia Number: 285/SK/R/UI/2003 on the Implementation Guidelines for Cross-Faculty Lectures in Universitas Indonesia
2. Decree of the Board of Trustees Universitas Indonesia Number: 006/MWA-UI/2004 on the Universitas Indonesia's Academic Curriculum
3. Decree of the Rector of Universitas Indonesia Number: 491/SK/R/UI/2004 on Universitas Indonesia Education Activities Conclusion Regulations
4. Decree of the Board of Trustees Universitas Indonesia Number: 001/TAP/MWA-UI/2005 on the Establishment of Academic Degrees in the Universitas Indonesia.
5. Decree of the Board of Trustees Universitas Indonesia Number 003/TAP/MWA-UI/2005 on General Guidelines for Implementation on Universitas Indonesia's Professional Programs
6. Regulation of the Board of Trustees Universitas Indonesia Number: 006/Peraturan/ MWA-UI/2005 on Student Learning Outcomes Evaluation at Universitas Indonesia
7. Regulation of the Board of Trustees Universitas Indonesia Number: 007/Peraturan/ MWA-UI/2005 on Academic Education Implementation Norms in Universitas Indonesia
8. Regulation of the Board of Trustees Universitas Indonesia Number: 008/Peraturan/ MWA-UI/2005 on Professional Education Curriculum Norms in Universitas Indonesia
9. Decree of the Rector of Universitas Indonesia Number: 838/SK/R/UI/2006 on Administration of Universitas Indonesia Student's Learning Outcomes
10. Decree of the Rector of Universitas Indonesia Number: 012/SK/R/UI/2007 on Implementation of the of Students Learning Activity in Universitas Indonesia
11. Decree of the Rector of Universitas Indonesia Number: 450/SK/R/UI/2008 on the Implementation of E-Learning in the University Indonesia
12. Decree of the Dean of Faculty of Engineering Universitas Indonesia Number: 3 year 2019 on the English Requirements for Undergraduate International Program Single Degree and Double Degree Faculty of Engineering Universitas Indonesia.
13. Decree of the Rector of Universitas Indonesia Number : 24 year 2022 on the Implementation of Undergraduate Program in Universitas Indonesia
14. Decree of the Rector of Universitas Indonesia Number : 25 year 2022 on the Implementation of Master Program in Universitas Indonesia
15. Decree of the Rector of Universitas Indonesia Number : 26 year 2022 on the Implementation of Doctoral Program in Universitas Indonesia
16. Decree of the Rector of Universitas Indonesia Number : 29 year 2022 on the Implementation of Professional Education Programs in Universitas Indonesia
17. Decree of the Dean of Faculty of Engineering Universitas Indonesia Number: 622/D/SK/FTUI/ IX/2016 on Academic Sanction for Academic Fraud Perpetrator in Faculty of Engineering Universitas Indonesia.
18. Decree of the Dean of Faculty of Engineering Universitas Indonesia Number: 623/D/SK/ FTUI/IX/2016 on General Regulation on Supplementary Exam for Mid Term and Final Examination in Faculty of Engineering Universitas Indonesia.
19. Decree of the Dean of Faculty of Engineering Universitas Indonesia Number: 624/D/SK/FTUI/ IX/2016 on Academic Sanction for Plagiarism and Act of Fraud in the Completion of Final Project in Faculty of Engineering Universitas Indonesia.
20. Decree of the Dean of Faculty of Engineering Universitas Indonesia Number : 2 year 2022 on the Scientific Publication Assessment Guide for Master Program and Doctoral Program in Faculty of Engineering Universitas Indonesia.
21. Decree of the Dean of Faculty of Engineering Universitas Indonesia Number : 703 year 2016 ont the Credit Transfer

Research

1. Decree of the Board of Trustees Universitas Indonesia Number 002/SK/MWA-UI/2008 on University's Research Norms
2. Decree of the Board of Trustees Universitas Indonesia Number 003/SK/MWA-UI/2008 on Research Policy at Universitas Indonesia

3. Decree of the Board of Trustees Universitas Indonesia Number 009/SK/MWA-UI/2008 on amendment of the Decree of the Board of Trustees of Universitas Indonesia Number 003/ MWA-UI/2008 on Research Policy in Universitas Indonesia

CHAPTER 3

FACILITIES AND CAMPUS LIFE

Facilities and Campus Life

New Facilities Available in FTUI

1. All classrooms in S building are now having one special chair for each classroom dedicated to left handed students.
2. FTUI has renovated the S405 classroom into a specially design discussion room for students to learn and discuss in groups in the implementation of Student-Centered Learning (SCL). This renovation is partly funded by USAID through their PEER Science research program by providing chairs, computer screen for each discussion group, wireless LCD projector and documented camera. The renovation is completed by the start of the Odd Semester of 2015. The class room will be able to accommodate up to 80 students in groups discussion form as in problem-based learning (PBL) or Collaborative Learning (CL) and up to 100 students in class room form
3. Online Electricity Metering and Monitoring System now help FTUI in monitoring electricity usage of each building and their characteristic. www.ee.ui.ac.id/power; www.eng.ui.ac.id/power
4. Offline Water Metering and Monitoring System prepare FTUI in determining the water usage of each building and help plan the creation of rain water well within the faculty.
5. Smoking is prohibited throughout most of the faculty areas. However, the new and vastly improved Smoking Shelter is now available in the student's cafeteria area and in front of the S Building.
6. Smart class rooms are built with concepts that have various advanced features to support various learning models. Equipped with a modular table that can be arranged according to lecture mode, as well as an interactive smart board that has advanced features. During the lecture, the system will automatically record the lecture activities and the results can be used by students. Recordings and discussion results during lectures in the smart class room can be accessed by students through the learning management system channel.
7. Integrated - Creatice Engineering Learning Laboratofy (i-CELL) is prepared to support the change in te educational process from Teaching Approach to Learning Approach which makes students the focus. i-CELL is also one of the answers to the demands of the Industrial Revolution 4.0. This building carries smart and green building technology that is environmentally friendly, equipped with sophisticated IT systems to support effective and efficient research and practicum activities. The construction of the i-CELL and Workshop building is an effort of FTUI to create and unite research and education laboratories that are integrated, comfortable, modern, and make it easier to conduct interdisciplinary research at FTUI.

Integrated Students Service Building (PPMT)

This building is located at the left of the Rector building with the one door policy in serving the registration process of all Universitas Indonesia students, whether they are vocational, undergraduate, undergraduate extension, master, doctoral, specialist, and professional students. This building consists of three divisions: PPSI division, Student Affairs division, and Academic division.

Faculty Administration Center

Academic administrative services for all academic programs in FTUI are managed by PAF. The services provided for students include academic records, change of grades from lecturers, testamur and academic transcripts, registration, absence of leave, enrollments and letter of reference letter. The working hour is at 08.00 to 18.00 from Monday to Friday, at PAF building.

University Central Library

Location : Kampus UI Depok

Service hours of UI Central Library

Monday - Friday	08.30 - 19.00 WIB
Saturday & Sunday	08.30 - 15.00 WIB
Holly Month of Ramadhan	08.30 - 15.00 WIB

Membership:

Students, lecturers, researchers and employee of the Universitas Indonesia are entitled for membership of the central library with the following requirements:

1. Provide the latest semester payment proof or the latest study card (IRS) or certification letter from any faculty, unit or department within the Universitas Indonesia.
2. Provide a 2x3 photo (one)

3. Provide a cover letter from the faculty (for lecturers)

Lending Procedures:

1. General text books can be borrowed for two weeks (max. 3 books) by showing your Student Card. Borrowed books need to be stamped.
2. Reference books, magazines, newspaper and thesis can only be read on the spot or photo-copied.
3. Dissertation and thesis can only be photocopied as many as 10 pages.

UI Central Library Services

Reference Service

This service is provided to help the UI civitas academica in searching information, especially for students who are working on their final assignment or research. Information search request may be submitted in person or via email (reflib@ui.ac.id).

Information Package

Information package is a form of service in the form of certain topics of information packages. Each package consists of several articles and their annotation in accordance to the selected topic. Each article can be obtained by contacting the reference division first (reflib@ui.ac.id) or by direct phone request (+6221-7270751).

Information Search Training

The information search training consists of several packages. They are: basic and advance package. This training is provided to help improve the information skill of library visitors and members. This service is available to all university members, especially new students and students who are in their final year. Request for training can be submitted directly or through the email perpusui@ui.ac.id

Circulation (Borrowing Books)

The circulation services are located in level 1 The library's collection of reference books, thesis, dissertation, research reports and UI-ana can only be read on the spot at the UI Central Library.

UI Central Library Facilities

OPAC (Online Public Access Catalog)

OPAC is a tool to search the information regarding the available collection of the library by using a terminal computer. OPAC computers are available on every floor of the library.

Internet Access

Internet access connection at the UI central library uses the integrated network (JUITA – Jaringan Terpadu) and can also be accessed by using the UI Hotspot. Internet service is also available at the first floor of the central library. Also available are computers with internet access for the usage of library visitors and members.

Computer, Scanner and Data Backup

Students are allowed to use the provided computers to work on their assignments, picture/photo scanning and to burn the result of their information search to a CD.

Photocopy

A photocopy machine is available at the UI Central Library

Discussion, Class and Seminar Rooms

Discussion, Class and Seminar rooms are available for students' needs and for classes.

Special Study Rooms

Special study rooms are available and can be used by all university members. These rooms are equipped with a desk, filing cabinet and internet access.

Locker

250 lockers are available for UI Central Library Members.

Computer Sciences & Network

Directorate of Information System Development and Service (PPSI) are responsible for the programmed computer network system designed to help fulfill the students and lecturers needs in computer usage (from academic activities such as programming to internet usage) through the Integrated UI network (JUITA).

Requirements for using the JUITA:

- Registered as a UI student
- Fill out registration form with a reference from the Associate Dean for Students Affairs/ Head of Study Program/Academic Counselor of the student.

Place of Registration:

- Depok (Integrated Student Service Center Building)
- Salemba (PUSILKOM Building)

Hotline Service

Users who are experiencing problems in the use of

this facility can report or request the help of the Computer Technical Unit through the following PPSI hotline service:

Phone	: +6221-7863419
Email	: support@ui.ac.id
Web Site	: http/cso.ui.ac.id
Office Hours	: Monday – Friday
	(09.00 - 16.00)

Puskom Services at FTUI

Puskom (Pusat Komputer) provides services related to education and information technology development for students and academic/non-academic staff. The office is located at 2nd floor of GK Building at FTUI, Depok Campus. Main duties of Puskom is to provide education facilities for students, learning and research facilities for lecturers, and services for education administration, students and personnel. Puskom also provides connection services to internet and local area network at the Faculty and the University. Internet can be accessed at all area of FTUI. This facility can be used by students as well as faculties. All computer networks have been connected by fiber optic cables for inter-building and copper cable in the buildings with capacity of 100 Mbps. Besides providing local networks, Puskom also controls 7 computer servers with redundancy backup to minimize troubles in academic and research services. Computers are also available for students at various locations at FTUI i.e. computer laboratory at 2nd floor of GK Building, as well as at FTUI building at Salemba Campus. The service hour is 09.00 to 16.00 from Monday to Friday. For further information please contact Puskom at GK Building, 2nd floor, tel. 021-7863508, 021-2720011 ext. 64, or send email to puskom@eng.ui.ac.id.

Student Welfare

Universitas Indonesia Mosques

- The Ukhuwah Islamiyah (UI) Mosque Depok located in the UI Depok Campus. Established on 28 January 1987 for the Friday prayer with Prof. H. Moh. Daud Ali, SH as khatib (preacher). This mosque was named Ukhuwah Islamiyah for within this mosque is fostered the Islamic brotherhood within the campus as well as the unity and brotherhood of Moslem from within and outside of campus area.
- The Arif Rahman Hakim (ARH) Mosque Salemba is located in the UI Salemba Campus. Established on 10 November 1967, 27 Rajab 1387 H. Based on the UI Rector Decree dated 16 August 1966, a development committee was established and consist of students. The vision of this mosque is to be the center of Islam education in the campus and produces modern Moslems (equipped with faith and knowledge) that can implement the teachings of Islam and help solve religious problems.

Teksas Bridge

The Teksas Bridge is a linkage bridge between two faculties in the UI Depok campus, the Faculty of Engineering and the Faculty of Humanities. These two faculties are separated by an 80 meters lake. The Teksas Bridge is hoped to serve as:

- As a connection bridge and “Landmark”
- As a research object for steel application product
- As a promotional tool on “Aesthetics Steel”

The concept of this bridge aims towards two approach:

- The side of the bridge on the Faculty of Engineering UI reflects a powerful and masculine character symbolized with a “Sail” shaped Pylon Bridge soaring to the sky as a symbol of “LINGGA”.
- The side of the bridge on the Faculty of Humanities UI reflects a flexible and feminine character symbolized with a “Hole Gate” shaped Pylon Bridge as a symbol of “YONI”.

Campus Bus

To serve the transportation needs of students within the campus, Universitas Indonesia provides 20 campus busses. These busses will serve inside campus routes from these times: 07.00-21.00 (Monday-Friday) and 07.00-14.00 (Saturday). These yellow campus busses have two different routes:

- **Blue :**
  UI Dormitory, Gerbatama, UI Train Station, Faculty of Psychology, Faculty of Social and Political Science, Faculty of Humanities, Faculty of Economics, Faculty of Engineering, KuKel, Student Center Building, Faculty of Mathematic and Natural Sciences, Faculty of Public Health, Balairung, UI Mosque, and Faculty of Law.
- **Red :**
  UI Dormitory, Gerbatama, UI Trains Station, Faculty of Law, UI Mosque, Balairung, Faculty of Public Health, Faculty of Mathematic and Natural Sciences, Student Center Building,

KuKel, Faculty of Engineering, Faculty of Economics, Faculty of Humanities, Faculty of Social and Political Science, and Faculty of Psychology.

Executive Bus

In order to provide transportation service, especially outside campus transportation, Universitas Indonesia provides Air Conditioned and Non-Air Conditioned busses for rent. These busses are available for various types of activity, such as: UI student organization activities, academic support activities, and many more.

Rental Procedures:

- Written rental request is submitted to:
  Directorate of Student Affairs
  Integrated Student Service Center
  Building, Kampus UI Depok
  Phone : +6221-7867222 (Operator)
  Fax : +6221-7863453
- Payment should be made, at the very latest, one week before the date of use via BNI Bank, Kampus UI Depok Branch, and Account Number: 1273000024 under the name of Universitas Indonesia.
- Proof of payment must be submitted to the Directorate of Student Affairs. Cancellation done 3 (three) days before the date of use will be charge a 10% cancellation fee from the paid rent. Cancellation on the date of use will be charge a 30% cancellation fee from the paid rent.

Student Welfare and Facility Building (GKFM) / University Health Center

Address : Kampus UI Depok

Phone : +6221-78881019

This building is located in front of the Faculty of Engineering in UI Campus Depok. GKFM / University Health Center Building was built to better serve several important needs of the students, such as:

Polyclinic Unit

Provide a free health service to all students of the Universitas Indonesia. Students only need to provide their Student ID card to process their membership card for future medical record to receive this service. There are several services available:

1. Public Health Service
2. Dental Health Service

Service Hours:

Monday – Thursday : 08.00 - 12.30
and 14.00 - 19.00

Friday : 08.00 - 11.00
and 14.00 - 19.00

Saturday : 08.00 - 12.00

Note:

Aside from the above mentioned facilities for students which are funded by the Students Welfare and Facility Fund, GKFM in UI Depok Campus also provide facilities for blood chemistry examinations, x-ray, and cardiac examination for university members with affordable prices.

Pharmacy

The pharmacy provides free medicine for 3 (three) days for UI students who seek treatments in the Polyclinic unit. The pharmacy also provides various other medicines for first aid needs for general public purchase.

UI Student Counseling and Guidance (BKM)

In providing service in the mental welfare of the UI students, the Student Counseling and Guidance is a place where UI students can receive psychological help in dealing with academic, personal or family problems. These psychological help are given in the form of counseling and guidance. Guidance service is the provision of information (to an individual or group) with the purpose of making sure that students are able to learn and build an optimal social relationship. Counseling service is the process of giving help to students and support student in finding a way to solve his problem. Here, a counselor functions as a facilitator.

Services in the UI Student Counseling and Guidance

The routine services provided by the BKM UI are counseling and guidance services daily which are done at:

Service Time : Monday – Friday

Service Hours : 09.00 – 15.00

Place : Student Welfare Center

Facility : 2nd floor, Student Welfare & Center Building
UI Campus Depok Phone
: +6221-96384797

BKM UI staff of counselors consists of psychologies, psychiatrists, and academic counselors.

Problems handled by BKM UI

Generally, the problems handled by the BKM UI consist of academic, personal, family, and social problems.

BKM UI's other services:

- Online counseling
- Peer counseling training
- Counseling training for counselor lecturers and BKM management in the faculty level.
- Coordinate meeting between BKM in the university and faculty level.
- Personality development training
- Group therapy

UI Salemba Polyclinic

For students in the UI Salemba Campus, the university also provides similar health service in the polyclinic for public health service. Service time : Monday – Friday: 08.00 – 12.00 and 14.00 – 18.00

Smart Classroom

FTUI in collaboration with Kapal Api Group build smart classroom. This is in line with FTUI's vision to implement IT technology that changes the teaching process at FT UI from teaching to student-focused learning. Smart class rooms are built with concepts that have various advanced features to support various learning models. Equipped with a modular table that can be arranged according to lecture mode, as well as an interactive smart board that has advanced features. During the lecture, the system will automatically record the lecture activities and the results can be used by students. Recordings and discussion results during lectures in the smart class room can be accessed by students through the learning management system channel.

Integrated - Creative Engineering Learning Laboratory (i-CELL)

2020 became a new milestone for the Faculty of Engineering, University of Indonesia (FTUI). This is related to the completion of the construction of the FTUI integrated - Creative Engineering Learning Laboratory (i-CELL) and Workshop building as the latest laboratory facility that integrates various practicum activities from all departments. i-CELL is an embodiment of FTUI's mission of providing Cutting Edge Engineering Education and conducting applied-based engineering research (Applied Engineering Research). i-CELL is prepared to support the change in the educational process from Teaching Approach to Learning Approach which makes students the focus. i-CELL is also one of the answers to the demands of the Industrial Revolution 4.0.

The integrated - Creative Engineering Learning Laboratory and Workshop building consists of 8 floors and 1 rooftop laboratory with a total building area of 8,410 square meters. This building carries smart and green building technology that is environmentally friendly, equipped with sophisticated IT systems to support effective and efficient research and practicum activities. The concept of green building is applied by designing buildings so that lighting, air circulation, and water are utilized optimally to reduce energy and water consumption.

The construction of the i-Cell and Workshop building is an effort of FTUI to create and unite research and education laboratories that are integrated, comfortable, modern, and make it easier to conduct interdisciplinary research at FTUI. This is done to answer the challenges in the field of science and technology in the future. Especially in increasing the number and quality of research, as well as efforts to realize UI as a World Class Research University.

Student Dormitory

Location : UI Campus, Depok

Phone/Fax : +6221- 7874414 /

+6221-7874271

Capacity : 594 rooms for male students housing, 656 rooms for female students housing (including the VIP – AC rooms)

Facility : TV, cafetaria, public pay phone, public internet shops, computer rental

UI Wismarini Student Dormitory

Location : Jl. Otto Iskandar Dinata No. 38, East Jakarta, Indonesia

Phone/Fax : +6221-8195058

Capacity : 72 rooms for male students housing, 111 rooms for female students housing

Facility : Badminton court, TV, cafeteria, Table Tennis

The UI Wismarini student dormitory is provided to students from the Salemba Campus (Faculty of Medicine & Faculty of Dentistry).

Facility

- Standard housing facility: Bed, table, chair, wardrobe, shoe rack, lamp, bathroom, wash basin.
- Technology facility: Public pay phone shops, public internet shop, photocopy
- Public facility: Cafeteria, praying room, laundry service, sport facility, car/motorcycle parking areas, minimart, dormitory market

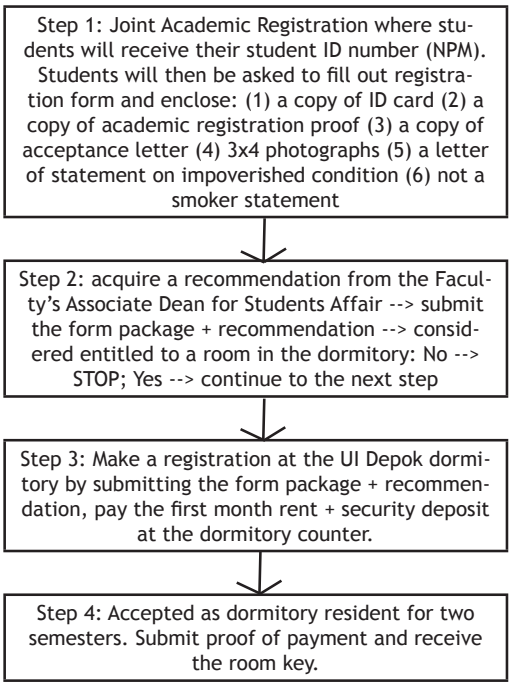
Room Specification

- Standard room: Standard bed, table, chair, bookcase, wardrobe, shoe rack, lamp, outdoor bathroom, non AC.
- Standard plus room: Standard bed, table, chair, book case, wardrobe, shoe rack, lamp, outdoor bathroom, air conditioned.
- Bungur and Melati room: Spring bed mattress, table, chair, indoor bathroom, wash basin, small kitchen, living room, air conditioned.
- VIP room: Spring bed mattress, table, chair, indoor bathroom, wash basin, small kitchen, living room, air conditioned.

Other information

- UI Depok dormitory has their own set of rules and regulations which must be obeyed by all dormitory residents as an attempt to create conducive environment for dormitory residents and as an attempt to maintain harmony among the various elements of the UI Depok dormitory residents.
- Each undergraduate student residents of the UI Depok dormitory are entitled to live in the dormitory for one year (semesters 1 and 2).
- Residents will be charged for every electronic device which they brought to their dormitory rooms.
- For further information, please contact UI Dormitory secretariat at +6221-78744144 or by clicking http://asrama.ui.edu.

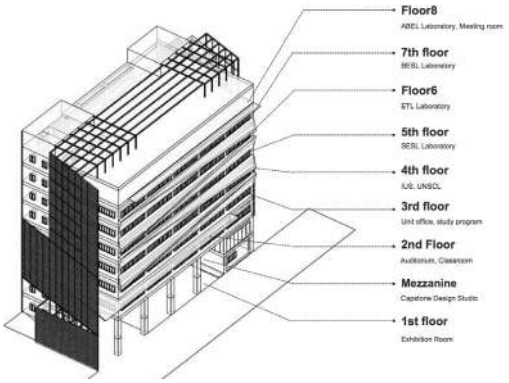
Registration Process Flow Chart for UI Dormitory



Interdisciplinary Engineering (IDE) Building

The InterDisciplinary Engineering (IDE) Building is the face of educational and research activities that involve interactions in the fields of civil engineering, environmental, mechanical, electrical, computer, machinery, shipping, metallurgy, materials, chemistry, bioprocess, biomedicine, industry and architecture. This building is equipped with advanced labs that are capable of accommodating interdisciplinary research in the fields of energy, biotechniques, biosystems, and smart city and regional planning.

The construction, use and management of IDE buildings has three main principles, namely sustainability, functionality and aesthetics which refer to Public Works and Public Housing (PUPR) completion standards and other applicable standards such as the Green Building Council Indonesia (GBCI). The IDE building will implement a green building concept that is efficient in the use of energy, air, lighting and air circulation.



Facility

- Exhibition room
- Capstone design studio
- Auditorium
- Classroom
- Unit room
- Meeting room
- Laboratorium facility: Urban Nexus and Smart City Lab (UNSCL), Sustainable Energy System Lab (SESL, Energy Transition Lab (ETL), Biological System Engineering Lab (BSEL), Advanced BioEngineering Lab (ABEL)

Wisma Makara

Phone : +6221-78883670, 78883671

Reservation : +6221-78883672

E-mail : info@makara.cso.ui.ac.id

Website : http://www.wismamakara.com

Wisma Makara, located within the UI Depok campus, is a choice of accommodation for the Southern Jakarta and Depok area. This hotel is very suitable for seminar, training, workshop activities. Surrounded by rubber trees and a lake; the hotel's cool, calm, and beautiful atmosphere provides the perfect background for your various activities. The hotel's tranquility also makes it very suitable for those of you who need tranquility to work and rest.

Available facilities:

- 70 fully furnished rooms (AC, TV, refrigerator)
- Restaurant
- Swimming Pool
- Coffee Shop
- Meeting room (up to 100 person capacity)
- Pay phone shop and internet shop
- Photocopy
- Ballroom (with 800 person capacity)
- Parking area

UI Student Activity Center (PUSGIWA)

Location : UI Campus Depok

Phone : +6221-7270201

Pusgiwa UI is a place for various student activities in Universitas Indonesia. Here we can find secretariat offices of various UI student organizations. Pusgiwa also provides many facilities for students' acitivites such as an 300-400 person auditorium.

UI Students Hall

Location : UI Salemba Campus

Capacity : 300 People

Phone : +6221-31901355/56

The UI Salemba Student Hall is one of the facilities in UI under the management of Directorate of Student Affairs and Alumni Relation. This hall is often used for various activities such as meetings, seminars,

workshops, and many more. The hall is available for use by the university members and public.

Sport Facilities

A. Stadium

- Football field
- Triple Jump Field
- Athletic Field

B. In Door (Gymnasium)

- Badminton court
- Volleyball court
- Basketball court

C. Out Door

- Hockey field
- Basketball court (3 lines)
- Badminton court (1 line)

D. SOR (Sarana Olahraga) Zona 1

- Futsal
- Basket
- Volley

Permit form or letter for the use of UI Student Activity Center (Pusgiwa), UI Student Hall, and Sport Facilities must be submitted to the Directorate of Student Affairs and Alumni Relation UI located at the Student Activity Center Building, UI Campus Depok.

Phone : +6221-7866403, 7863453

Fax : +6221-7863453

at FTUI, several sport facilities are available: basket ball court, futsal court and climbing wall.

Student Organization

Students are a nation's agent of change in making changes towards a fair and prosper independent society. Their power in fighting and struggling toward that goal must always be balanced with moral power as future asset in their fight in realizing the country's objectives. Thus, students need a vessel where all of their independent, family oriented, scientific, society oriented, and open activities can be accommodated. In Universitas Indonesia, this vessel is called Universitas Indonesia Student Society Association (Ikatan Keluarga Mahasiswa Universitas Indonesia – IKM UI).

IKM UI is a formal and legal organization which is the parent organization for all student activities in Universitas Indonesia. IKM UI adopts constitutional values adapted with the need of student lives. Sovereignty of IKM UI lies in the hand of the students and is fully implemented according to Laws and Constitution of IKM UI. The members of IKM UI are registered students in the Universitas Indonesia, consisting of active and regular members. Active members are IKM UI members that have followed active member admission procedures and received recommendation from the faculty. Regular members are IKM UI members that are not registered within the active membership of IKM UI. The symbol of the Universitas Indonesia Student Society Association (IKM UI) is the Makara of Universitas Indonesia with the wording IKATAN KELUARGA MAHASISWA UNIVERSITAS INDONESIA in black.

Student organizations that are incorporated within the IKM UI are:

1. Students Forum
2. Students Representative Council
3. Student Executive Body
4. Financial Audit Agency
5. Student Court
6. Student Element of the Board of Trustees
7. Autonomous Body of the Student Activity Unit
8. Semi Autonomous Body of the Student Activity Unit

Students Representative Council (Dewan Perwakilan Mahasiswa - DPM)

Students Representative Council is the high level body within the Universitas Indonesia Student Society Association (IKM UI) which possesses a legislative power. Members of the DPM UI consist of independent members from each faculties and representatives of legislative bodies of each faculty. Independent members are voted through a general election, while there can only be one representative from each faculty's legislative body. Membership of DPM UI is inaugurated by a student forum decree. Term of office for members of the DPM UI is one year and ended simultaneously with the inauguration of the new members of the DPM. The requirements for becoming a member of the DPM UI are regulated within the IKM UI laws. DPM UI has the authority in term of legislative, supervision, and assessment of Students Representative Council's (BEM UI) Work Accountability Report, jurisdiction, facility, and designing the admission mechanism and follow up on financial budget plan of each student organizations within the Universitas Indonesia for each period of management. Members of the DPM UI are entitled

to interpellation right, voting right, and the right to convey suggestion and express their opinions.

Secretariat : Student Activity Center

Building (Pusgiwa), 2nd floor

Phone :+6221-94629107,

+6285717884964

Students Representative Council (Badan Eksekutif Mahasiswa - BEM)

Universitas Indonesia Students Representative Council is a student organization within the university level with the executive power. Term of office for UI Students Representative Council is one year, from January to December each year. Chairman and Vice Chairman of BEM UI are elected as a couple directly by members of the IKM UI in a Universitas Indonesia General Election. The elected Chairman and Vice Chairman of BEM UI are later officially inaugurated with a Student Forum Decree. Function and authority of BEM UI are, among other: advocate students in issues relating to funds and facilities at the university level; addressing the external politic policy of IKM UI; serve and coordinate with the Universitas Indonesia Autonomy Body of UKM UI, faculty's executive body, and student element of the Board of Trustees. BEM UI Board of Administrators is elected based on open and close recruitment mechanism.

Student Activity Unit (Unit Kegiatan Mahasiswa - UKM)

Student Activity Unit of Universitas Indonesia (UKM-UI) is a place of student activities and creations in the Universitas Indonesia in one area of specialization, talent and religious services at the university level. The Student Activity Unit consists of the Autonomy and Semi Autonomy Bodies. Universitas Indonesia UKM Autonomy Body is a UKM in the university level which is deemed qualified and valid by the decree of the Student Forum into an autonomic UKM UI Autonomy Body. While the Universitas Indonesia UKM Semi Autonomy Body is a place of student activities and creations in the Universitas Indonesia in one area of specialization, talent and religious services at the university level under the coordination of the Students Representative Council.

a. Art

1. Krida Budaya Dance League
2. Madah Bahana Marching Band
3. Mahawarditra Philharmonic
4. Paragita Choir
5. Student Theater

b. Sport

1. Badminton
2. Hockey
3. Tennis
4. Soccer
5. Basket Ball
6. Swimming
7. Volley Ball
8. Softball
9. Bridge
10. Futsal
11. Dance Sport
12. Cricket
13. Table Tennis

c. Martial Art

1. Taekwondo
2. Merpati Putih
3. Aikido
4. Wushu

d. Religious Groups

1. Moslem Student Society (Nuansa Islam Mahasiswa - SALAM)
2. Catholic Student Society (Keluarga Mahasiswa Katolik - KMK)
3. Oikumene Civitas Academica Society (Persekutuan Oikumene Sivitas Akademika - POSA)
4. Buddhist Student Society (Keluarga Mahasiswa Budhis)
5. Hindu Student Society (Keluarga Mahasiswa Hindu)

e. Academic Group

1. Eka Prasetya Student Study Group (KSM EP)
2. English Debating Society (EDS)

f. Entrepreneurship

1. Student Voice
2. CEDS
3. Student Radio (RTC UI FM) 107,9 FM

g. Others

1. Wira Makara (Student Regiment)

2. Students' Mountaineering Club (Mapala)

Career Development Center

Career Development Center is a center with the aim of preparing UI graduates to have more skill and higher level of competitiveness and at the same time channeled UI graduates to the working world. CDC is located in the Student Center Building.

Phone/Fax : +6221-70880577/78881021

Email : cdc-ui@ui.ac.id

FTUI also has a CDC, located at 3rd floor of Engineering Center (EC) Building.

Phone : +6221-78880766

National Student Science Week

The National Student Science Week (Pekan Ilmiah Mahasiswa Nasional - PIMNAS) is a prestigious event for all Universities in Indonesia organized by the Directorate General of Higher Education (DIKTI). The Adikarta Kertawidaya trophy is the award contested at the PIMNAS. PIMNAS is an opportunity to channel the creativity, education and community service of the society in a Student Activities Program. Below is some of the Student Activities Program being contested within the National Student Science Week.

Student Creativity Program – Research (PKM-P)

This program is a research program that aimed to identify the determinants of the quality of the product, find a causal relationship between two or more factors, experimented with a form or equipment, to establish the method of learning, conduct an inventory of resources, modifying existing products, identify the chemical compounds in the plants, testing the efficacy of plant extracts, formulate marketing techniques, a health survey of street children, teaching methods Balinese script in elementary school students, the rate of economic growth in the craft center of Kasongan, superstition factor that characterizes the behavior of the Javanese community and other activities that have such a purpose.

Student Creativity Program - Technology Application (PKM-T)

This program is a technology assistance program (quality of raw materials, prototypes, models, equipment or production processes, waste management, and quality assurance systems and many other) or other micro-or small-scale industries (home industries, small traders or cooperation) as needed by the potential partners in the program. PKMT require students to exchange ideas with their partner in the program first, because the product is a solution of a problem which the PKMT partner prioritizes. Thus, in the proposed program, the student must attach a Statement of Willingness to Work Together with Partner on a paper with Rp. 6000, - seal.

Student Creativity Program – Entrepreneurship (PKM-K)

This program is the where students develop their skills in entrepreneurship and is a profit oriented program. Business commodities produced can be in the form of goods or services which in turn are one of the basic capital students will need in entrepreneurship and to enter the market.

Student Creativity Program – Community Service (PKM-M)

This program is an assistance program in science, technology, and arts in an effort to increase performance, build business skills, structuring and improving the environment, strengthening community institutions, the socialization of rational drug use, exposure to and understanding aspects of customary law, relief efforts on illiterates in the society and other community programs both for formal and non-formal societies.

Student Creativity Program - Writing Scientific Articles (PKM - AI)

This program is a program of writing a scientific article which originated from student activities in education, research, or community service which the student has done himself (case studies, field practice, community development work, student creativity program, internships, and many other).

Student Creativity Program – Written Concept (PKM - GT)

This program is a program of writing a scientific article that originated from ideas or concepts from a group of students. This written idea refers to an actual problem that can be found in the community and require a smart and realistic solution. In each area these programs are subdivided into seven groups of fields of science, namely:

1. Health field, including: Pharmacy, Nutrition, Obstetrics, Medicine, Dentistry, Nursing, Public Health, and Psychology.
2. Agricultural field, include: Veterinary Medicine, Forestry, Maritime, Fisheries, Agriculture, Animal Husbandry, and Agricultural Technology.
3. Mathematic and Natural Sciences field, including: Astronomy, Biology, Geography, Physics, Chemistry, and Mathematics.

4. Technology and Engineering field, including: Information Technology, Engineering, and Agricultural Technology.
5. Social Economy field, including: Agribusiness (Agriculture), Economic, Social and Political Sciences.
6. Humanities field, including: Religion, Language, Philosophy, Literature, and Art.
7. Education field, including: Education Sciences study program under the Faculty of Education.

Submission deadline for PKM-K, PKM-M, and PKM-P proposals are in October of each year, while deadline proposals for PKM-GT and PKM-AI are in March of each year. Almost all of these areas can be followed by students in 12 faculties at UI. PIMNAS is a means to prove the existence of UI as a research university in Indonesia. Win the Adikarta Kertawidya trophy and show the existence of UI as the Research Campus.

For further information :

http://bem.ui.ac.id/

http://mahasiswa.ui.ac.id/info-pkm-2010.html

Scholarship

Universitas Indonesia currently manages approximately 71 scholarships both from the government and the private sector. Information about scholarships can be obtained at the Student Affairs Division of each faculty or through the website of the Directorate of Student Affairs at www.mahasiswa.ui.ac.id.

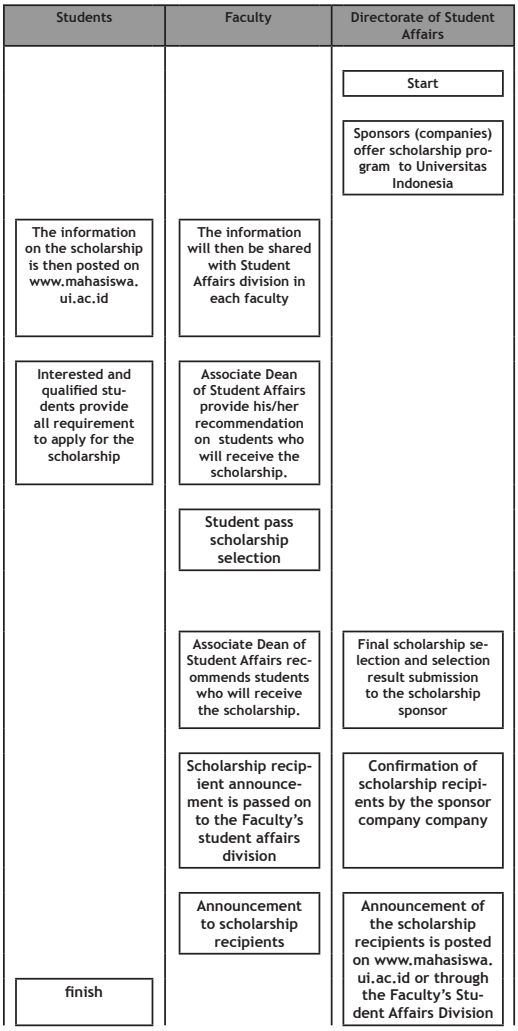
There are two types of scholarship in UI:

- UI Scholarship
- Donor/Sponsor Scholarship

General requirement procedure for scholarship application from Donor/Sponsor:

- Submit application through the Faculty Head with a recommendation from the Associate Dean of Student Affairs.
- Submit a photocopy of academic transcript stating a GPA corresponding with the requirement given by the donor/sponsor.
- Not a smoker.
- Is not a receiver of similar other scholarship.
- Other requirements as stated by the Donor/ Sponsor.

Flowchart of Scholarship Application



List of Name of Scholarship Donor/Sponsor For Universitas Indonesia Students

1. Bank BNI 46
2. Bank Central Asia
3. Bank Indonesia
4. Bank KEB Indonesia
5. Bank Lippo
6. Bank Mandiri
   - Bank Mandiri
   - Bank Mandiri Prestasi
7. Bank Mayapada
8. Bank Niaga
9. Bank Permata

10. Bank Tabungan Negara
11. Student Special Aid
    - Special Aid for Undergraduate Program Student
    - Special Aid for Vocational Program Student
12. BAZNAS
13. West Java Scholarship
14. BMU Scholarship
15. CIMB Niaga Excellent Scholarship
16. DKI Jakarta Scholarship
    - Jakarta Achievement Scholarship
    - Jakarta Thesis Scholarship
17. BPMIGAS
18. BRI
19. BUMN
20. DIKNAS
    - Diknas (Excellent Activist Scholarship)
    - Diknas (Excellent Master Scholarship)
    - Diknas (Super Excellent Scholarship)
21. Diknas 1 (BBM)
22. Diknas 2 (PPA)
23. Eka 2007 - 2008
24. Eka 2008 - 2009
25. Eka CIpta (Uang Buku)
26. Exxon MOBIL (For Students from Aceh)
27. Exxon MOBIL (For Students from Aceh) Thesis
28. Indosat
29. Karya Salemba 4 (KS 4)
30. KORINDO
31. LGE
32. MARUBENI
33. MC.DERMONT
34. Part Time Job
35. Posco (Thesis Aid)
36. PPA/BBM Angkatan 2009
    - PPA/BBM DIII
    - PPA/BBM S1
37. PPE
38. PT. BUMA Apparel Industry
39. PT. Coca Cola
40. PT. Indocement
41. PT. Accenture
42. PT. Sun Life Indonesia
43. PT. Thiess
44. Qatar Charity
45. Recapital
46. Rotary Club Jakarta Sudirman
47. Salim
48. Sariboga
49. Shell (Extention Scheme)
50. Shell (New Scheme)
51. Sime Darby
52. Sumitomo Bank (Supportive Scholarship)
53. Sumitomo Bank (Full Scholarship)
54. Sumitomo Corporation Scholarship
55. Supersemar
56. Tanoto
57. Tanoto S2
58. Total E & P
59. TPSDP (DIKTI)
60. UFJ Foundation / Mitsubishi
61. Unilever
62. Y. Asahi Glass (YAGI)
63. Y. Toyota (REGULER)
64. Yayasan IJARI
65. Yayasan Goodwill Internasional
66. YAYASAN TIFICO
67. YKPP - Pertamina
    - YKPP - Pertamina (Living Allowance)
    - YKPP - Pertamina (Tuition Fee)

Insurance

Each student enrolled in Universitas Indonesia for each running semester (participate in academic activities) will also be registered as an insurance member of PT. Asuransi Jasa Raharja.

For these insured students, they are allowed to submit an insurance claim in accordance with the following provisions:

- Accidents included within the insurance claim are accidents which occurred during the student's journey from home to UI campus to participate in academic and extracurricular activities whether it is within or outside of Campus area and with the UI/Faculty's Management's knowledge and permission.
- Compensation on claim regarding students' accident is only applicable to those who have paid the DKFM fee for the semester.
- In the event of an accident, student must report the accident no later than 3x24 hours to the office of the Universitas Indonesia Directorate of Student Affairs Sub Directorate of Student Welfare Services or the nearest PT Jasa Raharja Office Branch.
- If after 180 (one hundred and eighty) days, the accident is not reported, insurance compensation shall be canceled.
- Compensation claim (for victims suffering from injuries) must be submitted by attaching the original and valid receipt from doctor/hospital/clinic that treated the student's injuries.
- Non-medical care or treatment is not compensable.
- Students may send their inquiries regarding any matter that are not listed here directly to the Universitas Indonesia Head of Student Welfare Sub Directorate at the Central Administration Building, Universitas Indonesia Campus, Depok.

Cause	Condition	Required Document
Train Accident	Injured	1. A notification letter from the Faculty's Associate Dean of Student Affairs to the Directorate of Students Affairs.
		2. Accident Report issued by the police
		3. Treatment report from the attending doctor
		4. Original receipt from the hospital or the attending physician
	Death	1. A notification letter from the Faculty's Associate Dean of Student Affairs to the Directorate of Students Affairs.
		2. Accident Report issued by the police
		3. Accident Report from Polsuska (PT. KAI)
		4. Autopsy report from the hospital
		5. Death Certificate
		6. A copy of the victim's birth certificate
		7. A copy of Family Card
		8. Heir certificate letter from the local district office.
Road Accident	Injured	1. A notification letter from the Faculty's Associate Dean of Student Affairs to the Directorate of Students Affairs.
		2. Accident Report issued by the police
		3. Treatment report from the attending doctor
		4. Original receipt from the hospital or the attending physician and the pharmacy
	Death	1. A notification letter from the Faculty's Associate Dean of Student Affairs to the Directorate of Students Affairs.
		2. Accident Report issued by the police
		3. Accident Report from Transportation Agency
		4. Autopsy report from the hospital
		5. Death Certificate
		6. A copy of the victim's birth certificate
		7. A copy of Family Card
		8. Heir certificate letter from the local district office.

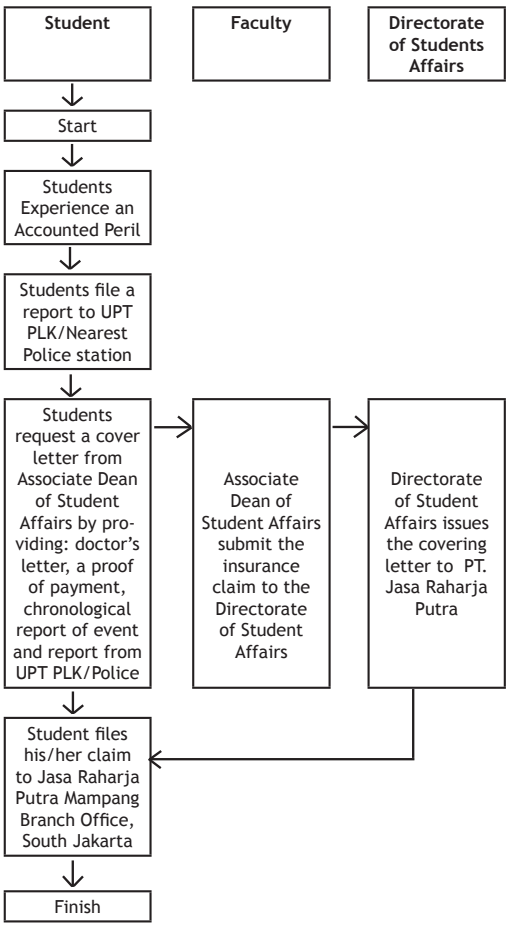
Compensation Receivable from the Insurance Claim *)

- **Death due to an accident :**
  Rp. 5.000.000, -

- **Permanent disability due to accident** : Rp. 10.000.000, -
- **Care / medical Treatment due to accident (maximum payment) :** Rp. 3.500.000, -

*) Subject about to change without notice

Insurance Claims Pro-



General Information

Post Office, Depok Campus

The Depok Campus Post Office offers postage stamp sales, special delivery mail delivery, registered mail, parcel post, money orders, checks and postal giro and savings services such as Batara.

Address: Ground Floor Integrated Student Services Center (PPMT) Building, UI ,Depok Campus, 16424

Important Phone Numbers

UI Campus Salemba

Phone : +6221-330343, 3303455

Fax : +6221-330343

UI Campus Depok

Phone : +6221-7270020, 7270021, 7270022, 7270023, 7863460

Firefighters : 116

SAR : 55 021

Ambulance

RSCM : 118

Accidents: 119, 334 130

Police (on duty) : 525011

Police station

Central Jakarta : 3909922

North Jakarta : 491 017

South Jakarta : 7206011

West Jakarta : 5482371

East Jakarta : 8191478

Depok : 7520014

International Journal of Technology

International Journal of Technology (IJTech) is bi-annual international referred journal with the objectives to explore, develop, and elucidate the knowledge of engineering design and technology, to keep practitioners and researchers informed on current issues and best practices, as well as serving as a platform for the exchange of ideas, knowledge, and expertise among technology researchers and practitioners.

International Journal of Technology provides an opportunity to share detailed insights from different understandings and practices associated with technology. It provides an international forum for cross-disciplinary exchange of insights and ideas regarding value and practices for dissemination. International Journal of Technology will publish your work to international society of practitioners and researchers with interest in technology design and development from a wide variety of sectors.

Website: www.ijtech.eng.ui.ac.id

Quality in Research (QiR) Conference

QiR Conference is a bi-annual international conference organized by FTUI since 1998. The 16th QiR was held in Padang, West Sumatera from 22 – 24 July 2019. This conference provide a chance for students, be it undergraduate, master or doctoral program

students, to present their research findings in front of an international audience. The 17th QiR will be held in October 2023. For more detail information on Qir, please visit: http://qir.eng.ui.ac.id.

International Office

International Office is the university division dedicated to support the internationalization goals of the university and to handle international mobility involving the university and the international civitas academica. Their goal is to assist the international students and scholars handle their academic-related matters at Universitas Indonesia and to bridge Universitas Indonesia's civitas academica with overseas universities. Universitas Indonesia has a worldwide cooperation with various universities all over the world. These cooperations include not only academic but also research collaborations, giving the international access and exposure to its entire proud member.

The International Office of Universitas Indonesia provides various services such as: Bilateral Cooperation (University to University Cooperation), Regional Cooperation (International Associations & International Forums), Government to Government Cooperation (G to G), International Learning and Teaching, Student Exchange, Double Degree, Sandwich Program, Visiting Scholars, Study abroad, Scholarship Opportunities, International Research and Research Training, International Knowledge Transfer; are some of the services provided by the International Office. These opportunities are open for all university members from lecturers to students, be it in their Bachelor, Master or Ph.D program. Students can benefit from these programs in experiencing a once in a life time chance to study and understand different academic cultures in the world.

For further information, please contact:

Central Administration Building

1st Floor, Universitas Indonesia

Kampus Depok, Jawa Barat 16424

Phone/fax : +62 21 – 7888 0139

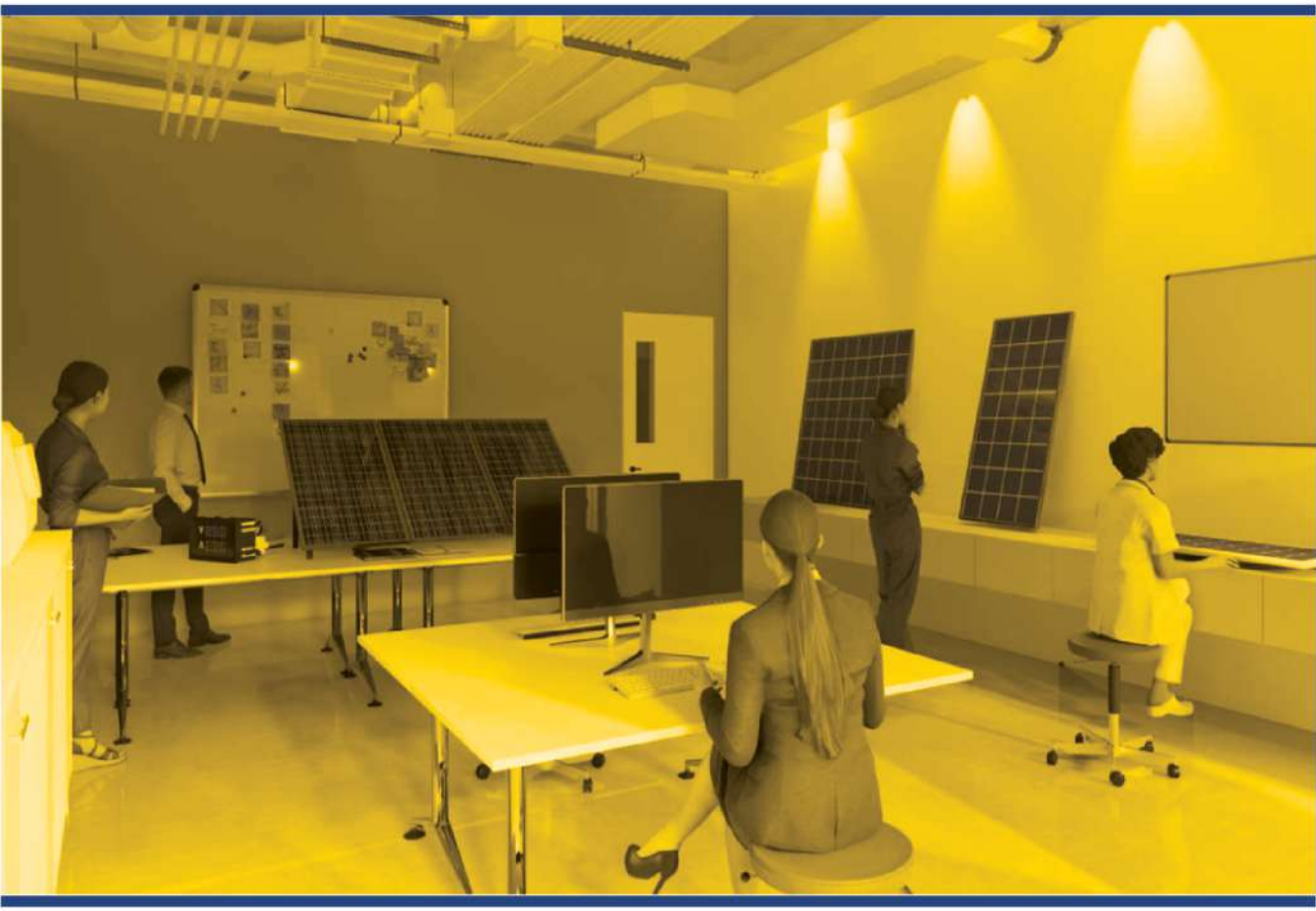
Email : intofui@yahoo.com, io-ui@ui.ac.id

Milist : internationaloffice@yahoogroups.com

Twitter : @intofui

CHAPTER 4

UNDERGRADUATE PROGRAM



Undergraduate Program in Civil Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia Double Degree: Universitas Indonesia and partner university	
2.	**Teaching Institution**	Universitas Indonesia Double Degree: Universitas Indonesia and partner university	
3.	**Faculty**	Engineering	
4.	**Programme Tittle**	Undergraduate Program in Civil Engineering	
5.	**Vision and Misson**	Vision of Civil Engineering Study Programme To become a center of knowledge and technology in Civil Engineering and Environmental Engineering and to play an important role in global market Mission of Civil Engineering Study Programme 1. To improve the quality of graduates in mastering Civil and Environmental Engineering knowledge with solid foundation, and to provide them with internationally standardized environmental insight 2. To actively contribute ideas through research including direct involvement in community service that is oriented to the development of facilities and infrastructure in the Civil and Environmental Engineering discipline, as well as reflecting upon the balanced relationships between human beings and nature. 3. To shape and build students that can demonstrate strong leadership and independent personality, along with the ability to socialize, communication effectively and uphold profession ethics.	
6.	**Class**	Regular, Non Reguler, and International	
7.	**Final Award**	Sarjana Teknik (S.T) Double Degree: Sarjana Teknik (S.T) and Bachelor of Engineering (B.Eng)	
8.	**Accreditation / Recognition**	BAN-PT: Excellent - accredited AUN-QA IABEE	
9.	**Language(s) of Instruction**	Bahasa Indonesia and English	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	High school /equivalent, or D3 / Polytechnique / equivalent, AND pass the entrance exam.	
12.	**Study Duration**	Designed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**Aims of The Programme** 1. Able to design environmentally friendly infrastructure professionally and based on reliable economic analysis; 2. Able to communicate and coordinate effectively; and 3. Have an adaptive attitude and open to the dynamics of science		

14. **Graduate Profiles:**
A professional/responsible Bachelor Engineer who are capable of designing and building civil engineering infrastructures by considering social, economic, and environmental aspects over the infrastructures' life cycle.

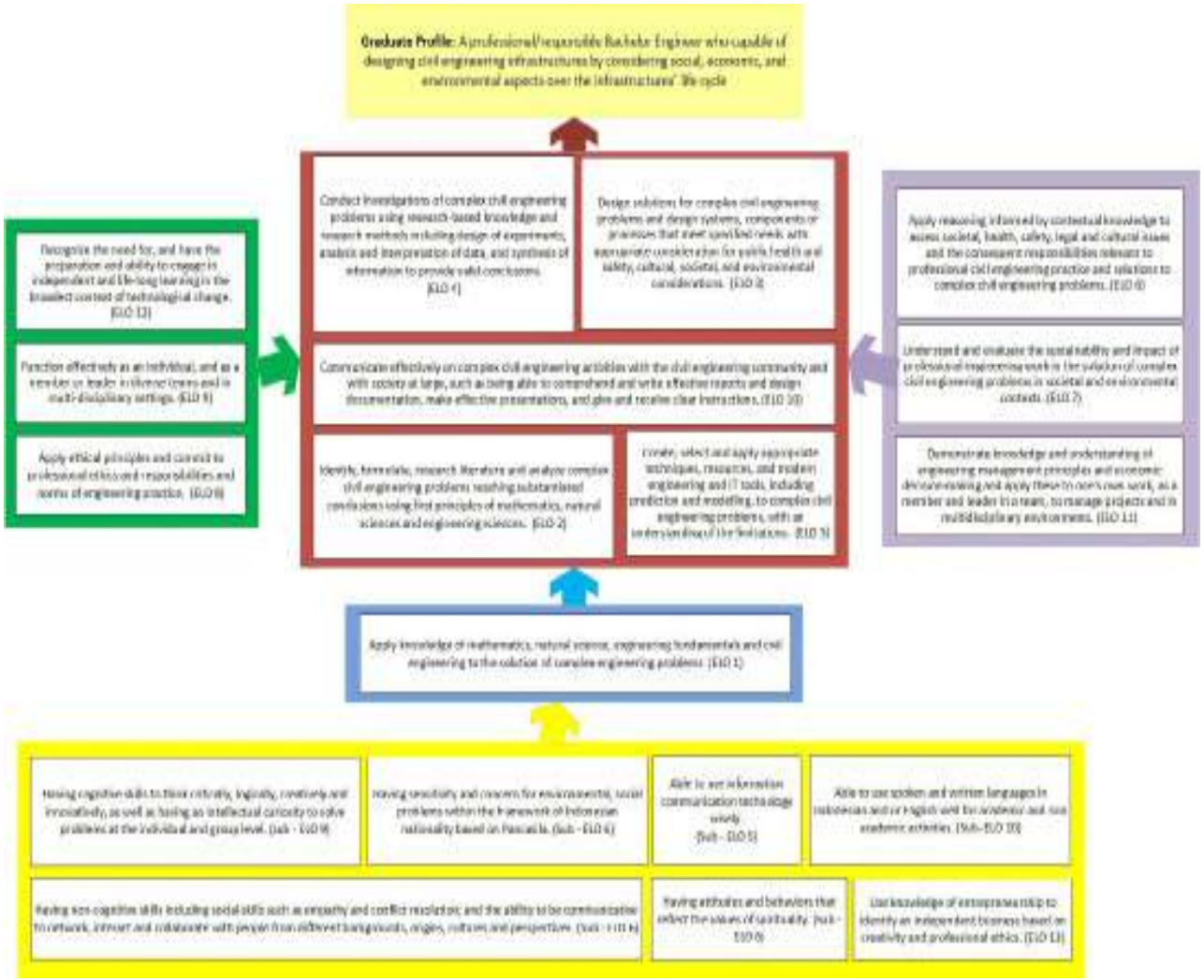
15. Expected Learning Outcomes:

1. Apply knowledge of mathematics, natural science, engineering fundamentals and civil engineering to the solution of complex engineering problems.
2. Identify, formulate, research literature and analyze complex civil engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. Design solutions for complex civil engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
4. Conduct investigations of complex civil engineering problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
5. Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex civil engineering problems, with an understanding of the limitations.
6. Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional civil engineering practice and solutions to complex civil engineering problems.
7. Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex civil engineering problems in societal and environmental contexts.
8. Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
9. Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
10. Communicate effectively on complex civil engineering activities with the civil engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
13. Apply knowledge of entrepreneurship to identify an independent business based on creativity and professional ethics.

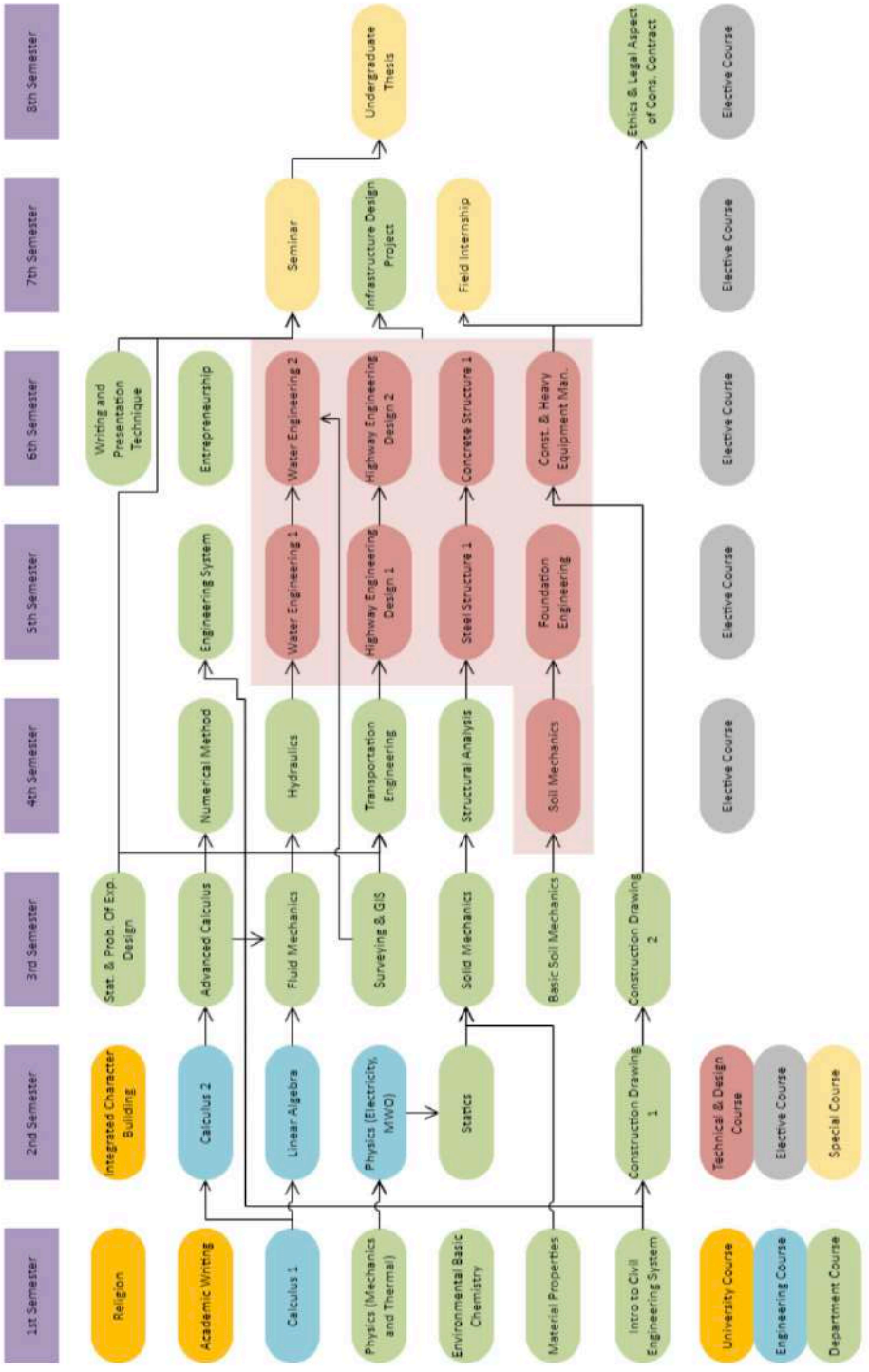
16. **Classification of Subjects**

No.	Classification	Credit Hours (SKS)	Percentage
i	**University General Subjects**	10	6 %
ii	**Basic Engineering Subjects**	13	9 %
iii	**Core Subjects**	88	61 %
iv	**Elective Subjects**	26	18 %
v	**Industrial Attachment, Seminar, Undergraduate Thesis, Project**	8	6%
	Total	145	100 %
	Total Credit Hours to Graduate		145 SKS

Learning Outcomes



Flow Diagram of Subjects Undergraduate Program on Civil Engineering



Course Structure of Undergraduate Program in Civil Engineering (Regular/Non Reguler)

Code	Subject	SKS
	1st Semester	
UIGE 600004	Religion	2
UIGE 600003	Academic Writing	2
ENGE 600001	Calculus 1	3
ENCV 601001	Physics (Mechanics and Thermal)	4
ENCV 601002	Environmental Basic Chemistry	3
ENCV 601003	Intro to Civil Engineering System	3
ENCV 601004	Material Properties	**3**
	Sub-Total	**20**
	2nd Semester	
UIGE 600007	Integrated Charater Building	6
ENGE 600002	Calculus 2	3
ENGE 600007	Physics (Electricity, MWO)	3
ENGE 600004	Linear Algebra	4
ENCV 602001	Construction Drawing 1	2
ENCV 602002	Statics	3
	Sub-Total	**21**
	3rd Semester	
ENCV 603001	Construction Drawing 2	3
ENCV 603002	Solid Mechanics	4
ENCV 603003	Fluid Mechanics	3
ENCV 603004	Statistics and Probabilistic of Experimental Design	2
ENCV 603005	Basic Soil Mechanics	3
ENCV 603006	Surveying & Geospatial Information Systems	2
ENCV 603007	Advanced Calculus	3
	Sub Total	**20**
	4th Semester	
ENCV 604001	Soil Mechanics	3
ENCV 604002	Hydraulics	3
ENCV 604003	Structural Analysis	4
ENCV 604004	Numerical Method	2
ENCV 604005	Transportation Engineering	3
	Elective Course	5
	Sub-Total	**20**
	5th Semester	
ENCV 605001	Foundation Engineering	3
ENCV 605002	Engineering System	2
ENCV 605003	Highway Engineering Design 1	4
ENCV 605004	Steel Structure 1	3
ENCV 605005	Water Engineering 1	3
	Elective Course	5
	Sub-Total	**20**
	6th Semester	
ENCV 606001	Concrete Structure 1	3
ENCV 606002	Construction & Heavy Equipment Management	4
ENCV 606003	Highway Engineering Design 2	2
ENCV 606004	Writing and Presentation Technique	2
ENCV 606006	Water Engineering 2	3
	Elective Course	9
	Sub Total	**19**
	7th Semester	
ENCV600110	Seminar	1
ENCV 600100	Field Internship	3
ENCV 607001	Infrastucture Des ign Project	4
	Elective Courses	7
	Sub Total	**15**
	8th Semester	
ENCV 600200	Undergraduate Thesis	4
ENCV 608001	Ethics and Aspects in Construction Contract Laws	2
	Elective Courses	4
	Sub Total	**10**
	Total	**145**

Electives Course

Code	Elective Courses	SKS
	4th Semester	
ENCV 604 101	Application of the FEM with Program Package Software	3
ENCV 600 300	Internship A	2
ENCV 600 011	Engineering Economics	**3**
Code	**5th Semester**	**SKS**
ENCV 605 102	Cold Formed Steel Structure	2
ENCV 605 301	Airport Planning	2
ENCV 600 012	HSE Protection	**2**
Code	**6th Semester**	**SKS**
ENCV 600 400	Internship B	3
ENCV 606 103	Steel Structure 2	3
ENCV 606 201	Introduction to Geotechnical Investigation	2
ENCV 606 302	Railroad Transportation	2
ENCV 606 303	Transportation and Environment	3
ENCV 606 005	Entrepreneurship	**2**
Code	**7th Semester**	**SKS**
ENCV 607 104	Concrete Structure 2	3
ENCV 607 202	Geotechnical Construction Method	2
ENCV 607 304	Port Planning	3
ENCV 607 401	Coastal Engineering	3
ENCV 607 402	River Engineering	2
ENCV 607 501	Introduction to Stakeholders and Project Communications	2
ENCV 607 502	Introduction to Management System of HSE	2
ENCV 600 600	Special Topic of Research Collaboration	3
ENCV 600 200	Student Affairs	1
Code	**8th Semester**	**SKS**
ENCV 608 403	Stormwater management	2
ENCV 608 404	Water Resources Infrastructure	2
ENCV 608 503	Introduction to Quality & Risk Management	2
ENCV 608 504	Introduction to Procurement Management & Contract Administration and Claim	2

Structural Engineering Courses		
Code	**Course**	**SKS**
ENCV 601 004	Material Properties	2
ENCV 602 002	Statics	3
ENCV 603 002	Solid Mechanics	4
ENCV 604 101	Application of the FEM with Program Package Software	3
ENCV 605 004	Steel Structure 1	3
ENCV 606 001	Concrete Structure 1	3
Geotechnical Engineering Courses		
Code	**Course**	**SKS**
ENCV 602 002	Statics	3
ENCV 603 002	Solid Mechanics	4
ENCV 603 005	Basic Soil Mechanics	3
ENCV 604 001	Soil Mechanics	3
ENCV 605 001	Foundation Engineering	3
	Geotechnical Elective Course	2-3
Construction Management Engineering Courses		
Code	**Course**	**SKS**
ENCV 602 001	Construction Drawing 1	2
ENCV 603 001	Construction Drawing 2	3
ENCV 606 002	Construction & Heavy Equipment Management	4
ENCV 608 001	Ethics and Aspects in Construction Contract Laws	2
ENCV 607 501	Introduction to Stakeholders and Project Communications	3
ENCV 608 503	Introduction to Quality & Risk Management	3
Water Resource Engineering Courses		
Code	**Course**	**SKS**
ENCV 603 003	Fluid Mechanics	3
ENCV 604 002	Hydraulics	3
ENCV 605 005	Water Engineering 1	3
ENCV 606 006	Water Engineering 2	3
ENCV 801 402	Hydrological Engineering	3
ENCV 608 404	Water Resources Infrastructure	3
Transportation Engineering Courses		
Code	**Course**	**SKS**
ENCV 603 006	Surveying & GIS	2
ENCV 604 005	Transportation Engineering	3

ENCV 606 303	Transportation & Environment	2
ENCV 605 301	Airport Planning	2
ENCV 803 502	Public Transportation Planning	3
ENCV 803 508	Logistics Transportation	3

Transition Policy from the 2016 to the 2020 Curriculum

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow this transition rules.
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd semester while in previous curriculum in even semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in equivalence table have not changed, both in names and credits.
5. When there is a change in the course credits, then the number of graduation credits counted in, is the number of credits when it was taken. The same or equivalent courses when are equated with different credits, if retaken, or just taken will be acknowledged under a new name and credits. (see course equivalence table).
6. When a compulsory subject in the curriculum 2016 is deleted and there is no equivalence in the curriculum 2020 then:
7. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 145 credits.For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 145 credits.

Equalizing the 2016 Curriculum Subjects and the 2020 Curriculum for Civil Engineering Undergraduate

No	Name of Courses in Curriculum 2016	Credits 2016	Name of Courses in Curriculum 2020	Credits 2020	Remarks
1	Integrated Character Building - A (MPKT A)	6	Integrated Character Building (MPKT)	6	Those who have not pass MPKT-A and MPKT-B can enroll in MPKT Those who have not pass one of MPKT-A or MPKT-B; do not have to retake MPKT
2	Integrated Character Building - B (MPKT B)	6			
3	Sport/Art	1	None		Those who have not pass; see transition rule #6
4	Religion	2	Religion	2	The change of teaching learning method; (refer to course plan / syllabus)
5	English	3	English	2	
6	Physics - Mechanics and Thermal	3	Physics - Mechanics and Thermodynamics	4	The change of course name
7	Physics - Mechanics and Thermal Lab	1	None	-	Those who have not pass the laboratory courses are suggested to enroll in one of new compulsory courses of Curriculum 2020
8	Physics - Electricity, MWO Lab	1	None	-	

9	Basic Chemistry	2	Environmental Basic Chemistry	2	Those who have not pass one of Basic Chemistry or Advanced Chemistry should enroll in Environment Basic Chemistry
10	Advanced Chemistry	2		2	
11	Construction Drawing	2	Construction Drawing 1	2	The change of course name
12	Surveying	3	Surveying & Geospatial Information System	2	The change of course name & credits
13	Statics	4	Statiics	3	The change of course credit
14	Statistic & Probabilistic	2	Statistic & Probabilistic Experiments	2	The change of course name
15	Building Construction	3	Construction Drawing 2	3	The change of course name
16	Structural Analysis	3	Structural Analysis	4	The change of course credit
17	Road Geometric Design	3	Highway Engineering Design 1	4	Those who have not pass one of Road Geometric Design or Pavement Engineering should enroll in both Highway Engineering 1 and 2
18	Pavement Design	3	Highway Engineering Design 2	2	
19	Construction Management	2	Construction & Heavy Equipment Management	4	Those who have not pass one of Construction Management or Construction Methods & Equipments should enroll in Construction & Heavy Equipment Management
20	Construction Methods & Equipments	2			
21	Capstone Project	3	Infrastructure Design Project	4	The change of course name & credits
22	Internship	3	Field Internship	3	The change of prequisite
23	Seminar	1	Seminar	1	
24	Final Project	4	Final Project	4	
25	-		Student Activity	1	New courses, compulsory for batch 2018 onward
26	-		Civil Engineering System	2	
27	-		Effective Communication	2	
28	-		Internship A Internship B	2/3	New elective courses

Course Structure International Undergraduate Program on Civil Engineering

Code	Subject	SKS
	1st Semester	
UIGE 600 003	Academic Writing	2
ENGE 610 001	Calculus 1	3
ENCV 611 001	Physics (Mechanics and Thermal)	4
ENCV 611 002	Statics	3
ENCV 611 003	Construction Drawing 1	2
ENCV 611 004	Material Properties	3
ENCV 611 005	Intro to Civil Engineering System	3
	Sub Total	**20**
	2nd Semester	
ENGE 610002	Calculus 2	3
ENGE 610007	Physics (Electricity, MWO)	3
ENGE 610004	Linear Algebra	4
ENCV 612 001	Basic Soil Mechanics	3
ENCV 612 002	Construction Drawing 2	3
ENCV 612 003	Solid Mechanics	4
	Sub Total	**20**
	3rd Semester	
ENCV 613 001	Statistics and Probabilistic of Experimental Design	2
ENCV 613 002	Advanced Calculus	3
ENCV 613 003	Environmental Basic Chemistry	3
ENCV 613 004	Soil Mechanics	3
ENCV 613 005	Fluid Mechanics	3
ENCV 613 006	Surveying & Geospatial Information Systems	2
ENCV 613 007	Structural Analysis	4
	Sub Total	**20**
	4thSemester	
ENCV 614 001	Engineering System	2
ENCV 614 002	Transportation Engineering	3
ENCV 614 003	Steel Structure 1	3
ENCV 614 004	Hydraulics	3
ENCV 614 005	Numerical Method	2
ENCV 614 006	Foundation Engineering	3
	Elective Courses	**3**
	Sub Total	**19**
	5th Semester	
UIGE 600 004	Religion	2
ENCV 615 001	Highway Engineering Design 1	4
ENCV 615 002	Water Engineering 1	3
ENCV 615 003	Construction & Heavy Equipment Management	4
ENCV 615 004	Concrete Structure 1	3
	Elective Courses	**4**
	Sub Total	**20**
	6th Semester	
UIGE 610 011	Integrated Charater Building	6
ENCV 616 001	Water Engineering 2	3
ENCV 616 002	Writing and Presentation Technique	2
ENCV 616 003	Highway Engineering Design 2	2
ENCV 616 004	Ethics and Legal Aspect of Construction Contract	2
ENCV 616 005	Infrastructure Design Project	4
	Sub Total	**19**
	7th Semester	
ENCV 610 100	Field Internship	3
	Elective Course	10
	Sub Total	**13**
	8th Semester	
ENCV 610 300	Final Project	5
	Elective Course	9
	Total	**14**
	Total	**145**

Code	Elective Courses	SKS
	Odd Semester	
ENCV 617 101	Cold Formed Steel Structure	2
ENCV 617 102	Concrete Structure 2	3
ENCV 617 201	Geotechnical Construction Method	2
ENCV 617 301	Airport Planning	2
ENCV 617 302	Port Planning	3
ENCV 617 401	Coastal Engineering	3
ENCV 617 402	River Engineering	2
ENCV 617 501	Introduction to Stakeholders and Project Communications	2
ENCV 617 502	Introduction to Management System of HSE	2
ENCV 610 200	Service Learning	1
ENCV 610 400	Internship A	2
ENCV 610 500	Special Topic of Research Collaboration	3
ENGE 610 012	HSE Protection	2
ENCV 615 005	Entrepreneurship	2
ENCV 618 503	Introduction to Quality & Risk Management	2
	Even Semester	
ENCV 618 103	Application of the FEM with Program Package Software	3
ENCV 618 104	Steel Structure 2	3
ENCV 618 303	Railroad Transportation	2
ENCV 618 304	Transportation and Environment	3
ENCV 618 403	Stormwater management	2
ENCV 618 404	Water Resources Infrastructure	2
ENCV 618 503	Introduction to Quality & Risk Management	2
ENCV 618 504	Introduction to Procurement Management & Contract Administration and Claim	2
ENCV 610 600	Internship B	3
ENCV 610 011	Engineering Economics	3

Transition Policy from the 2016 to the 2020 Curriculum

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow this transition rules.
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd semester while in previous curriculum in even semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in equivalence table have not changed, both in names and credits.
5. When there is a change in the course credits, then the number of graduation credits counted in, is the number of credits when it was taken. The same or equivalent courses when are equated with different credits, if retaken, or just taken will be acknowledged under a new name and credits. (see course equivalence table).
6. When a compulsory subject in the curriculum 2016 is deleted and there is no equivalence in the curriculum 2020 then:

a. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 145 credits.

b. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 145 credits.

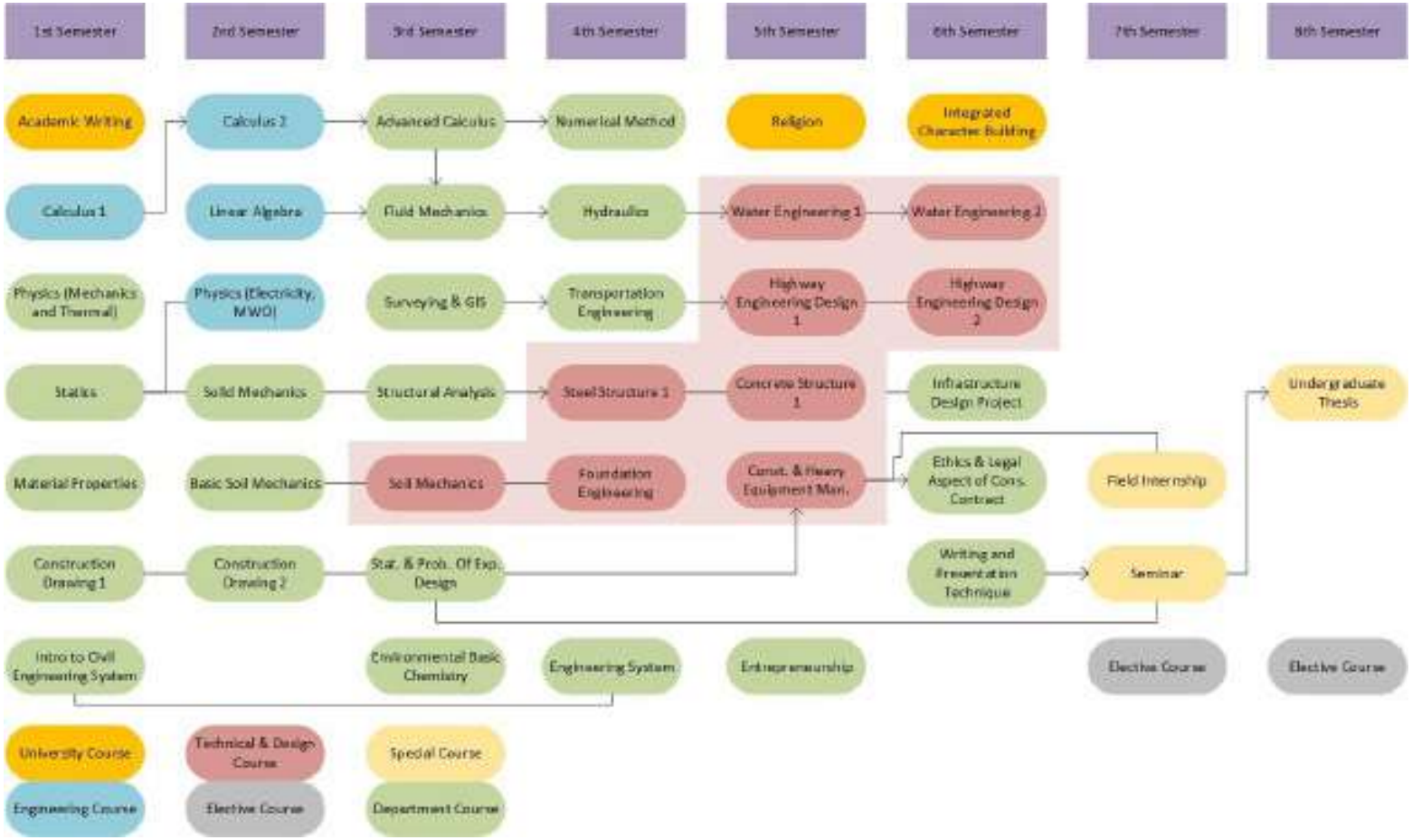
Equalizing the 2016 Curriculum Subjects and the 2020 Curriculum for Civil Engineering Undergraduate

No	Name of Courses in Curriculum 2016	Credits 2016	Name of Courses in Curriculum 2020	Credits 2020	Remarks
1	Integrated Character Building - A (MPKT A)	6	Integrated Character Building (MPKT)	6	Those who have not pass MPKT-A and MPKT-B can enroll in MPKT Those who have not pass one of MPKT-A or MPKT-B; do not have to retake MPKT
2	Integrated Character Building - B (MPKT B)	6			
3	Sport/Art	1	None		Those who have not pass; see transition rule #6
4	Religion	2	Religion	2	The change of teaching learning method; (refer to course plan / syllabus)
5	English	3	English	2	
6	Physics - Mechanics and Thermal	3	Physics - Mechanics and Thermodynamics	4	The change of course name
7	Physics - Mechanics and Thermal Lab	1	None	-	Those who have not pass the laboratory courses are suggested to enroll in one of new compulsory courses of Curriculum 2020
8	Physics - Electricity, MWO Lab	1	None	-	
9	Basic Chemistry	2	Environmental Basic Chemistry	2	Those who have not pass one of Basic Chemistry or Advanced Chemistry should enroll in Environment Basic Chemistry
10	Advanced Chemistry	2		2	

Electives Course

11	Construction Drawing	2	Construction Drawing 1	2	The change of course name
12	Surveying	3	Surveying & Geospatial Information System	2	The change of course name & credits
14	Statistic & Probabilistic	2	Statistic & Probabilistic	2	The change of course name
15	Building Construction	3	Construction Drawing 2	3	The change of course name
16	Structural Analysis	3	Structural Analysis	4	The change of course credit
17	Road Geometric Design	3	Highway Engineering Design 1	4	Those who have not pass one of Road Geometric Design or Pavement Engineering should enroll in both Highway Engineering 1 and 2
18	Pavement Design	3	Highway Engineering Design 2	2	
19	Construction Management	2	Construction & Heavy Equipment Management	4	Those who have not pass one of Construction Management or Construction Methods & Equipments should enroll in Construction & Heavy Equipment Management
20	Construction Methods & Equipments	2			
21	Capstone Project	3	Infrastructure Design Project	4	The change of course name & credits
22	Internship	3	Field Internship	3	The change of prequisite
23	Seminar	1	Seminar	1	
24	Final Project	4	Final Project	4	
25	-		Student Activity	1	New courses, compulsory for batch 2018 onward
26	-		Civil Engineering System	2	
27	-		Effective Communication	2	
28	-		Internship A Internship B	2/3	New elective courses

Flow Diagram of Subjects – International Undergraduate Program on Civil Engineering



Civil Engineering Fast-Track Curriculum (Undergraduate and Graduate)

Code	Subject	SKS
	1st Semester	
UIGE 600004	Religion	2
UIGE 600003	Academic Writing	**2**
ENGE 600 001	Calculus 1	3
ENCV 601 001	Physics (Mechanics and Thermal)	4
ENCV 601 002	Environmental Basic Chemistry	**3**
ENCV 601 003	Intro to Civil Engineering System	3
ENCV 601 004	Material Properties	3
	Sub Total	**20**
	2nd Semester	
UIGE 600007	Integrated Character Building	6
ENGE 600002	Calculus 2	3
ENGE 600007	Physics (Electricity, MWO)	3
ENGE 600004	Linear Algebra	4
ENCV 602 001	Construction Drawing 1	2
ENCV 602 002	Statics	3
	Sub Total	**21**
	3rd Semester	
ENCV 603 001	Construction Drawing 2	3
ENCV 603 002	Solid Mechanics	4
ENCV 603 003	Fluid Mechanics	3
ENCV 603 004	Statistics and Probabilistic of Experimental Design	2
ENCV 603 005	Basic Soil Mechanics	3
ENCV 603 006	Surveying & Geospatial Information Systems	2
ENCV 603 007	Advanced Calculus	3
	Sub Total	**20**
	4thSemester	
ENGE 600 011	Engineering Economics	3
ENCV 604 001	Soil Mechanics	3
ENCV 604 002	Hydraulics	3
ENCV 604 003	Structural Analysis	4
ENCV 604 004	Numerical Method	2
ENCV 604 005	Transportation Engineering	3
	Elective Courses	**9**
	Sub Total	**20**
	5th Semester	
ENGE 600 012	HSE Protection	2
ENCV 605 001	Foundation Engineering	3
ENCV 605 002	Engineering System	2
ENCV 605 003	Highway Engineering Design 1	4
ENCV 605 004	Steel Structure 1	3
ENCV 605 005	Water Engineering 1	3
	Elective Courses	9
	Sub Total	**20**
	6th Semester	
ENCV 606 001	Concrete Structure 1	3
ENCV 606 002	Construction & Heavy Equipment Management	4
ENCV 606 003	Highway Engineering Design 2	2
ENCV 606 004	Effective Communication	2
ENCV 606 005	Entrepreneurship	**2**
ENCV 606 006	Water Engineering 2	3
	Elective Course	3
	Sub Total	**19**
	7th Semester	
ENCV 600 100	Field Internship	3
ENCV 600 300	Service Learning	1
ENCV 607 001	Infrastructure Design Project	4
ENCV 801 101	Applied Mathematics (S2)	3
ENCV 801 102	Value and System Engineering (S2)	3
	Mandatory Specialization Course S2	3
	Sub Total	**17**
	8th Semester	
ENCV 608 001	Ethics and Legal Aspect of Construction Contract	2
ENCV 802 103	Research Methodology	3
ENCV 800 104	Pra Master Thesis	4
	Mandatory Specialization Course S2	3

	Sub Total	**12**
	9th Semester	
ENCV 800 105	Master Thesis	4
	Mandatory/Elective Specialization Course S2	3
	Mandatory/Elective Specialization Course S2	3
	Sub Total	**15**
	10th Semester	
ENCV 800 106	Scientific Pub;lication	2
	Mandatory/Elective Specialization Course S2	3
	Mandatory/Elective Specialization Course S2	3
	Mandatory/Elective Specialization Course S2	3
	Sub Total	**10**

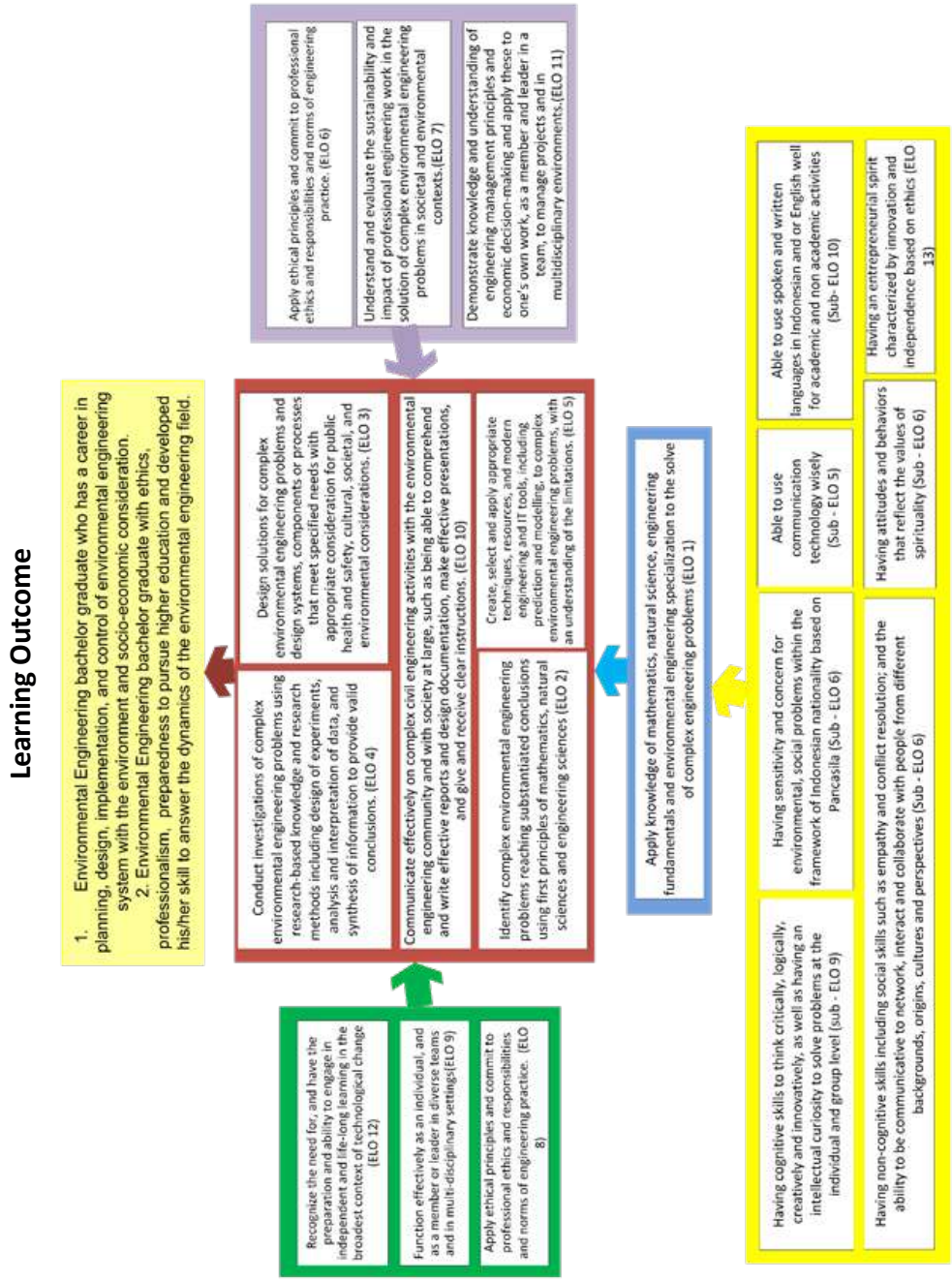
Undergraduate Program in Environmental Engineering

Program Specification

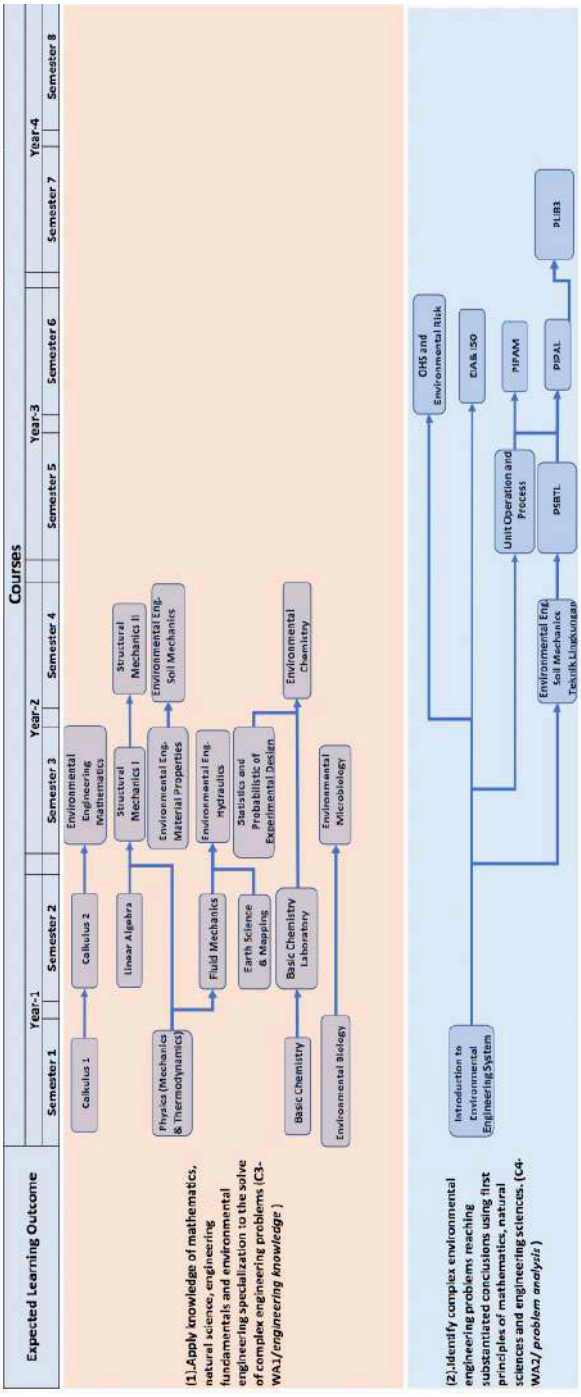
1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Programme Tittle**	Undergraduate Program in Environmental Engineering	
5.	**Vision and Misson**	The Vision: "As an exceptional center for science and technology in the field of environmental engineering that contributes to the global market" The Mission: a. Produce graduates who mastered the technique of the environment with the underlying technology of basic civil and environmental engineering and a robust international standard. b. Actively contribute ideas to society through research and development of environmental engineering facilities and infrastructure, considering the harmonious relationship between humans and nature. c. Develop students to have leadership skills, independence, sociable, communicative, and upholds professional ethics.	
6.	**Class**	Regular and Non Reguler	
7.	**Final Award**	Sarjana Teknik (S.T)	
8.	**Accreditation / Recognition**	National Accreditation: Excellent accreditation from BAN – PT: International accreditation from IABEE and AUN-QA	
9.	**Language(s) of Instruction**	Bahasa Indonesia	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	High school /equivalent, or D3 / Polytechnique / equivalent, AND pass the entrance exam.	
12.	**Study Duration**	Designed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**The aims of the programme** is produce environmental engineering bachelor graduate that protects the environment, through the design, implementation, and control in the areas of : 1. Drinking Water Supply. 2. Wastewater management and solid waste management (Hazardous and Non-Hazardous) 3. Drainage 4. Environmental Sanitation 5. Water Resource 6. Air Pollution 7. Pollution Prevention 8. Environmental Impact Assessment		

14.	**Profile of Graduates** 1. Environmental Engineering bachelor graduate who has a career in planning, design, implementation, and control of environmental engineering system with the environment and socio-economic consideration. 2. Environmental Engineering bachelor graduate with ethics, professionalism, preparedness to pursue higher education and developed his/her skill to answer the dynamics of the environmental engineering field.
15.	**Expected Learning Outcomes (ELO):** 1. Apply knowledge of mathematics, natural science, engineering fundamentals and environmental engineering specialization to the solve of complex engineering problems (C3-WA1/engineering knowledge) 2. Identify complex environmental engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (C4-WA2/problem analysis) 3. Design solutions for complex environmental engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (C5-WA3/design or development of solutions) 4. Conduct investigations of complex environmental engineering problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions. (C4-WA4/investigation) 5. Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex environmental engineering problems, with an understanding of the limitations. (P3-WA5/modern tool usage) 6. Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional civil engineering practice and solutions to complex environmental engineering problems.(C3-WA6/the engineer and society) 7. Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex environmental engineering problems in societal and environmental contexts. (C3-WA7/environment and sustainability) 8. Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (A4-WA8/ethics) 9. Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings. (P3-WA9/individual and team work) 10. Communicate effectively on complex civil engineering activities with the environmental engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. (C3, P3/WA10 communication) 11. Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. (C3-WA11/project management and finance) 12. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. (C3-WA12/lifelong learning) 13. Use knowledge of entrepreneurship to identify an independent business based on creativity and professional ethics. (C3-UI-E)
16.	**Classification of Subjects**

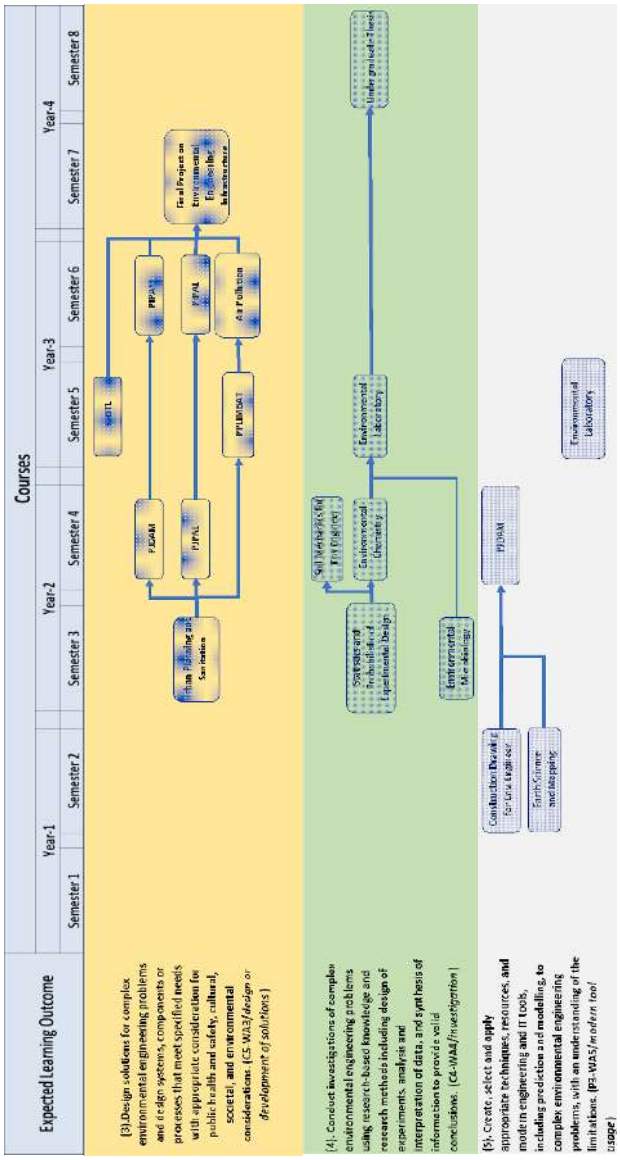
No.	Classification	Credit Hours (SKS)	Percentage
i	University General Subjects	10	6,25 %
ii	Basic Engineering Subjects	12	8,33 %
iii	Core Subjects	88	61,11 %
iv	Electives	26	18,06 %
v	Industrial Attachment, Seminar, Undergraduate Thesis	9	6,25 %
	Total	145	100 %
	Total Credit Hours to Graduate		145 SKS



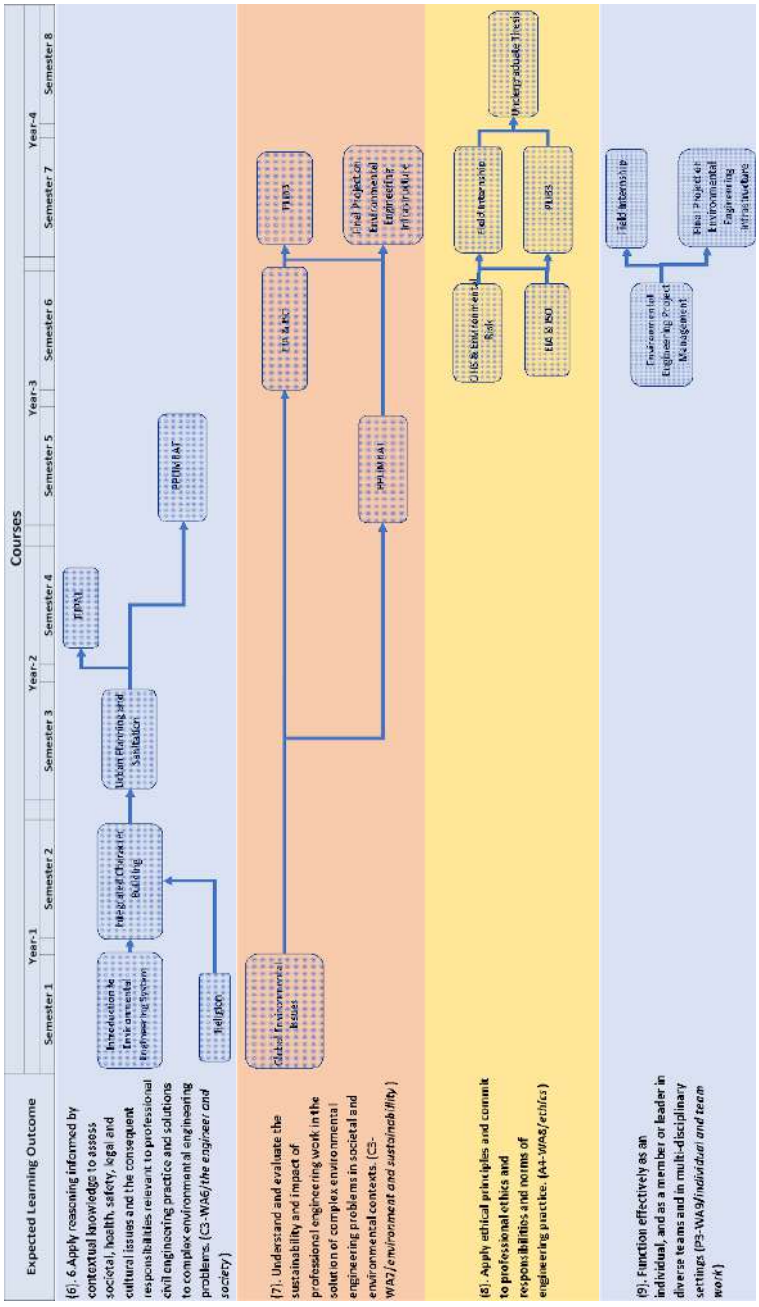
Flow Diagram Of Subject to Reach ELO in Environmental Engineering Undergraduate Programme



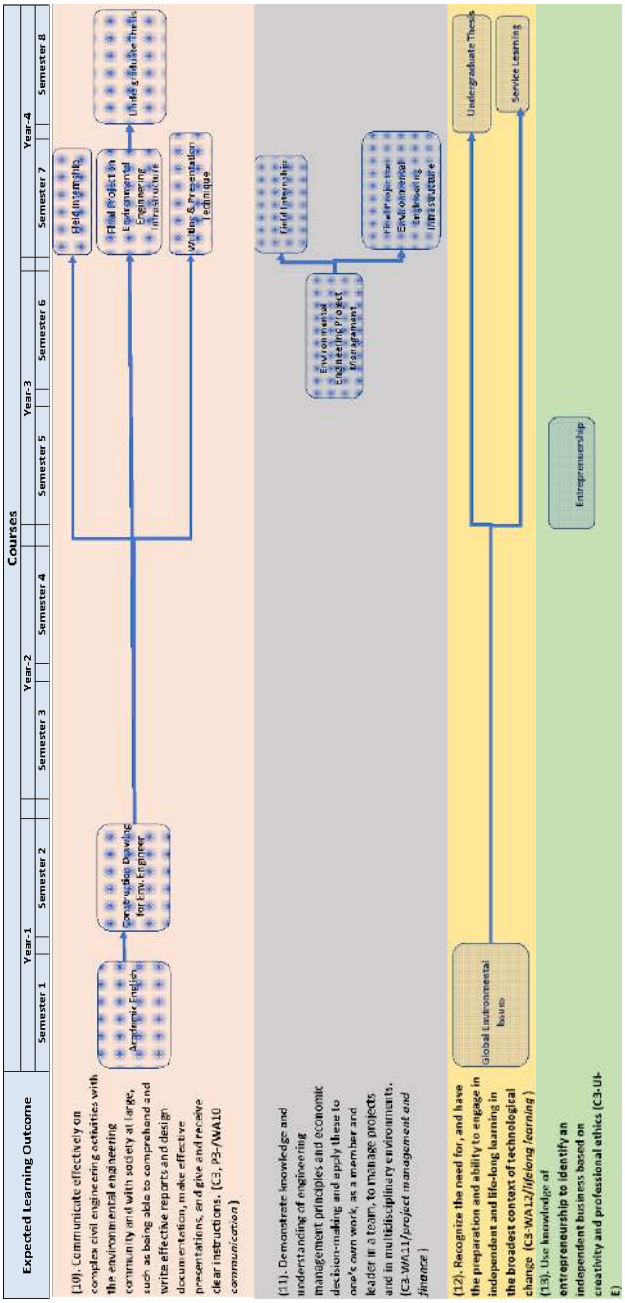
PSBTL: Structural Design for Environmental Engineering Infra-structure	PIPAL: Domestic Wastewater Treatment Plant Design
EIA & ISO: Environmental Impact Assessment & ISO	PJPAL: Wastewater Collection System Design
PIPAM: Water Treatment Plant Design	PLIB3: Hazardous dan Industrial Waste Treatment
PJDAM: Drinking Water Distribution System Design	PPLIMBAT: Integrated Solid Waste Management Planning
OHS and Environmental Risk : Occupational Health and Safety and Environmental Risk	



PSBTL: Structural Design for Environmental Engineering Infrastructure	PIPAL: Domestic Wastewater Treatment Plant Design
EIA & ISO: Environmental Impact Assessment & ISO	PJPAL: Wastewater Collection System Design
PIPAM: Water Treatment Plant Design	PLIB3: Hazardous dan Industrial Waste Treatment
PJDAM: Drinking Water Distribution System Design	PPLIMBAT: Integrated Solid Waste Management Planning
OHS and Environmental Risk : Occupational Health and Safety and Environmental Risk	



PSBTL: Structural Design for Environmental Engineering Infrastructure	PIPAL: Domestic Wastewater Treatment Plant Design
EIA & ISO: Environmental Impact Assessment & ISO	PJPAL: Wastewater Collection System Design
PIPAM: Water Treatment Plant Design	PLIB3: Hazardous dan Industrial Waste Treatment
PJDAM: Drinking Water Distribution System Design	PPLIMBAT: Integrated Solid Waste Management Planning
OHS and Environmental Risk : Occupational Health and Safety and Environmental Risk	



PSBTL: Structural Design for Environmental Engineering Infrastructure	PIPAL: Domestic Wastewater Treatment Plant Design
EIA & ISO: Environmental Impact Assessment & ISO	PJPAL: Wastewater Collection System Design
PIPAM: Water Treatment Plant Design	PLIB3: Hazardous dan Industrial Waste Treatment
PJDAM: Drinking Water Distribution System Design	PPLIMBAT: Integrated Solid Waste Management Planning
OHS and Environmental Risk : Occupational Health and Safety and Environmental Risk	

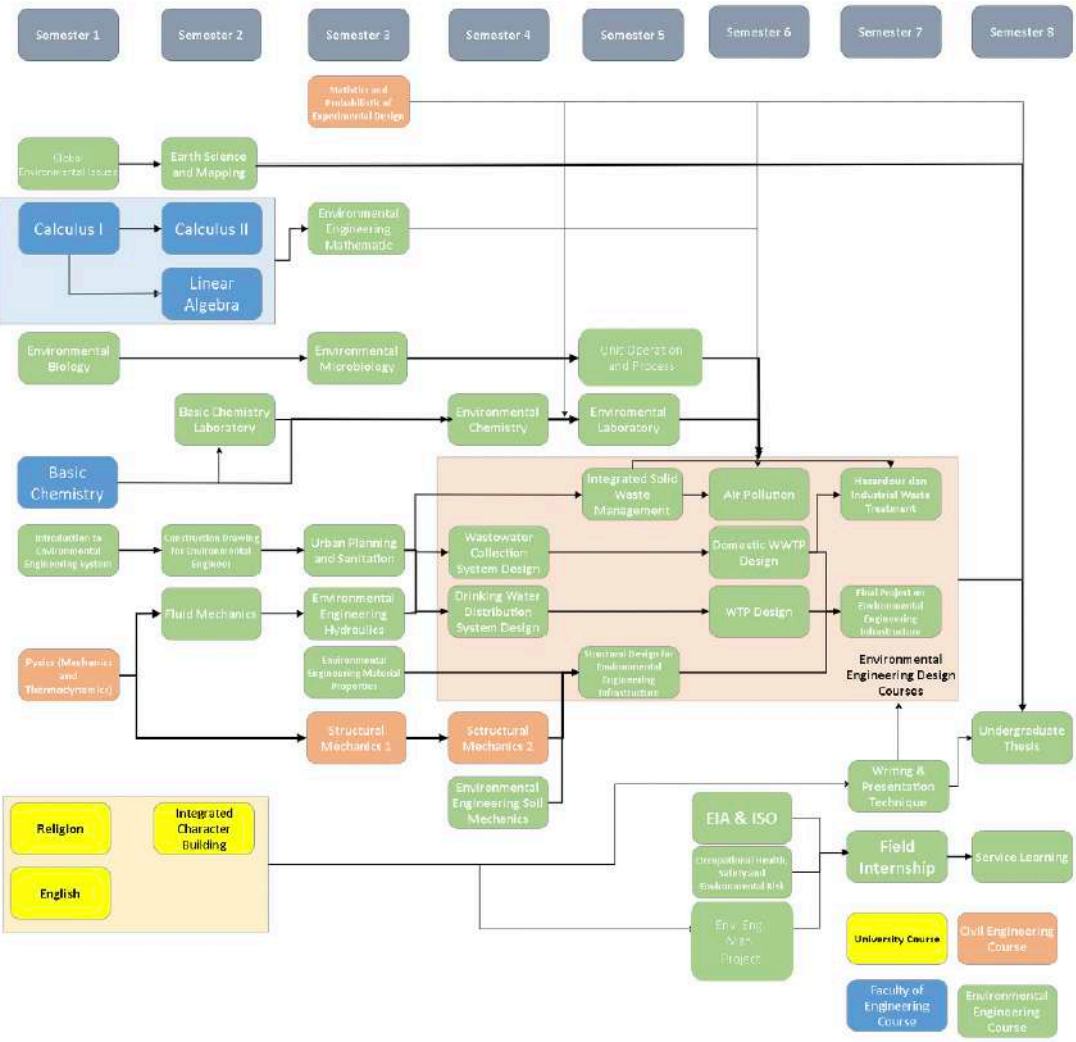
Code	Course	SKS	ELO													Total Assessment
			Engineering Knowledge	Problem Analysis	Design	Experiments	Modern Tools	Engineer and Society	Sustainability	Ethics	Individual and Teamwork	Communication	Project Management	Lifelong	(Ul-e)	
			1	2	3	4	5	6	7	8	9	10	11	12	13	
Semester 1		**20**														
UIGE 600 003	Academic English	2										O				1
UIGE 600 004	Religion	2						O								1
ENGE 600 001	Calculus 1	3	O													1
ENGE 600 009	Basic Chemistry	2	O													1
ENCV 601 001	Physics (Mechanics and Thermodynamics)	4	O													1
ENEV 601 001	Introduction to Environmental Engineering System	3		O				O								2
ENEV 601 002	Global Environmental Issues	2							O					O		2
ENEV 601 003	Environmental Biology	2	O													1
Semester 2		**20**														
UIGE 600 006	Integrated Character Building	5	O													1
ENGE 600 002	Calculus 2	3	O													1
ENGE 600 004	Linear Algebra	4	O													1
ENCV 603 003	Fluid Mechanics	3	O													1
ENEV 602 001	Earth Science and Mapping	2	O				O									2
ENEV 602 002	Construction Drawing for Environmental Engineer	2					O					O				2
ENEV 602 003	Basic Environmental Chemistry	1	O													1

Code	Course	SKS	ELO													Total Assessment
			Engineering Knowledge	Problem Analysis	Design	Experiments	Modern Tools	Engineer and Society	Sustainability	Ethics	Individual and Teamwork	Communication	Project Management	Lifelong	(Ul-e)	
			1	2	3	4	5	6	7	8	9	10	11	12	13	
Semester 3		**18**														
ENCV 603 004	Statistics and Probabilistic of Experimental Design	2	O			O										2
ENEV 603 001	Environmental Engineering Mathematic	3	O													1
ENEV 603 002	Environmental Microbiology	3	O			O										2
ENEV 603 003	Environmental Engineering Material Properties	2	O													1
ENEV 603 004	Environmental Hydraulics	3	O													1
ENEV 603 005	Structural Mechanics I	2	O													1
ENEV 603 006	Urban Planning and Sanitation	3			O			O								2
Semester 4		**18**														
ENEV 604 001	Structural Mechanics II	2	O													1
ENEV 604 002	Drinking Water Distribution System Design	2			O		O									2
ENEV 604 003	Soil Mechanics for Environmental Engineer	3	O	O		O										3
ENEV 604 004	Environmental Chemistry	3	O			O										2
ENEV 604 005	Wastewater Collection System Design	2			O			O								2
ENGE 600 011	Engineering Economy*	3														0
	Elective/Minor	3	O													1

Code	Course	SKS	ELO													Total Assessment
			Engineering Knowledge	Problem Analysis	Design	Experiments	Modern Tools	Engineer and Society	Sustainability	Ethics	Individual and Teamwork	Communication	Project Management	Lifelong	(Ul-e)	
			1	2	3	4	5	6	7	8	9	10	11	12	13	
Semester 5		**20**														
ENEV 605 002	Unit Operation and Process	4		O												1
ENEV 605 003	Environmental Laboratory	3				O	O									2
ENEV 605 004	Integrated Solid Waste Management Planning	3			O			O	O							3
ENEV 605 005	Structural Design for Environmental Engineering Infrastructure	3		O	O											2
	Elective/Minor	7														0
Semester 6		**20**														
ENEV 606 001	Occupational Health, Safety and Environmental Risk	2		O						O						2
ENEV 606 002	Environmental Impact Assessment and ISO	3		O					O	O						3
ENEV 606 003	Environmental Engineering Project Management	3									O		O			2
ENEV 606 004	Water Treatment Plant Design	3		O	O											2
ENEV 606 005	Domestic Wastewater Treatment Plant Design	3		O	O											2
ENEV 606 006	Air Pollution	3			O											1
	Elective/Minor	3														0

Code	Course	SKS	ELO													Total Assessment
			Engineering Knowledge	Problem Analysis	Design	Experiments	Modern Tools	Engineer and Society	Sustainability	Ethics	Individual and Teamwork	Communication	Project Management	Lifelong	(Ul-e)	
			1	2	3	4	5	6	7	8	9	10	11	12	13	
Semester 7		15														
ENEV 600 100	Field Internship	3								O	O	O	O			4
ENEV 607 001	Final Project on Environmental Engineering Infrastructure	4			O				x		O	O	O			4
ENEV 607 002	Hazardous dan Industrial Waste Treatment	3		O					O	O						3
ENEV 603 007	Writing and Presentation Technique	2								O		O				2
	Elective/Minor	3														0
Semester 8		13														
ENEV 600 300	Service Learning	1												O		1
ENEV 600 400	Undergraduate Thesis	5				O				O		O		O		4
	Elective/Minor	7														0
	Total	144														77
	Number of Course assessed by each ELO		19	19	9	9	6	4	5	4	6	3	6	3	3	0

Flow Diagram of Subjects in Environmental Engineering Undergraduate Programme



PSBTL: Structural Design for Environmental Engineering Infrastructure	PIPAL: Domestic Wastewater Treatment Plant Design
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PJDAM: Drinking Water Distribution System Design	PPLIMBAT: Integrated Solid Waste Management Planning
OHS and Environmental Risk : Occupational Health and Safety and Environmental Risk	

Course Structure Undergraduate Program Environmental Engineering

Code	Subject	SKS
	1st Semester	
UIGE 600 003	Academic English	2
UIGE 600 004	Religion	2
ENGE 600 001	Calculus 1	3
ENGE 600 009	Basic Chemistry	2
ENCV 601 001	Physics (Mechanics and Thermodynamics)	4
ENEV 601 001	Introduction to Environmental Engineering System	3
ENEV 601 002	Global Environmental Issues	**2**
ENEV 601 003	Environmental Biology	**2**
	Sub Total	**20**
	2nd Semester	
UIGE 600 007	Integrated Character Building	6
ENGE 600 002	Calculus 2	3
ENGE 600 004	Linear Algebra	4
ENCV 603 003	Fluid Mechanics	3
ENEV 602 001	Earth Science and Mapping	2
ENEV 602 002	Construction Drawing for Environmental Engineer	2
ENEV 602 003	Basic Environmental Chemistry	1
	Sub Total	**21**
	3rd Semester	
ENCV 603 004	Statistics and Probabilistic of Experimental Design	2
ENEV 603 001	Environmental Engineering Mathematic	3
ENEV 603 002	Environmental Microbiology	3
ENEV 603 003	Environmental Engineering Material Properties	2
ENEV 603 004	Environmental Hydraulics	3
ENEV 603 005	Structural Mechanics I	2
ENEV 603 006	Urban Planning and Sanitation	3
	Sub Total	**18**
	4th Semester	
ENEV 604 001	Structural Mechanics II	2
ENEV 604 002	Drinking Water Distribution System Design	2
ENEV 604 003	Soil Mechanics for Environmental Engineer	3
ENEV 604 004	Environmental Chemistry	3
ENEV 604 005	Wastewater Collection System Design	2
	Elective/Minor	6
	Sub Total	**18**
	5th Semester	
ENEV 605 002	Unit Operation and Process	4
ENEV 605 003	Environmental Laboratory	3
ENEV 605 004	Integrated Solid Waste Management Planning	3
ENEV 605 005	Structural Design for Environmental Engineering Infrastructure	3
	Elective/Minor	7
	Sub Total	**20**
	6th Semester	
ENEV 606 001	Occupational Health, Safety and Environmental Risk	2
ENEV 606 002	Environmental Impact Assessment and ISO	3
ENEV 606 003	Environmental Engineering Project Management	3
ENEV 606 004	Water Treatment Plant Design	3
ENEV 606 005	Domestic Wastewater Treatment Plant Design	3
ENEV 606 006	Air Pollution	3
	Elective/Minor	3
	Sub Total	**20**
	7th Semester	
ENEV 600 100	Field Internship	3
ENEV 607 001	Final Project on Environmental Engineering Infrastructure	4
ENEV 607 002	Hazardous and Industrial Waste Treatment	3
ENEV 607 003	Writing and Presentation Technique	2
	Elective/Minor	3

	Sub Total	**15**
	8th Semester	
ENEV 600 300	Service Learning	1
ENEV 600 400	Undergraduate Thesis	5
	Elective/Minor	7
	Sub Total	**13**
	Total	**145**

Transition Policy from the 2016 to the 2020 Curriculum

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow this transition rules
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd semester while in previous curriculum in even semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in equivalence table have not changed, both in names and credits.
5. When there is a change in the course credits, then the number of graduation credits counted in, is the number of credits when it was taken. The same or equivalent courses when are equated with different credits, if retaken, or just taken will be acknowledged under a new name and credits. (see course equivalence table).
6. When a compulsory subject in the curriculum 2016 is deleted and there is no equivalence in the curriculum 2020 then:For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 144 credits. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 144 credits.
7. The shortage of credits due to curriculum changes can be covered by taking new compulsory courses in the 2020 curriculum as stated in the equivalence of courses. The excess of credits due to curriculum changes has an impact on reducing the obligation of credits for elective courses.
8. If there is a change in the credit of a course, the number of credits taken into account in graduation is the number of credits at the time the course is taken. The same subject or equivalent with different credits weights, if repeated or newly taken will be listed with a new name and calculated with the new credit weight.
9. The new mandatory courses in the 2020 curriculum such as Practicum of Basic Chemistry, Environmental Biology, and Student Affairs are elective courses for the 2019 class, 2018 and before and become a compulsory MK for the 2020 class and after.
10. The new mandatory courses in the 2020 curriculum such as Practicum of Basic Chemistry, Environmental Biology, and Student Affairs are elective courses for the 2019 class, 2018 and before and become a compulsory MK for the 2020 class and after
11. It should be noted for the following courses managed by the University:

a. Students who have passed one of the MPKT A (6 credits) or MPKT B (6 credits) courses in the 2016 Curriculum are not required to take the MPKT MK (5 credits) in the 2020 Curriculum.

b. Students who have not passed or have not taken the MK Sports/Arts (2 credits) are required to take the MK Option/Minor.

c. Students who have not passed or have not taken the English Constitutional Court (3 credits) are required to take the English Constitutional Court (2 credits) in the 2020 Curriculum.

12. It should be noted for the following courses managed by the faculty:

a. Students who have not passed or have not taken the MK Calculus (4 credits), are required to repeat the MK Calculus course (4 credits) organized by the Study Program within the FTUI environment.

b. Students who have not passed or have not taken the MK Physics of Mechanics and Heat (3 credits), are required to take Physics of Mechanics and Thermodynamics (4 credits) in the 2020 Curriculum.

c. Students who have not passed or have not taken the Basic Physics Practicum 1 (1 credit) in the 2016 curriculum, are not required to take the MK in the 2020 curriculum. To meet the shortage of credits,

they can take the Mandatory MK Study Programs in the 2020 Curriculum

d. Students who have not passed or have not taken the MGO Electrical Physics MK (3 credits) in the 2016 curriculum are required to take the compulsory MK Study Program in the 2020 curriculum which is equivalent, namely Environmental Biology (2 credits) To meet the shortage of credits, they can take the compulsory MK Study Program in the 2020 curriculum.

e. For students who have not passed or have not taken the MK Electrical Physics Practicum (1 credit) are not required to take the MK in the 2020 curriculum. To meet the shortage of credits, they can take the Mandatory MK Study Programs in the 2020 Curriculum

f. Students who have not passed or have not taken the MK Statistics & Probability 2016 curriculum are required to take the MK Compulsory Study Program which is equivalent to the MK Statistics and Probabilistic Experiments curriculum 2020

g. Students who have not graduated or have not taken the K3LL MK (2 credits) in the 2016 curriculum are required to take the equivalent Study Program Compulsory MK, namely the K3 MK and Environmental Risk (2 credits) in the 2020 Curriculum.

h. Students who have not graduated or have not taken the MK Basic Chemistry (2 credits) in the 2016 curriculum are required to take the compulsory MK Study Programs in the 2020 curriculum which are equivalent, namely the MK Basic Chemistry (2 credits) and the Basic Chemistry Practicum Court (1 credit) in the 2020 curriculum.

Equalizing the 2016 Curriculum Subjects and the 2020 Curriculum for Civil Engineering Undergraduate

No	Name of Courses in Curriculum 2016	Credits 2016	Name of Courses in Curriculum 2020	Credits 2020	Remarks
1	Physics - Mechanics and Thermal	3	Physics - Mechanics and Thermody-namics	4	New courses are mandatory for the study program. The number of credits is reduced. Merger of two courses, Exception for 2019; 2018; 2017 during transition
2	Thermodynamics	2			
3	Praktikum Fisika Dasar	1	None	-	
4	Academic English	3	Academic English	2	The change of course credit
5	Integrated Character Building A	6	Integrated Character Building	6	The change of course name & credits
6	Integrated Character Building B	6			
7	Olahraga/ Seni	1			
8	Religion	2	Religion		The change of position form even to odd
9	Physics - Electricity, MWO	3	Environmental Biology	2	New courses are mandatory for the study program
10	Physics - Electricity, MWO Lab	1	None	-	

11	Basic Chemistry	2	Basic Chemistry	2	The change of position (semester 3 become semester 1) and New courses are mandatory The course become study programme mandatory course; The change of course name.
12			Basic Chemistry Lab	1	
13	Statistic & Probabilistic	2	Statistik & Probabilistik Eksperimen	2	
14	Advanced Calculus	3	Environmental Engineering Mathematic	3	The change of course name
15	Occupational Health, Safety and Environmental Risk	2	Occupational Health, Safety and Environmental Risk	2	The course become study programme mandatory course; The change of course name.
16	Construction Drawing	2	Construction Drawing for Environmental Engineer	2	The new courses of the study program replace these courses and change credit
17	Construction Building	2		2	
18	Surveying	3	Earth Science and Mapping	2	The new courses of the study program replace these courses and change credit
19	Theory of Material Property	2	Environmental Engineering Material Properties	2	The change of course name
20	Structural Mechanics	3	Structural Mechanics I	2	The change of course name and change of credits
21	Fluid Mechanics	3	Fluid Mechanics	3	The change of course position form odd to even
22	Basic Soil Mechanics	3	Soil Environment for Environmental Engineer	3	The change of course name
23	Soil Mechanics	3	Structural Mechanics II	2	The change of course name and change of credits
24	Environmental Hydraulics	3	Environmental Hydraulics	3	The change of course position form even (semester 4) to odd (semester 3)
25	Global Envinronmental Issues	2	Global Envinronmental Issues	2	The change of course position from evenp(semester 4) to odd (semester 1)
26	Environmental Microbiology	2	Environmental Microbiology	3	The change of course position form even (semester 4) to odd (semester 3)
27	Urban Planning and Sanitation	3	Urban Planning and Sanitation	3	The change of course position form semester 5 to semester 3

28	Water Supply Sewerage Network Design	3	Wastewater Collection System Design	2	The new course that split from Water Supply and Sewerage Network Design course. The total credits increase. The change of course position form odd (semester 5) to even (semester 4) The change of course name
29			Drinking Water Distribution System Design	2	
30	Structural Design of Environmental Engineering Facilities	3	Structural Design for Environmental Engineering Infrastructure	3	
31	Water Treatment Design	3	Water Treatment Plant Design	3	The change of course name
32	Domestic Waste Water Treatment Design	3	Domestic Waste Water Treatment Plant Design	3	The change of course name
33	Air Pollution	3	Air Pollution	3	The change of course position from odd (semester 7) to even (semester 6)
34	Research Methodology & Proposal	2	Undergraduate Thesis	5	The new course of the study program replaces the course.
35	Final Project	4			Increase the number of credits
36	-	-	Final Project on Environmental Engineerin Infrastructure	4	New courses are mandatory for the study program
37	-	-	Service Learning	1	New courses are mandatory for the study program
38	-		Writing and Presentation Technique	2	New courses are mandatory for the study program

Course of Fast Track S1-S2 Environmental Engineering

Code	Subject	SKS
	1st Semester	
UIGE 600 004	Religion	2
UIGE 600 003	Academic English	**2**
ENGE 600 001	Calculus 1	3
ENGE 600 009	Basic Chemistry	2
ENCV 601 001	Physics (Mechanics and Thermal)	4
ENEV 601 001	Introduction to Environmental Engineering System	**3**
ENEV 601 002	Global Environmental Issues	2
ENEV 601 003	Basic Chemistry Laboratory	1
	Sub Total	**19**
	2nd Semester	
UIGE 600 007	Integrated Charater Building	6
ENGE 600002	Calculus 2	3
ENGE 600004	Linear Algebra	4
ENCV 603 003	Fluid Mechanics	3
ENEV 602 001	Earth Science and Mapping	2
ENEV 602 002	Construction Drawing for Environmental Engineer	2
ENEV 602 003	Environmental Biology	2
	Sub Total	**22**
	3rd Semester	
ENCV 603 004	Statistics and Probabilistic of Experimental Design	2
ENEV 603 001	Environmental Engineering Mathematic	3
ENEV 603 002	Environmental Microbiology	3
ENEV 603 003	Environmental Engineering Material	2
ENEV 603 004	Environmental Hydraulics	3
ENEV 603 005	Structural Mechanics I	2
ENEV 603 006	Urban Planning and Sanitation	3
ENEV 603 007	Effective Communication	2
	Sub Total	**20**
	4thSemester	
ENGE 600 011	Engineering Economics	3
ENEV 604 001	Structural Mechanics II	2
ENEV 604 002	Drinking Water Distribution System Design	2
ENEV 604 003	Soil Mechanics for Environmental Engineer	3
ENEV 604 004	Environmental Chemistry	3
ENEV 604 005	Wasterwater Collection System Design	2
	Elective/ Minor	**3**
	Sub Total	**18**
	5th Semester	
ENCV 606 005	Entrepreneurship	2
ENEV 605 001	Environmental Modelling	2
ENEV 605 002	Unit Operation and Process	4
ENEV 605 003	Environmental Laboratory	3
ENEV 605 004	Integrated Solid Waste Management Planning	3
ENEV 605 005	Structural Design for Environmental Engineering Infrastructure	3
	Elective/ Minor	**3**
	Sub Total	**20**
	6th Semester	
ENEV 606 001	Occupational Health, Safety and Environmental Risk	2
ENEV 606 002	Environmental Impact Assessment and ISO	3
ENEV 606 003	Environmental Engineering Project Management	3
ENEV 606 004	Water Treatment Plant Design	3
ENEV 606 005	Domestic Wastewater Treatment Plant Design	**3**
ENEV 606 006	Air Pollution	3
	Elective/ Minor	3
	Sub Total	**20**

	7th Semester	
ENEV 600 100	Field Internship	3
ENEV 607 001	Final Project on Environmental Engineering Infrastructure	4
ENEV 607 002	Hazardous and Industrial Waste Treatment	3
ENEV 607 003	Writing and Presentation Technique	2
ENEV 801 101	Environmental Data Analysis	3
ENEV 801 102	Environmental Risk Management	3
	Specialization Compulsary Course S2	3
	Sub Total	**21**
	8th Semester	
ENEV 600 300	Service Learning	1
ENEV 600 400	Undergraduate Thesis	5
ENCV 802 103	Research Method	3
ENEV 802 104	Environmental Engineering Special Topic	3
	Specialization Compulsary Course S2	3
	Sub Total	**15**
	9thSemester	
ENEV 800 104	Pra Thesis	2
	Specialization Compulsary/ Elective Course (S2)	3
	Specialization Compulsary/ Elective Course (S2)	3
	Specialization Compulsary/ Elective Course (S2)	3
	Sub Total	**11**
	10th Semester	
ENCV 800 105	Master Thesis	6
ENCV 800 106	Scientific Pub;lication	2
	Specialization Compulsary/ Elective Course (S2)	3
	Sub Total	**11**

Undergraduate Program in Mechanical Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia Double Degree: Universitas Indonesia and Partner University	
2.	**Teaching Institution**	Universitas Indonesia Double Degree: Universitas Indonesia and Partner University	
3.	**Faculty**	Engineering	
4.	**Study Programme**	Undergraduate Program in Mechanical Engineering	
5.	**Vision and Mission**	VISION As a center of research and education services that excel in mechanical engineering MISSION Carry out research and research-based education for the development of science and technology in the field of mechanical engineering, and conduct research and education that seeks its use to improve the level and quality of people's lives and humanity.	
6.	**Classes**	Regular, Non Reguler and International	
7.	**Final Award**	Sarjana Teknik (S.T) Double Degree: Sarjana Teknik (S.T) and Bachelor of Engineering (B.Eng)	
8.	**Accreditation / Recognition**	Accreditation of BAN-PT (Excellent) Internasional Assesment from Asean University Network-Quality Assurance (AUN-QA) Accreditation of Indonesia Accreditation Board For Engineering Education (IABEE), General Accreditation.	
9.	**Language(s) of Instruction**	Bahasa Indonesia and English	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11,	**Entry Requirements**	High school /equivalent, or D3 / Polytechnique / equivalent, AND pass the entrance exam.	
12.	**Duration for Study**	Designed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	17
	Short (optional)	3	8
13.	**Aims of the programme:** 1. Producing Mechanical Engineering graduates who meet the specified learning outcomes 2. Contribute to the development of scientific and mechanical technology 3. Contribute to improving the quality of society and industry		
14.	**Profile of Graduates:** Bachelor of Mechanical Engineering who is able to analyze and design energy systems, industrial machinery, building facilities, and the transportation industry in contributing to meeting the goals of sustainable development.		

15.	**Expected Learning Outcomes (ELO):** 1. Able to apply basic knowledge of mathematics, numerical methods, statistical analysis and basic science and information technology. 2. Able to design energy systems, industrial machinery, building facilities, and the transportation industry to meet the expected needs within realistic boundaries, as well as to recognize and / or utilize the potential of local and national resources with global insight. 3. Able to carry out experiments, dig up information and analyze data, report the results of experiments by applying statistical rules. 4. Able to think critically, creatively, and innovatively in identifying, formulating, analyzing and solving mechanical engineering problems. 5. Able to apply modern methods, skills and technical tools needed for engineering practices such as the selection of materials and processes, automation systems, and computer-aided mechanical designs. 6. Able to communicate effectively both visually, in writing and verbally. 7. Able to design, plan, complete and evaluate tasks within the existing constraints. 8. Able to work effectively both individually and in teams across disciplines or across cultures 9. Able to take responsibility and adhere to the ethics of the engineering profession and entrepreneurship which is characterized by innovation and independence. 10. Able to carry out lifelong learning processes including access to knowledge related to relevant contemporary issues.
16.	**Composition of Subjects**

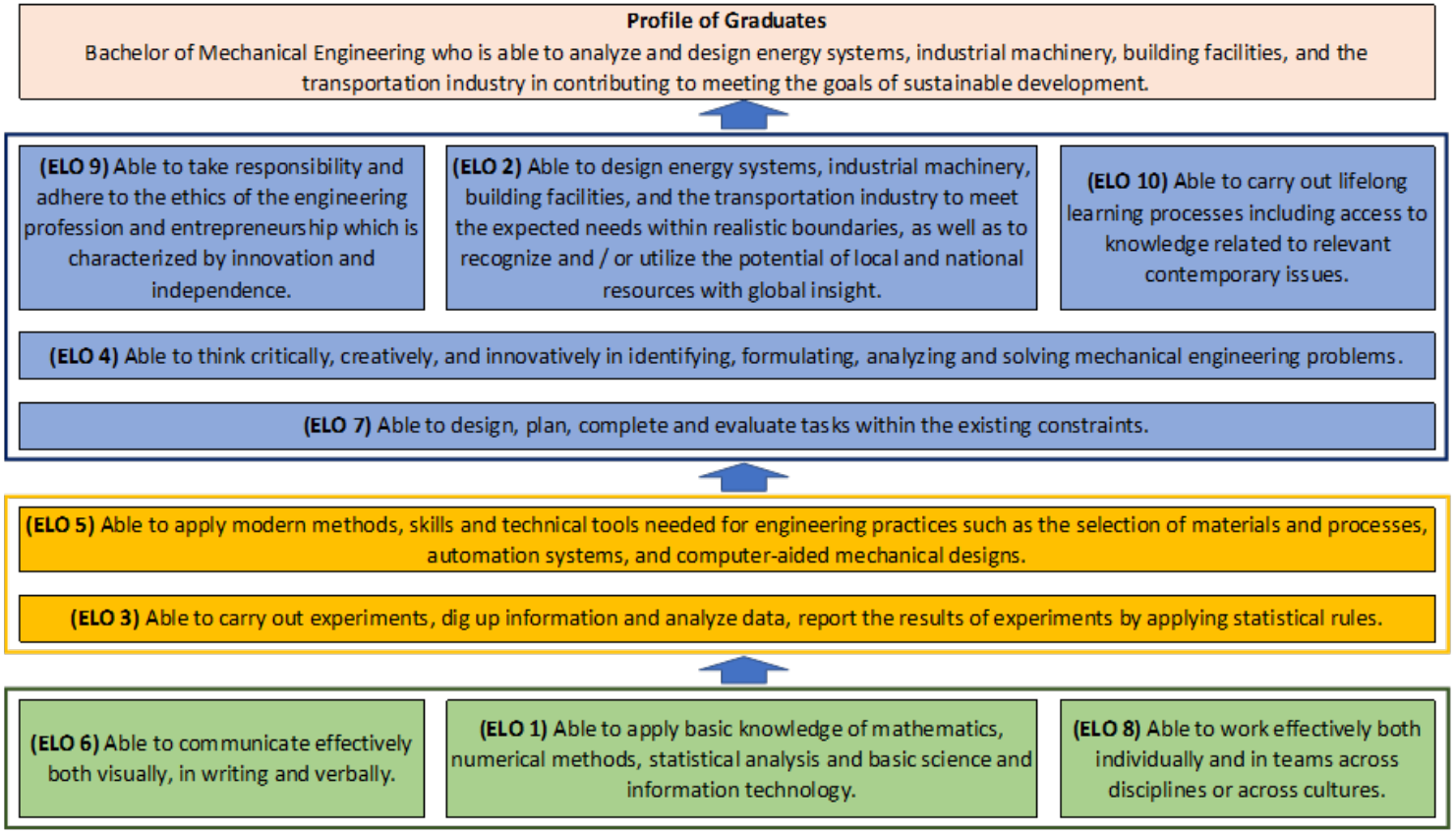
No.	Classification	Credit Hours (SKS)	Percentage
i	University General Subjects	10	6,3 %
ii	Basic Engineering Subjects	20	13,9 %
iii	Core Subjects	81	56,3 %
iv	Specialization Subjects	-	
v	Elective Subjects	26	18,1 %
vi	Internship, Seminar, Undergraduate Thesis,	8	5,6 %
	Total	145	100 %
	Total Credit Hours to Graduate		145 SKS

Career Prospects

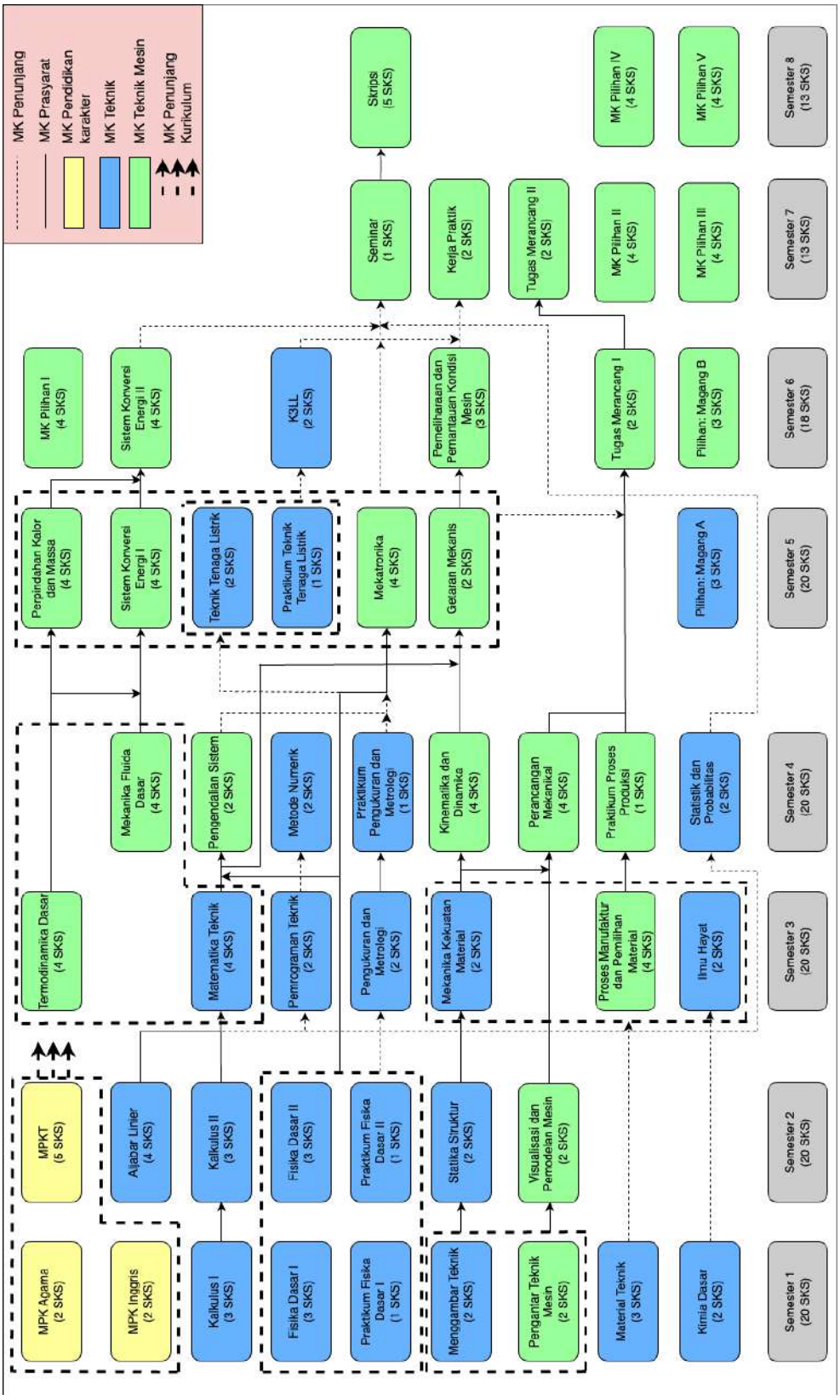
Graduates of this study program can work in various fields such as a) energy systems, b) industrial machinery, c) building facilities, and d) transportation industry, as:

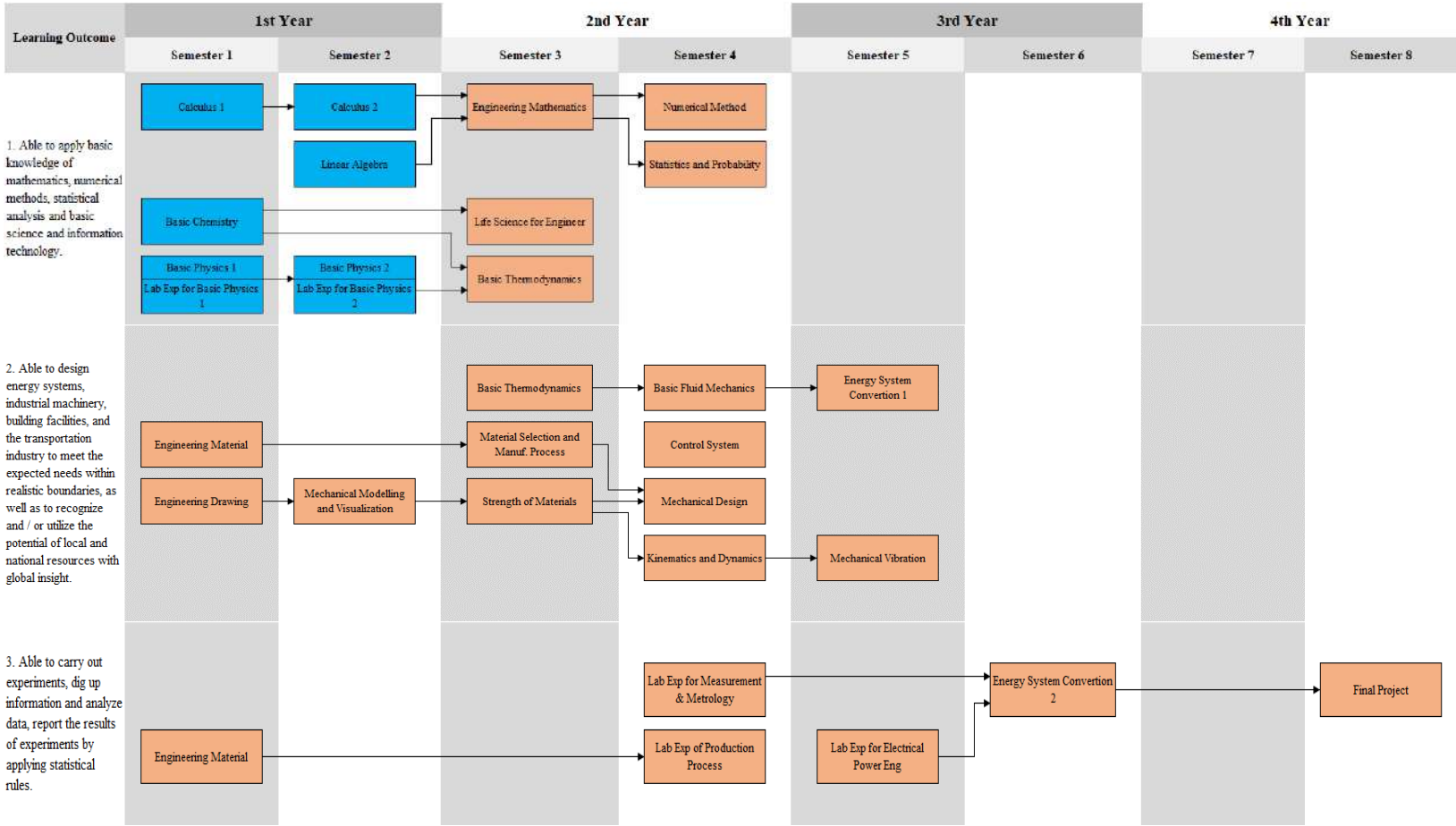
1. Researchers of mechanical elements and systems (mechanical, thermal and fluid systems, materials and production processes)
2. Mechanical systems engineer
3. Managers in the government and private sectors
4. Planners in the process of design, construction, operation and maintenance of machines
5. Civil society motivators and instructors
6. Engineering project inspector
7. Sales & Service Engineers
8. Entrepreneur
9. Adjuster

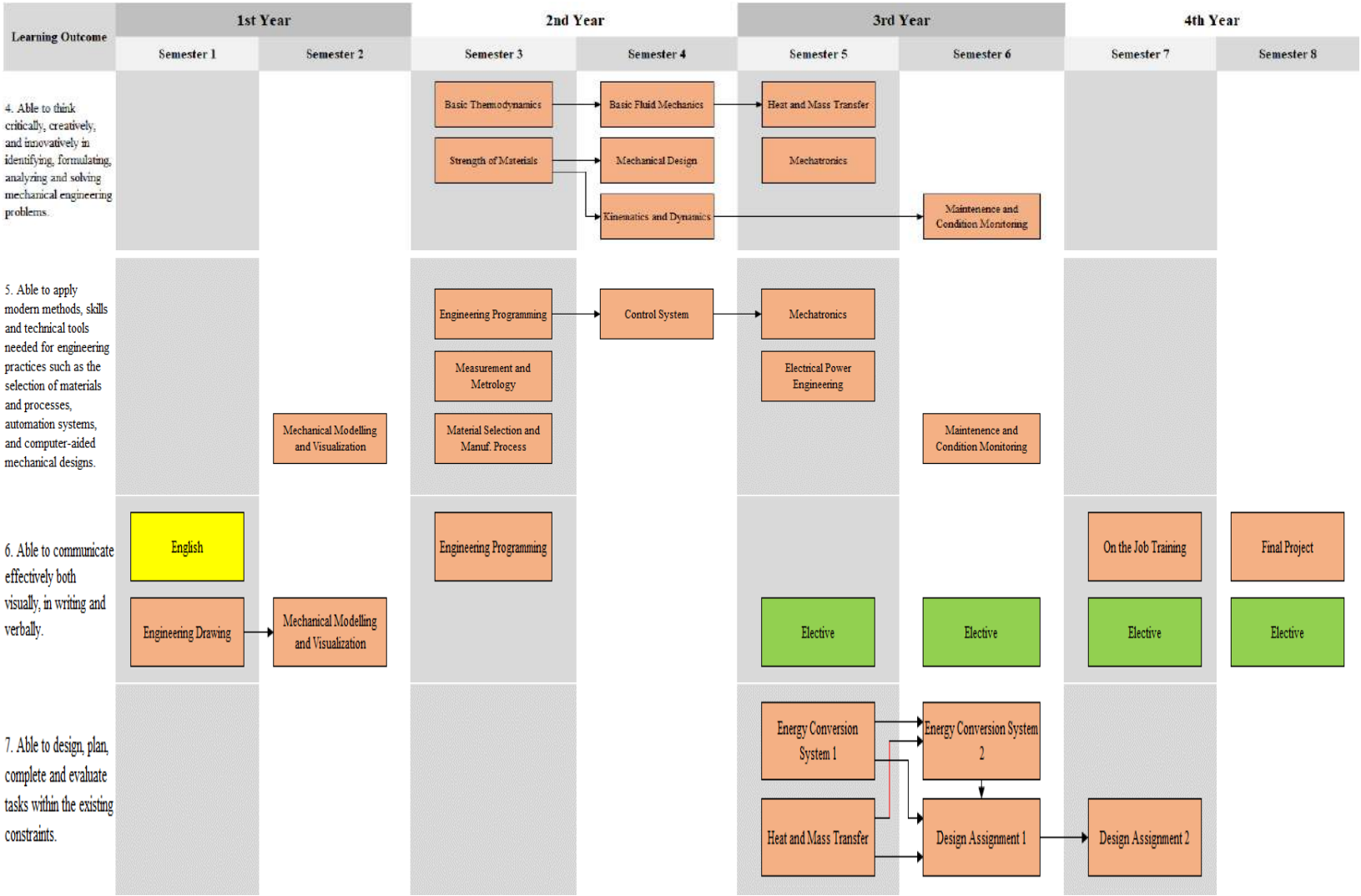
Curriculum Structure Undergraduate Mechanical Engineering Program

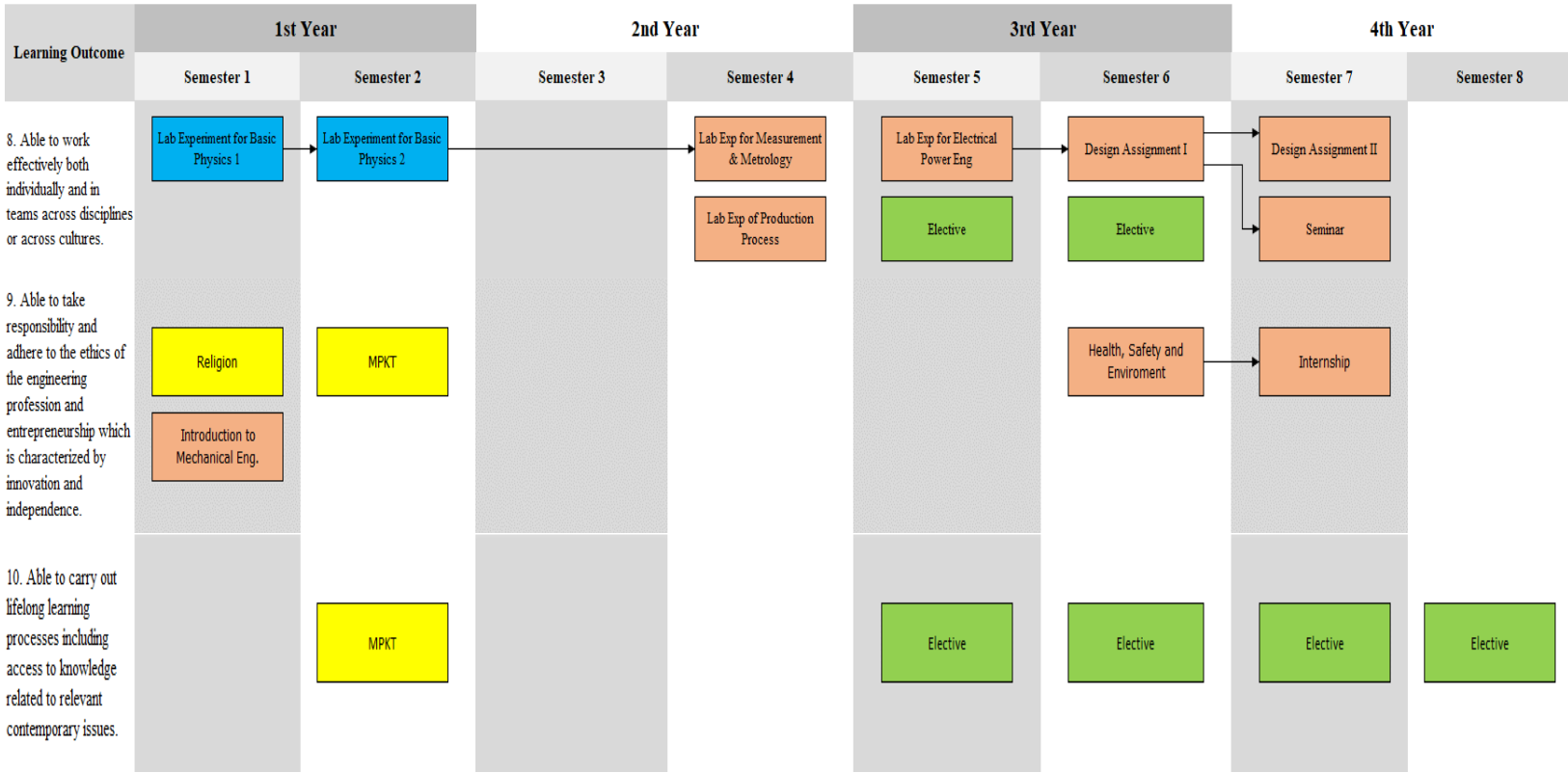


Course Flow Chart to Achieve Learning Outcomes in the Mechanical Engineering Study Program




Learning Outcome
1st Year
2nd Year
3rd Year
4th Year
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
1. Able to apply basic knowledge of mathematics, numerical methods, statistical analysis and basic science and information technology.
Calculus 1
Calculus 2
Linear Algebra
Engineering Mathematics
Numerical Method
Statistics and Probability
Basic Chemistry
Life Science for Engineer
Basic Physics 1
Lab Exp for Basic Physics 1
Basic Physics 2
Lab Exp for Basic Physics 2
Basic Thermodynamics
2. Able to design energy systems, industrial machinery, building facilities, and the transportation industry to meet the expected needs within realistic boundaries, as well as to recognize and / or utilize the potential of local and national resources with global insight.
Basic Thermodynamics
Basic Fluid Mechanics
Energy System Convertion 1
Engineering Material
Material Selection and Manuf. Process
Control System
Engineering Drawing
Mechanical Modelling and Visualization
Strength of Materials
Mechanical Design
Kinematics and Dynamics
Mechanical Vibration
3. Able to carry out experiments, dig up information and analyze data, report the results of experiments by applying statistical rules.
Lab Exp for Measurement & Metrology
Energy System Convertion 2
Final Project
Engineering Material
Lab Exp of Production Process
Lab Exp for Electrical Power Eng


Learning Outcome
1st Year
2nd Year
3rd Year
4th Year
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
4. Able to think critically, creatively, and innovatively in identifying, formulating, analyzing and solving mechanical engineering problems.
Basic Thermodynamics
Basic Fluid Mechanics
Heat and Mass Transfer
Strength of Materials
Mechanical Design
Mechatronics
Kinematics and Dynamics
Maintenence and Condition Monitoring
5. Able to apply modern methods, skills and technical tools needed for engineering practices such as the selection of materials and processes, automation systems, and computer-aided mechanical designs.
Engineering Programming
Control System
Mechatronics
Measurement and Metrology
Electrical Power Engineering
Mechanical Modelling and Visualization
Material Selection and Manuf. Process
Maintenence and Condition Monitoring
6. Able to communicate effectively both visually, in writing and verbally.
English
Engineering Programming
On the Job Training
Final Project
Engineering Drawing
Mechanical Modelling and Visualization
Elective
Elective
Elective
Elective
7. Able to design, plan, complete and evaluate tasks within the existing constraints.
Energy Conversion System 1
Energy Conversion System 2
Heat and Mass Transfer
Design Assignment 1
Design Assignment 2


Learning Outcome
1st Year
2nd Year
3rd Year
4th Year
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
8. Able to work effectively both individually and in teams across disciplines or across cultures.
9. Able to take responsibility and adhere to the ethics of the engineering profession and entrepreneurship which is characterized by innovation and independence.
10. Able to carry out lifelong learning processes including access to knowledge related to relevant contemporary issues.
Lab Experiment for Basic Physics 1
Lab Experiment for Basic Physics 2
Lab Exp for Measurement & Metrology
Lab Exp of Production Process
Lab Exp for Electrical Power Eng
Elective
Design Assignment I
Elective
Design Assignment II
Seminar
Religion
MPKT
Introduction to Mechanical Eng.
Health, Safety and Enviroment
Internship
MPKT
Elective
Elective
Elective
Elective

Curriculum Structure of Mechanical Engineering Study Program

Code	Subject	SKS
	1st Semester	
UIGE600004	Religion	2
UIGE600003	English	2
ENME601001	Introduction to Mechanical Engineering	2
ENGE600001	Calculus 1	3
ENGE600005	Basic Physics 1 (Mechanic & Heat)	3
ENGE600006	Laboratory Experiment for Basic Physics 1	1
ENME601002	Engineering Drawing	2
ENME603005	Engineering Material	3
ENGE600009	Basic chemistry	2
	Sub Total	**20**
	2nd Semester	
UIGE600007	Integrated Character Building Subject	6
ENGE600002	Calculus 2	3
ENGE600007	Basic Physics 2 (Electrical, Magnet, Wave, and Optic)	3
ENGE600008	Laboratory Experiment for Basic Physics 2 (Electrical, Magnet, Wave, and Optic)	1
ENGE600004	Linear Algebra	4
ENME602004	Engineering Statics	2
ENME603006	Mechanical Modelling and Visualization	2
	Sub Total	**21**
	3rd Semester	
ENME605015	Measurement and Metrology	2
ENME600013	Engineering Mathematics	4
ENME604010	Material Selection and Manuf. Process	4
ENME603007	Strength of Materials	2
ENME603008	Basic Thermodynamics	4
ENME606024	Life Science for Engineer	2
ENME600017	Engineering Programming	2
	4th Semester	
ENME604011	Basic Fluid Mechanics	4
ENME604012	Mechanical Design	4
ENME600016	Numerical Method	2
ENGE600010	Statistics and Probability	2
ENME605019	Control System	2
ENME600009	Kinematics and Dynamics	4
ENME600007	Laboratory Experiment of Production Process	1
ENME600008	Laboratory Experiment for Measurement and Metrology	1
	Sub Total	**20**
	5th Semester	
ENME605017	Heat and Mass Transfer	4
ENME605021	Energy Convertion System 1	4
ENME606025	Mechatronics	4
ENME605014	Mechanical Vibration	2
ENME606023	Electrical Power Engineering	2
ENME600010	Laboratory Experiment for Electrical Power Engineering	1
	Elective (Internship A)	3
	Subtotal	**20**
	6th Semester	
ENME600001	Design Assignment 1 (Conceptual Design)	2
ENME606022	Energy Convertion System 2	4
ENGE600012	Health, Safety and Enviroment	2
ENME606020	Maintenance and Condition Monitoring	3
	Elective (Internship B)	3
	Elective	4
	Subtotal	**18**
	7th Semester	
ENME600002	Design Assignment 2	2
ENME600004	Seminar	1
ENME600003	On the Job Training	2
	Elective	4
	Elective	4
	Subtotal	**13**

	8th Semester	
ENME 600 005	Final Project	5
	Elective	4
	Elective	4
	Subtotal	**13**
	Total	**145**

The list of Elective Courses

Code	Electives Courses, Odd Semester	
ENME803105	Internal Combustion Engine	4
ENME803106	Applied Flow Measurement and Visualization	4
ENME803107	CFD Application	4
ENME801113	Ventilation and Air Conditioning System	4
ENME803115	Clean Room	4
ENME803124	Energy Audit	4
ENME803134	Fire Dynamics and Modelling	4
ENME803145	Composite Product Development	4
ENME803147	Toy Production Design	4
ENME803154	Quality and Production Management System	4
ENME803195	Oil and Gas Drilling Equipment	4
ENME803196	Jet and Rocket Propulsion	4
ENME803174	Risk Management	4
ENME601101	Project Management	4
ENME601102	Entrepreneurship	2
ENME601103	Industrial Seminar	2
ENME601108	Internship A (content: Project Management and Entrepreneurship)	3
ENME601104	Special Topic 1	4
ENME601105	Special Topic 2	4
ENME801002	Advanced Engineering Mathematics*	2
ENME802004	Engineering Computation*	2
ENME801101	Advanced Thermodynamics*	4
ENME801102	Advanced Fluid Dynamic and Heat Transfer*	4
ENME802133	Fire and Building Science*	4
ENME801140	Materials and Manufacturing Processes*	4
ENME801141	Product Design and Development Methodolgy*	4
ENME801150	Management of Manufacturing Information System*	4
ENME801151	Manufacturing System and Processes*	4
ENME801163	Vehicle Engineering and Heavy Duty Equipment*	4
ENME801164	Prime Mover and Powertrain System*	4
Code	**Electives Courses, Even Semester**	
ENME804110	Combustion Engineering	4
ENME804109	Heat and Mass Transfer Engineering	4
ENME804111	Aerodynamics Engineering	4
ENME803108	Refrigeration Engineering	4
ENME804118	Mechanical system for Building	4
ENME802103	Energy System Optimization	4
ENME804138	Fire Safety Analysis	4
ENME804148	Design For Manufacture and Assembly	4
ENME804149	Noise and Vibration Control	4
ENME804155	CAD/CAM	4
ENME804156	Manufacturing Performance Assesment	4
ENME802152	Automation and Robotics	4
ENME804168	Railway Vehicle Engineering	4
ENME804197	Handling and Construction Equipment	4
ENME804198	Aircraft Design and Performance	4
ENME804190	Advanced Welding Engineering	4
ENME804136	Forest and Land Fires	4
ENME803104	Thermal Power Generation	4
ENME803143	Mechanical Failure	4

ENME803153	Machine Vision System	4
ENME601109	Internship B (content: Industrial Seminar and Entrepreneurship)	3
ENME601106	Special Topic 3	4
ENME601107	Special Topic 4	4
ENME802003	Experimental Design*	2
ENME802006	Data Analytics*	2
ENME802131	Fire Protection System*	4
ENME802132	Building Mechanical and Electrical System*	4
ENME802142	Design and Manufacturing Technology Integration*	4
ENME802165	Vehicle Frame and Body Engineering*	4
ENME803166	Vehicle Control System*	4
ENME802181	Maritime Engineering and Management*	4

*For Fast-Track Program Only

Transition Policy from the 2016 to the 2020 Curriculum

1. The 2020 curriculum is implemented starting in the Odd Semester 2020/2021. In principle, after the 2016 Curriculum is implemented, only subjects in the 2020 Curriculum will be opened.
2. Class of 2019 and earlier followed the 2020 curriculum with transitional rules.
3. A transitional period of 1 year is applied, namely in the academic year 2020/2021 for subjects that change the implementation semester (from Even to Odd, or vice versa), if necessary, will be opened in both semesters during the transition period (Academic Year 2020 / 2021).
4. For students who have not passed the compulsory subjects in the 2016 Curriculum, are required to take the same or equivalent subjects in the 2020 Curriculum. (Curriculum 2016 courses that are not listed in the Equivalent Table means that they have not changed, both the name and the Credit.
5. If there is a change in the SKS of the course, the number of SKS taken into account in graduation is the number of the SKS at the time the course was taken. Same or equal subjects with different SKS, if repeated or newly taken will be listed with a new name and calculated with new SKS.
6. If the compulsory subjects in the 2016 Curriculum are removed and there is no equivalence in the 2020 Curriculum then for students who have passed these courses, they will still be counted as compulsory subjects in the calculation of passing 145 SKS. Students who have not passed the course can take new compulsory subjects or elective courses in the 2020 Curriculum to complete 145 credits.

Subject Eqivalent Table Mechanical Engineering Study Program

2016			2020		
CODE	SUBJECTS	CREDIT	CODE	SUBJECT	CREDIT
UIGE600003	English	3	UIGE600003	English	2
ENME603005	Engineering Material	2	ENME603005	Engineering Material	3
UIGE600001	MPKT A	6	UIGE600007	MPKT	6
UIGE600002	MPKT B	6		Elective	
UIGE600020-48	Sport / Art	1		Elective	
ENME602003	Engineering Drawing	2		Elective	
			ENME600017	Engineering Programming	2
ENME605020	Control System	4	ENME605020	Control System	2
ENME605021	Energy Convertion and Coservation	2	ENME605021	Energy Convertion System 2	4
ENME600019	Lab Exp for Energy Convertion and Coservation	1			
ENME605018	Fluid System	3	ENME605022	Energy Convertion System 1	4
			ENME601108	Elective, Internship A	3
ENME600006	Industrial Seminar	2	ENME601109	Elective, Internship B	3
ENME803134	Fire Dynamics in Room and Modelling	4	ENME803134	Fire Dynamics and Modelling	4
ENME804138	Evaliation and Fire Protection System Maintenance	4	ENME804138	Fire Safety Analysis	4

ENME804149	Noise and Vibration	4	ENME804149	Noise and Vibration Control	4
ENME804198	Aircraft Stability and Control	4	ENME804198	Aircraft Design and Performance	4
			ENME804136	Forest and Land Fires	4
			ENME601104	Special Topic 1	4

Curriculum of International Program In Mechanical Engineering

Code	Subject	
	1st Semester	
ENME611001	Introduction to Mechanical Engineering	2
ENME611002	Engineering Drawing	2
UIGE610002	Academic Writing	2
ENGE610001	Calculus 1	3
ENGE610004	Linear Algebra	4
ENGE610005	Basic Physics 1 (Mechanic & Heat)	3
ENGE610006	Laboratory Experiment for Basic Physics 1	1
ENGE610010	Statistics and Probabilistic	2
	Sub Total	**19**
	2nd Semester	
UIGE610004	Religion	2
ENGE610002	Calculus 2	3
ENGE610007	Basic Physics 2 (Electrical, Magnet, Wave, and Optic)	3
ENGE610008	Laboratory Experiment for Basic Physics 2 (Electrical, Magnet, Wave, and Optic)	1
ENGE610009	Basic chemistry	2
ENME615015	Measurement and Metrology	2
ENME612004	Engineering Statics	2
ENME612005	Engineering Material	3
ENME613006	Mechanical Modelling and Visualization	2
	Sub Total	**20**

	3rd Semester	
ENME610013	Engineering Mathematics	4
ENME613007	Strength of Materials	2
ENME613008	Basic Thermodynamics	4
ENME613010	Material Selection and Manuf. Process	4
ENME606024	Life Science for Engineer	2
ENME610007	Laboratory Experiment of Production Process	1
ENME600008	Laboratory Experiment for Measurement and Metrology	1
ENME600017	Engineering Programming	2
	Sub Total	**20**
	4th Semester	
ENME610016	Numerical Method	2
ENME610009	Kinematics and Dynamics	4
ENME616023	Electrical Power Engineering	2
ENME615017	Heat and Mass Transfer	4
ENME614012	Mechanical Design	4
ENME604011	Basic Fluid Mechanics	4
	Sub Total	**20**

	5th Semester	
UIGE610011	MPKT	6
ENME615014	Mechanical Vibration	2
ENME605021	Energy Convertion System 1	4
ENME616025	Mechatronics	4
ENME605020	Control System	2
	Elective (Internship A)	3
	Sub Total	**21**
	6th Semester	
ENME610001	Design Assignment 1	2
ENME610010	Laboratory Experiment for Electrical Power Engineering	1
ENME606022	Energy Convertion System 2	4
ENGE600012	Health, Safety and Enviroment	2
ENME616020	Maintenence and Condition Monitoring	3
	Elective (Internship B)	3
	Elective	4
	Sub Total	**19**
	7th Semester	
ENME600002	Design Assignment 2	2
ENME600004	Seminar	1
ENME610003	Internship	2
	Elective	4
	Elective	4
	Sub Total	**13**
	8th Semester	
ENME610005	Final Project	5
	Elective	4
	Elective	4
	Sub Total	**13**
	Total	**145**

Curriculum for Fast Track Programme (S1 and S2)

Mechanical Engineering Fast Track Course

Code	Course	
	7th Semester	
ENME600002	Design Assignment II*	2
ENME600004	Seminar*	1
ENME600003	On the Job Training*	2
ENME801001	Applied Engineering Mathematics	2
ENME802004	Engineering Computation	2
	Specialization Course	8
	Sub Total	**17**
	8th Semester	
ENME600005	Final Project*	5
ENME802002	Experiment Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
	Specialization Course	8
	Sub Total	**19**
	9th Semester	
ENME800005	Scientific Publication	2
ENME802007	Project Design	2
	Elective Course	4
	Sub Total	**8**
	10th Semester	
ENME800007	Thesis	6
	Elective Course	4
	Sub Total	**10**

*Subjets of S1 program which can not be transfered to S2 program

Study Material	Code	Subjects	Credits
Energy Convertion and Conservation System	ENME801101	Basic Thermodynamics	4
	ENME801102	Advanced Fluid Dynamics and Heat Transfer	4
	ENME801113	Ventilation and Air Conditioning System	4
	ENME802103	Energy System Optimization	4
	ENME803104	Thermal Power Generation	4
	ENME803105	Internal Combustion Engine	4
	ENME803106	Applied Flow Measurement and Visualization	4
	ENME803107	CFD Application	4
	ENME803108	Refrigeration Engineering	4
	ENME803182	Ocean Energy	4
	ENME803195	Oil and Gas Drilling Equipment	4
	ENME803196	Jet and Rocket Propulsion	4
	ENME804109	Heat and Mass Transfer Engineering	4
	ENME804110	Combustion Engineering	4
	ENME804111	Aerodynamics Engineering	4
	ENME803124	Energy Audit	4
Mechanical System for Building	ENME803124	Energy Audit	4
	ENME801113	Ventilation and Air Conditioning System	4
	ENME802103	Energy System Optimization	4
	ENME802132	Building Mechanical and Electrical System	4
	ENME803107	CFD Application	4
	ENME803115	Clean Room	4
	ENME804118	Mechanical System for Building	4
	ENME803108	Refrigeration Engineering	4
Fire Safety Technology	ENME803134	Fire Dynamics and Modelling	4
	ENME802131	Fire Protection System	4
	ENME801113	Air Conditioning and Ventilation System	4
	ENME804138	Fire Safety Analysis	4
	ENME804137	Fire Investigation Engineering	4
	ENME804136	Forest and Land Fires	4
	ENME803174	Risk Management	4
	ENME804139	Fire Protection in Industrial Process	4
	ENME803135	Fire Fighting Techniques and Strategies	4

Product Design and Manufacrure	ENME801140	Material and Manufacturing Process	4
	ENME801141	Design Methodology and Product Development	4
	ENME802142	Designing and Manufacturing Technology Integration	4
	ENME803143	Mechanical Failure	4
	ENME801150	Manufacture Information System Management	4
	ENME801151	Manufacture System and Process	4
	ENME803144	Mechanical System Dynamics	4
	ENME803145	Composte Product Development	4
	ENME803146	Finite Element and Multiphysics	4
	ENME803147	Educational Product Design and Development	4
	ENME804148	Design for Manufacture and Assemby	4
	ENME804155	CAD/CAM	4
	ENME804156	Manufacturing Performance Assesment	4
	ENME804197	Handling and Construction Equipment	4
Otomation Technology and Microfabrication System	ENME802152	Otomation and Robotics	4
	ENME803153	Machine Vision System	4
	ENME803161	Micro-machining	4
	ENME803154	Quality and Production Management System	4
	ENME804162	Laser Assisted Process	4
	ENME804190	Advanced Welding Engineering	4
Advanced Vehicle Technology	ENME803196	Jet and Rocket Propulsion	4
	ENME803167	Modern Vehicle Technology	4
	ENME801163	Vehicle Engineering and Heavy Duty Equipment	4
	ENME801164	Prime Mover and Powertrain System	4
	ENME802165	Vehicle Frame and Body Engineering	4
	ENME803166	Vehicle Control System	4
	ENME804111	Aerodynamics Engineering	4
	ENME803105	Internal Combustion Engine	4
	ENME804112	Turbomachinery	4
	ENME804119	Accoustics	4
	ENME804149	Noise and Vibration Control	4
	ENME804168	Railway Vehicle Engineering	4

Minor in Mechanical Engineering
Pre-requisite: Mathematics, Physics, Engineering Drawing

Odd Semester			Even Semester		
Code	**Subjects**	**Credits**	**Code**	**Subjects**	**Credits**
Mandatory Subjects, 24 SKS					
ENME603005	Engineering Material	3	ENME602004	Engineering Statics	2
ENME604010	Material Selection and Manuf. Process	4	ENME603006	Mechanical Modelling and Visualization	2
ENME603007	Strength of Materials	2	ENME604011	Basic Fluid Mechanics	4
ENME603008	Basic Thermodynamics	4	ENME606020	Maintenence and Condition Monitoring	3
	Subtotal	13		**Subtotal**	11
Elective, Mechanical Engineering					
ENME605017	Heat and Mass Transfer	4	ENME604012	Perancangan Mekanika	4
ENME605021	Energy System Convertion 1	4	ENME600009	Kinematika dan Dinamika	4
ENME606025	Mechatronics	4	ENME605022	Energy System Convertion 2	4
ENME605014	Mechanical Vibration	2	ENME600001	Design Assignment I (Conceptual design)	2
ENME605015	Measurement and Metrology	2		Elective	4
	Elective	4			
Elective, Fire Safety Engineering					
ENME801113	Air Conditioning and Ventilation System	4	ENME804138	Fire Safety Analysis	4
ENME803134	Fire Dynamics and Modelling	4	ENGE600012	HSE	2
ENME605017	Heat and Mass Transfer	4			

Undergraduate Program in Naval Architecture and Marine Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Study Programme**	Undergraduate Program in Naval Architecture and Marine Engineering	
5.	**Vision and Mission**	Vision: To become the center of excellent research and education services in Naval Architecture and Marine Engineering. Mission: To conduct research and research-based education for the development of science and technology in the field of Naval Architecture and Marine Engineering, and to conduct research and education and use it to improve quality life and humanity.	
6.	**Classes**	Regular, International	
7.	**Final Award**	Sarjana Teknik (S.T)	
8.	**Accreditation / Recognition**	BAN-PT: "A" Accreditated International assessment by Asean University Network-Quality Assurance (AUN-QA)	
9.	**Language(s) of Instruction**	Bahasa Indonesia, English	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11,	**Entry Requirements**	High school /equivalent, or D3 / Polytechnique / equivalent, AND pass the entrance exam.	
12.	**Duration for Study**	Designed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	17
	Short (optional)	3	8
13.	**Aims of the programme:** 1. Provide graduates in Naval Architecture and Marine Engineering with the qualification of expected learning outcomes. 2. Contribute to the development of science and technology in the field of Naval Architecture and Marine Engineering through continuous research. 3. Contribute to improving the quality of society and industry.		
14.	**Profile of Graduates:** Bachelor of Engineering with abilities of analyze and design of ship buildings, marine systems, and marine transportation, with considering an aspect of energy conservation to meet the sustainable development goals.		

15.	**Expected Learning Outcomes (ELO):** 1. Able to apply basic knowledge of mathematics, basic science and information technology needed to achieve competence in the field of Naval Architecture and Marine Engineering. 2. Able to design ship buildings, marine systems, marine transportation, considering the aspect of energy conservation to meet the expected outcomes within realistic boundaries, as well as to recognize and/or utilize local and national potential resources with global insight. 3. Able to carry out experiments, digging information and analyze data, report the results of experiments by applying statistical rules 4. Able to think critically, creatively, and innovatively in identifying, formulating, analyzing and solving shipping technical problems 5. Able to apply modern methods, skills and technical tools needed for engineering practices such as the selection of materials and processes, and the design of computer-aided ships 6. Able communicate effectively both visually, in writing and verbally 7. Able to design, plan, complete and evaluate tasks within the existing constraints 8. Able to work effectively both individually and in teams across disciplines or across cultures 9. Able to take responsibility and adhere to the ethics of the engineering profession and entrepreneurship which is characterized by innovation and independence. 10. Able to carry out the lifelong learning process including access to knowledge related to relevant contemporary issues.
16.	**Composition of Subjects**

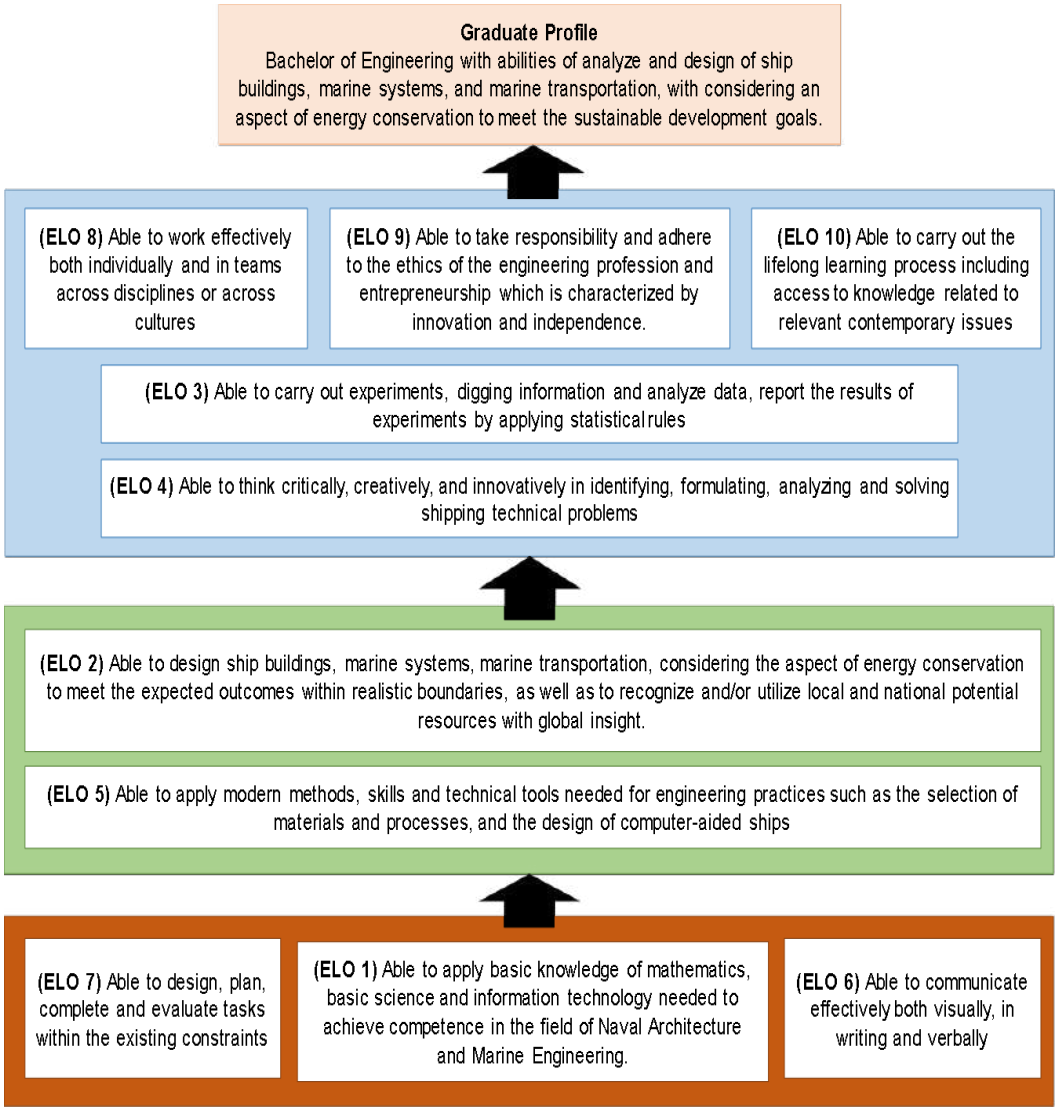
No.	Classification	Credit Hours (SKS)	Percentage
i	University General Subjects	10	6 %
ii	Basic Engineering Subjects	20	13,9 %
iii	Core Subjects	81	59,6 %
iv	Elective Subjects	26	18,1 %
v	Special Subjects (On The Job Training, Seminar, Undergraduate Thesis)	8	5,6 %
	Total	145	100 %
	Total Credit Hours to Graduate		145 SKS

Career Prospects

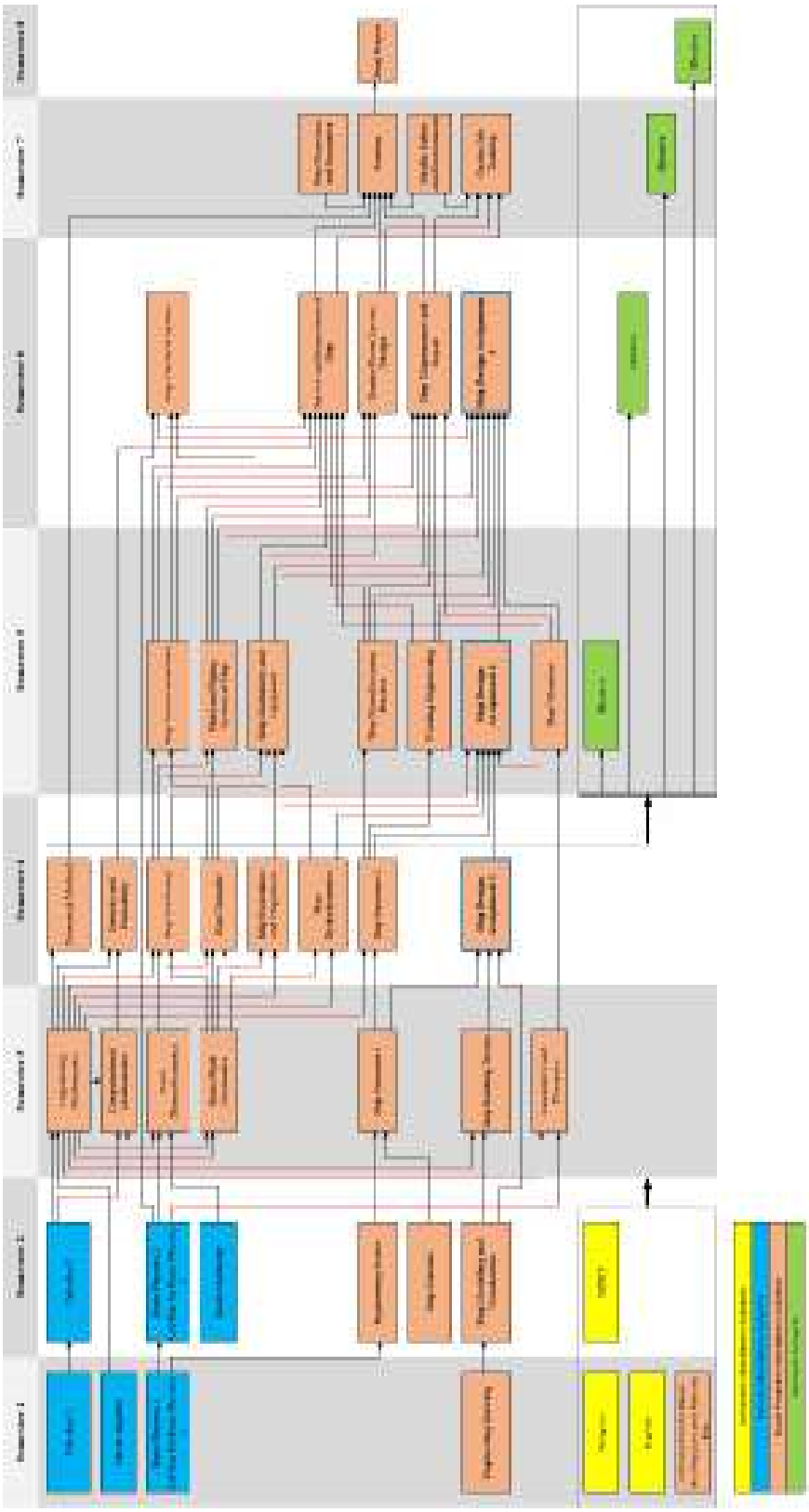
Graduates of Naval Architecture and Marine Engineering study have devoted themselves to various fields such as:

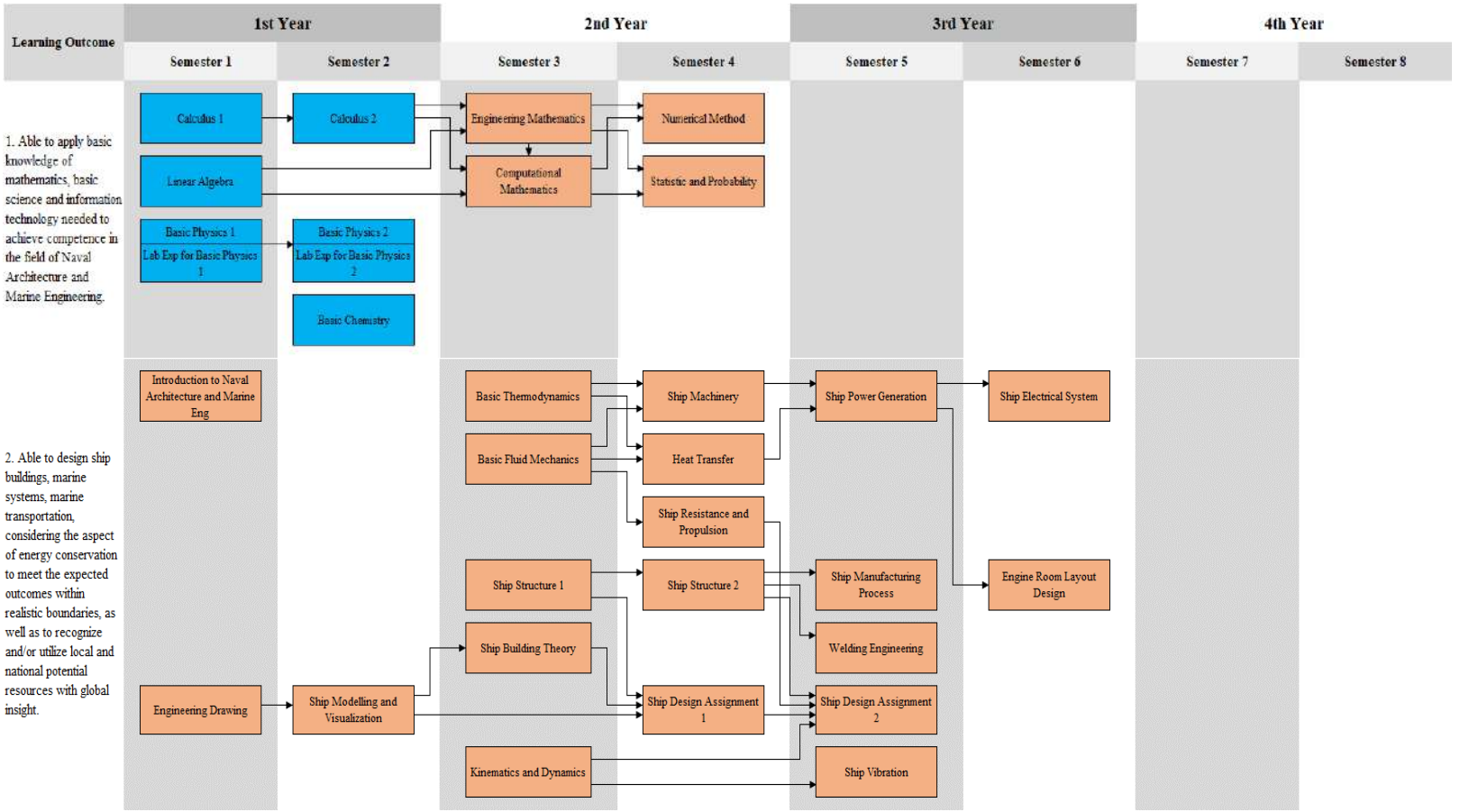
- Engineer at the shipyard
- Superintendent in shipping companies
- Shipping consultant
- Designers in the ship design office
- Appraisers at insurance companies
- Engineers in oil and gas companies
- Analyst at the Ministry of Maritime Affairs and Fisheries
- Analyst at the Ministry of Transportation
- Analysts at the Customs

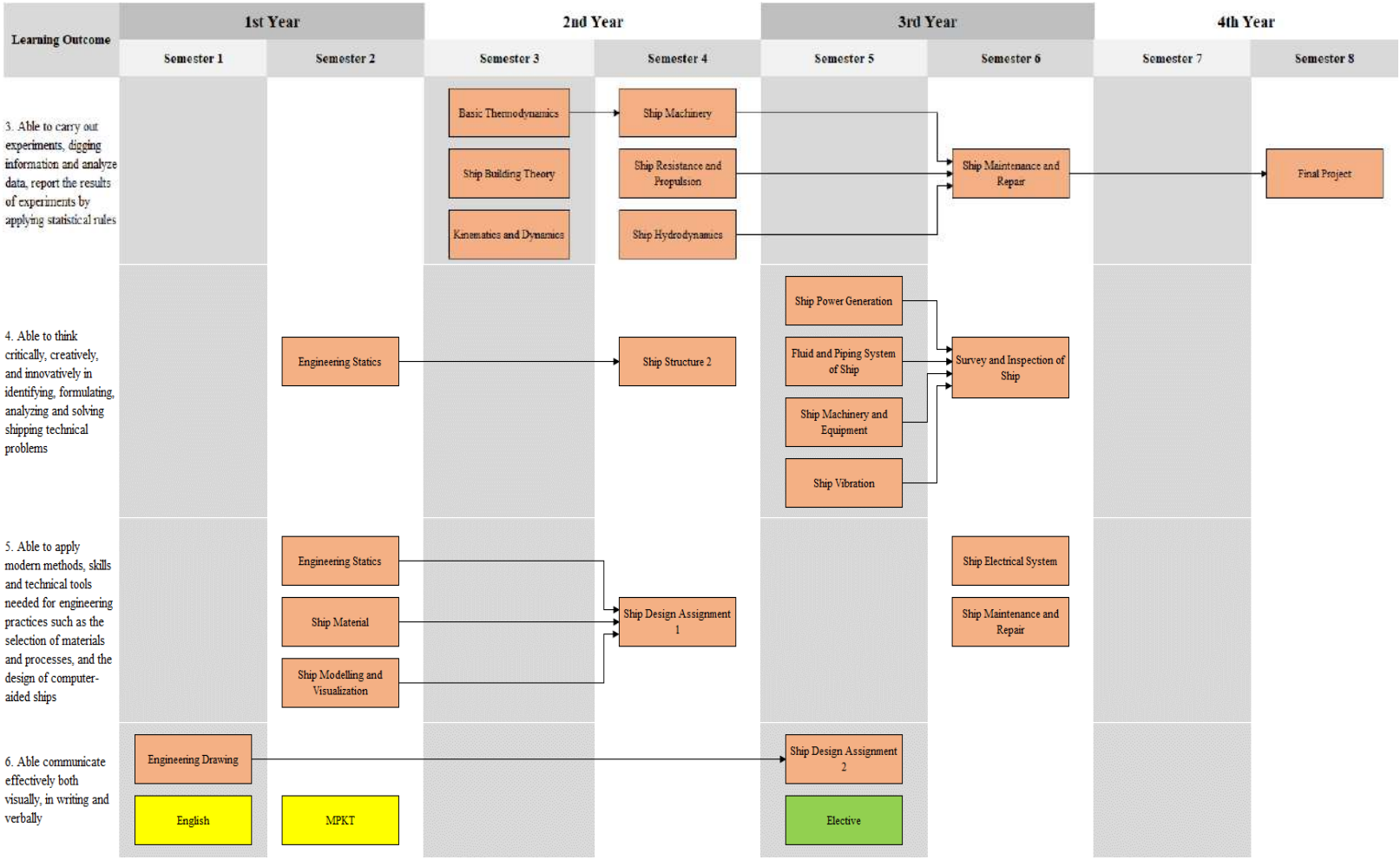
Flow Diagram of Expected Learning Outcomes
Undergraduate Program in Naval Architecture and Marine Engineering

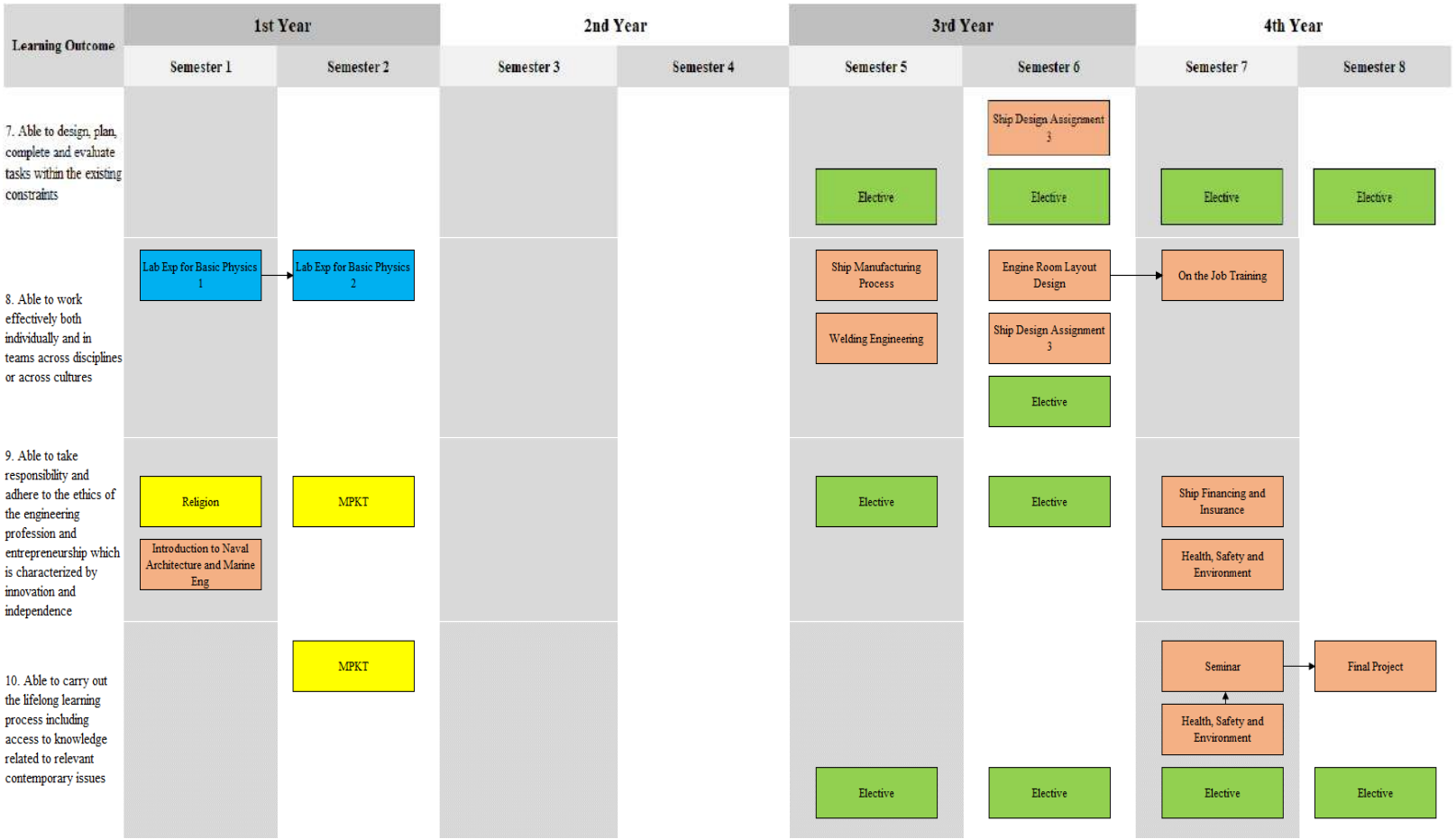


Flow Diagram of Subject Courses Undergraduate Program in Naval Architecture and Marine Engineering




Learning Outcome
1st Year
2nd Year
3rd Year
4th Year
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
1. Able to apply basic knowledge of mathematics, basic science and information technology needed to achieve competence in the field of Naval Architecture and Marine Engineering.
Calculus 1
Calculus 2
Engineering Mathematics
Numerical Method
Linear Algebra
Computational Mathematics
Statistic and Probability
Basic Physics 1
Lab Exp for Basic Physics 1
Basic Physics 2
Lab Exp for Basic Physics 2
Basic Chemistry
2. Able to design ship buildings, marine systems, marine transportation, considering the aspect of energy conservation to meet the expected outcomes within realistic boundaries, as well as to recognize and/or utilize local and national potential resources with global insight.
Introduction to Naval Architecture and Marine Eng
Basic Thermodynamics
Ship Machinery
Ship Power Generation
Ship Electrical System
Basic Fluid Mechanics
Heat Transfer
Ship Resistance and Propulsion
Ship Structure 1
Ship Structure 2
Ship Manufacturing Process
Engine Room Layout Design
Ship Building Theory
Welding Engineering
Engineering Drawing
Ship Modelling and Visualization
Ship Design Assignment 1
Ship Design Assignment 2
Kinematics and Dynamics
Ship Vibration


Learning Outcome
1st Year
2nd Year
3rd Year
4th Year
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
3. Able to carry out experiments, digging information and analyze data, report the results of experiments by applying statistical rules
Basic Thermodynamics
Ship Building Theory
Kinematics and Dynamics
Ship Machinery
Ship Resistance and Propulsion
Ship Hydrodynamics
Ship Maintenance and Repair
Final Project
4. Able to think critically, creatively, and innovatively in identifying, formulating, analyzing and solving shipping technical problems
Engineering Statics
Ship Structure 2
Ship Power Generation
Fluid and Piping System of Ship
Ship Machinery and Equipment
Ship Vibration
Survey and Inspection of Ship
5. Able to apply modern methods, skills and technical tools needed for engineering practices such as the selection of materials and processes, and the design of computer-aided ships
Engineering Statics
Ship Material
Ship Modelling and Visualization
Ship Design Assignment 1
Ship Electrical System
Ship Maintenance and Repair
6. Able communicate effectively both visually, in writing and verbally
Engineering Drawing
English
MPKT
Ship Design Assignment 2
Elective


Learning Outcome
1st Year
2nd Year
3rd Year
4th Year
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
7. Able to design, plan, complete and evaluate tasks within the existing constraints
Ship Design Assignment 3
Elective
Elective
Elective
Elective
8. Able to work effectively both individually and in teams across disciplines or across cultures
Lab Exp for Basic Physics 1
Lab Exp for Basic Physics 2
Ship Manufacturing Process
Welding Engineering
Engine Room Layout Design
Ship Design Assignment 3
Elective
On the Job Training
9. Able to take responsibility and adhere to the ethics of the engineering profession and entrepreneurship which is characterized by innovation and independence
Religion
MPKT
Introduction to Naval Architecture and Marine Eng
Elective
Elective
Ship Financing and Insurance
Health, Safety and Environment
10. Able to carry out the lifelong learning process including access to knowledge related to relevant contemporary issues
MPKT
Seminar
Final Project
Health, Safety and Environment
Elective
Elective
Elective
Elective

Subject Structure Undergraduate Program in Naval Architecture and Marine Engineering

Code	Subject	SKS
	1st Semester	
UIGE600004	Religion	2
UIGE600003	English	2
ENGE600001	Calculus 1	3
ENGE600005	Basic Physics 1 (Mechanic & Heat)	3
ENGE600006	Laboratory Experiment for Basic Physics 1	1
ENMR601001	Introduction to Naval Architecture and Marine Engineering	2
ENME601002	Engineering Drawing	2
ENGE600004	Linier Algebra	4
	Subtotal	**19**
	2nd Semester	
UIGE600007	MPKT	6
ENGE600009	Basic Chemistry	2
ENGE600002	Calculus 2	3
ENGE600007	Basic Physics 2 (Electrical, Magnet, Wave, and Optic)	3
ENGE600008	Laboratory Experiment for Basic Physics 2	1
ENME602004	Engineering Statics	2
ENMR603003	Ship Material	2
ENMR602002	Ship Modelling and Visualization	2
	Subtotal	**21**
	3rd Semester	
ENME600013	Engineering Matematics	4
ENME603008	Basic Thermodynamics	4
ENMR603004	Ship Building Theory	2
ENMR603005	Ship Structure 1	2
ENME600009	Kinematics and Dynamics	4
ENMR604011	Basic Fluid Mechanics	2
ENME600017	Computational Mathe-matics	2
	Subtotal	**20**
	4th Semester	
ENMR604005	Heat Transfer	2
ENMR604007	Ship Machinery	2
ENMR604008	Ship Structure 2	2
ENMR604009	Ship Resistance and Propulsion	4
ENMR604010	Ship Hydrodynamics	2
ENME600016	Numeric Method	2
ENGE600010	Statistic and Probability	2
ENMR600001	Ship Design Assignment 1	3
	Subtotal	**19**
	5th Semester	
ENMR606017	Ship Vibration	2
ENMR600002	Ship Design Assignment 2	4
ENMR605011	Fluid and Piping System of Ship	2
ENMR605013	Ship Manufacturing Process	2
ENMR605014	Welding Engineering	2
ENMR606020	Ship Power Generation	2
ENMR606018	Ship Machinery and Equipment	2
	Elective, Internship A	3
	Subtotal	**19**
	6th Semester	
ENMR600003	Ship Design Assignment 3	3
ENMR607023	Survey and Inspection of Ship	2
ENMR605015	Ship Electrical System	3
ENMR605016	Engine Room Layout Design	2
ENMR606021	Ship Maintenance and Repair	2
	Elective, Internship B	3
	Elective	4
	Subtotal	**19**
	7th Semester	
ENMR600005	Seminar	1
ENMR600004	On the Job Training	2
ENMR605012	Ship Financing and Insurance	2
ENME600009	Health, Safety and Environ-ment	2
	Elective	4

	Elective	4
	Subtotal	**15**
	8th Semester	
ENMR600006	Final Project	5
	Elective	4
	Elective	4
	Subtotal	**13**
	Total	**145**

Elective Subjects Undergraduate Program In Naval Architecture And Marine Engineering

Code	Subject	SKS
	Odd Semester	
ENME803183	Marine and Offshore Structure	4
ENME803185	Maritime Law and regulation	4
ENME804192	Supply Chain Technology	4
ENME804193	Cold Storage Technology	4
ENME803184	Marine Transportation and Port Management	4
ENME601108	Internship A (content: Project Management and Entrepreneurship)	4
ENMR601104	Special Topic 1	4
ENME601105	Special Topic 2	4
ENME801002	Advanced Engineering Mathematics*	4
ENME802004	Engineering Computation*	4
ENME801102	Advanced Fluid Dynamics and Heat Transfer*	4
ENME801140	Materials and Manufacturing Processes*	4
	Even Semester	
ENME804186	Special Ship Project	4
ENME804187	Ship Production Optimization	4
ENME804189	Maritime Safety	4
ENME804190	Advanced Welding Engineering	4
ENME804191	Port Operation and Planning	4
ENME802103	Energy Optimization System	4
ENMR607022	Air Conditioning and Refrigeration System of Ship	4
ENME601109	Internship B (content: Industrial Seminar and Entrepreneurship)	4
ENME601106	Special Topic 3	4
ENME601107	Special Topic 4	4
ENME802003	Experimental Design*	4
ENME802006	Data Analytics*	4
ENME802181	Maritime Engineering and Management*	4
ENME803182	Ocean Energy*	4

*For Fast-Track Program Only

Transition Rules

1. The 2020 curriculum is implemented starting in the Odd Semester 2020/2021. In principle, after the 2016 Curriculum is implemented, only subjects in the 2020 Curriculum will be opened.
2. Class of 2019 and previously followed the 2020 curriculum with transitional rules.
3. A transitional period of 1 year, in the academic year 2020/2021, is implemented for subjects where the semester placement changes (from Even to Odd, or vice versa), if necessary, will be opened in both semesters during the transition period (Academic Year 2020 / 2021).
4. For students who have not passed the compulsory subjects in the 2016 Curriculum, are required to take the same or equivalent subjects in the 2020 Curriculum.)
5. If there is a change in the SKS for the course, the number of SKS taken into account in graduation is the number of the SKS at the time the course was taken. Same or equal subjects with different SKS weights, if repeated or newly taken will be listed with a new name and calculated with new SKS weights.
6. If the compulsory subjects in the 2016 Curriculum are removed and there is no equivalence in the 2020 Curriculum then for students who have passed these courses, they will still be counted as compulsory subjects in the calculation of passing 145 SKS. Students who have not passed the course can take new compulsory subjects or elective courses in the 2020 Curriculum to complete 145 credits.

Curriculum of International Program In Naval Architecture and Marine Engineering

Code	Subject	SKS
	1st Semester	
UIGE610002	Academic Writing	2
UIGE610004	Religion	2
ENGE610004	Linear Algebra	4
ENGE610006	Laboratory Experiment for Basic Physics 1	1
ENGE610001	Calculus 1	3
ENGE610005	Basic Physics 1 (Mechanic and Heat)	3
ENME611002	Engineering Drawing	2
ENMR611001	Intro to Naval Architecture and Marine Eng	2
	Subtotal	**19**
	2nd Semester	
ENGE610007	Basic Physics 2 (Elec, Magnet, Wave & Opt)	3
ENGE610008	Laboratory Experiment for Basic Physics 2	1
ENGE610002	Calculus 2	3
ENMR612002	Ship Modelling and Visualization	2
ENMR613003	Ship Material	2
ENME612004	Engineering Statics	2
ENGE610009	Basic Chemistry	2
ENME610016	Numerical Method	2
ENGE610010	Statistic and Probability	2
	Subtotal	**19**
	3rd Semester	
ENMR613004	Ship Building Theory	2
ENMR614011	Basic Fluid Mechanics	2
ENMR613005	Ship Structure 1	2
ENME610013	Engineering Mathematics	4
ENME610018	Computational Mathematics	2
	4th Semester	
ENMR615013	Ship Manufacturing Process	2
ENMR616020	Ship Power Generation	2
ENMR614010	Ship Hydrodynamics	2
ENMR614009	Ship Resistance and Propulsion	4
ENMR614007	Ship Machinery	2
ENMR615015	Ship Electrical System	3
ENMR614008	Ship Structure 2	2
ENMR614005	Heat Transfer	2
	Sub Total	**19**
	5th Semester	
UIGE610011	Integrated Character Building	6
ENMR610001	Ship Design Assignment 1	3
ENMR616018	Ship Machinery and Equipment	2
ENMR615014	Welding Engineering	2
ENMR615011	Fluid and Piping System of Ship	2
ENMR616017	Ship Vibration	2
	Sub Total	**17**
	6th Semester	
ENGE610012	Health, Safety and Environment	2
ENMR610002	Ship Design Assignment 2	4
ENMR616021	Ship Maintenance and Repair	2
ENMR615016	Engine Room Layout Design	2
ENMR617023	Survey and Inspection of Ship	2
	Sub Total	**12**

Subject Eqivalent Table Mechanical Engineering Study Program

2016			2020		
CODE	SUBJECTS	CREDIT	CODE	SUBJECT	CREDIT
UIGE600001	MPKT A	6	UIGE600007	MPKT	6
UIGE600002	MPKT B	6		Elective	
UIGE600020-48	Sport / Art	1		Elective	
ENMR606019	Ship Electrical System	2		Elective	
UIGE600003	English	3	UIGE600003	English	2
ENMR602002	Ship Modelling and Visualization	3	ENMR602002	Ship Modelling and Visualization	2
			ENME602004	Engineering Statics	2
			ENME600018	Computational Mathematics	2
ENMR600001	Ship Design Assignment 1	2	ENMR600001	Ship Design Assignment 1	3
ENMR604006	Thermofluids	4	ENMR604011	Basic Fluid Mechanics	2
			ENMR604005	Heat Transfer	2
ENMR605012	Engineering Economic	2	ENMR605012	Ship Financing and Insurance	2
			ENME601108	Internship A	3
ENME600006	Industrial Seminar	2	ENME601109	Internship B	3
ENMR605015	Ship Electrical System	2	ENMR605015	Ship Electrical System	3
ENMR607022	Air Conditioning and Refrigeration System of Ship	4	ENMR607022	Elective, Air Conditioning and Refrigeration System of Ship	4
ENMR604008	Ship Structure 2	4	ENMR604008	Ship Structure 2	2
ENMR606020	Ship Power System	2	ENMR606020	Ship Power Generation	2
ENMR607023	Survey and Inspection of Ship	2	ENMR607023	Survey and Inspection of Ship	4
ENME804187	Ship Production and Management	4	ENME804187	Ship Production Optimization	4

			ENMR601104	Special Topic 1	4
			ENMR601105	Special Topic 2	4
			ENME804192	Supply Chain Technology	4
			ENME804193	Cold Storage Technology	4
			ENME804191	Port Operation and Planning	4

Study Material on Naval Architecture And Marine Engineering

Study Material	Code	Subjects	Credits
Ship Design	ENME803183	Offshore Building	4
	ENME804186	Special Ship	4
	ENME804187	Ship Production Optimization	4
	ENME804190	Advanced Welding Engineering	4
	ENME804189	Marine Safety	4
Ship System	ENME804193	Cargo Cooling Technology	4
	ENMR607022	Ship Air Conditioning and Refrigeration	4
Sea Transportation System	ENME804192	Supply Chain Technology	4
	ENME804191	Port Operational and Planning	4
	ENME803185	Marine Law and Regulation	4

Minor in Naval Architecture and Marine Engineering
Pre-requisite: Mathematics, Physics, Engineering Drawing

Odd Semester			Even Semester		
Code	**Subjects**	**Credits**	**Code**	**Subjects**	**Credits**
Mandatory Subjects, 24 SKS					
ENMR601001	Introduction of Naval Architecture and Marine Engineering	2	ENMR602002	Ship Visualization and Modelling	2
ENMR603004	Ship Building Theory	2	ENMR604009	Ship Resistance and Propulsion	4
ENMR605013	Ship Manufacturing Process	2	ENMR604008	Ship Stucture 2	2
ENMR603005	Ship Stucture 1	2	ENMR604007	Ship Engine	2
ENMR606018	Auxiliary Ship Engine	2	ENMR604010	Ship Hidrodynamics	2
			ENMR607023	Ship Survey and Inspection	2
	Subtotal	10		**Subtotal**	14
Elective (Ship Design and Construction)					
ENME803183	Offshore Building	4	ENME804187	Ship Production Optimization	4
			ENME804186	Special Ship	4
Elective (Ship System)					
ENME804193	Cargo Cooling Technology	4	ENMR607022	Ship Air Conditioning and Refrigeration	4
			ENME803182	Ocean Energy	4
Elective (Ship Transportation)					
ENME803185	Marine Law and Regulation	4	ENME804191	Port Operational and Planning	4
ENME804192	Supply Chain Technology	4			

Undergraduate Program in Electrical Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia Double Degree: Universitas Indonesia and partner university	
2.	**Teaching Institution**	Universitas Indonesia Double Degree: Universitas Indonesia and partner university	
3.	**Faculty**	Engineering	
4.	**Program Title**	Undergraduate Program in Electrical Engineering	
5.	**Vision and Mission**	**Vision** "to become a leading study programme that is able to provide the solutions to the problems and challenges at the national and global level" **Mission** The department has defined its mission to 1. Deliver education based on the concept of good university governance to produce graduates who are knowledgeable, internationally minded, and have an entrepreneurial spirit. 2. Organize facilities, funding, and participation in applied research and new findings that can provide solutions to national and global problems. 3. Apply appropriate sciences and technologies in community service activities that meet the needs of the communities and industries.	
6.	**Class**	Regular, Non Reguler, International	
7.	**Final Award**	Sarjana Teknik (S.T)	
8.	**Accreditation Status**	BAN-PT: A-accredited and AUN-QA International Assessment	
9.	**Language(s) of Instruction**	Bahasa Indonesia and English for International Class	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11,	**Entry Requirements**	High school /equivalent or polytechnic/equivalent and pass the entrance exam	
12.	**Duration for Study**	Designed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**Aims of the programme:** 1. To produce graduates that will have autonomous professional profile as follows: 2. Become a professional graduate who has technical, managerial, and entrepreneurial skills as well as global insight, and as an active learner who follows the latest developments in science and technology in the field of Electrical Engineering. 3. Become a graduate with character, ethics, and care for the environment.		
14.	**Graduate Profiles:** Engineering Graduates that can analyze and design the systems in the field of Electrical Engineering that can provide solutions to problems in society in accordance with professional ethics.		

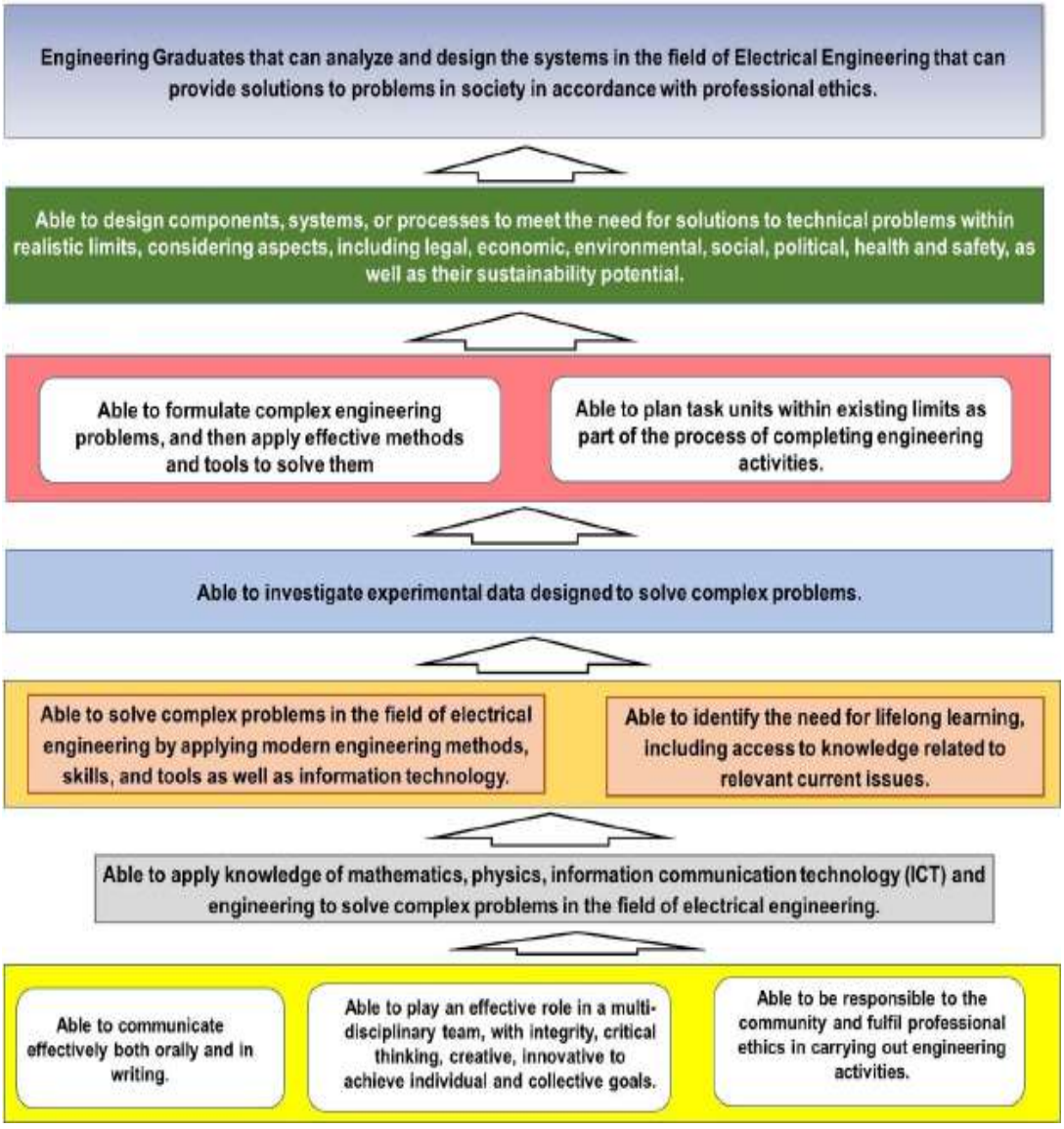
15.	**Expected Learning Outcomes:** Electrical Engineering Graduates are expected to have the following learning outcomes: 1. Able to design components, systems, or processes to meet the need for solutions to technical problems within realistic limits, considering aspects, including legal, economic, environmental, social, political, health and safety, as well as their sustainability potential. 2. Able to plan task units within existing limits as part of the process of completing engineering activities. 3. Able to formulate complex engineering problems, and then apply effective methods and tools to solve them. 4. Able to investigate experimental data designed to solve complex problems. 5. Able to identify the need for lifelong learning, including access to knowledge related to relevant current issues. 6. Able to solve complex problems in the field of electrical engineering by applying modern engineering methods, skills, and tools as well as information technology. 7. Able to apply knowledge of mathematics, physics, information communication technology (ICT) and engineering to solve complex problems in the field of electrical engineering. 8. Able to communicate effectively both orally and in writing. 9. Able to play an effective role in a multi-disciplinary team, with integrity, critical thinking, creative, innovative to achieve individual and collective goals. 10. Able to be responsible to the community and fulfill professional ethics in carrying out engineering activities.

No.	Classification	Credit Hours (SKS)	Percentage
i	University General Subjects	10	6,3%
ii	Faculty Subjects	18	12,5%
iii	Core Subjects	88	61,1%
iv	Elective Subjects	29	20,1
	Total	145	100 %
	Total Credit Hours to Graduate		145 SKS

Career Prospects

Graduates of this study program can work in various types of companies such as the electric power industry, telecommunications and information technology, electronics, oil and gas, education, government, health industry, banking, and other related industries.

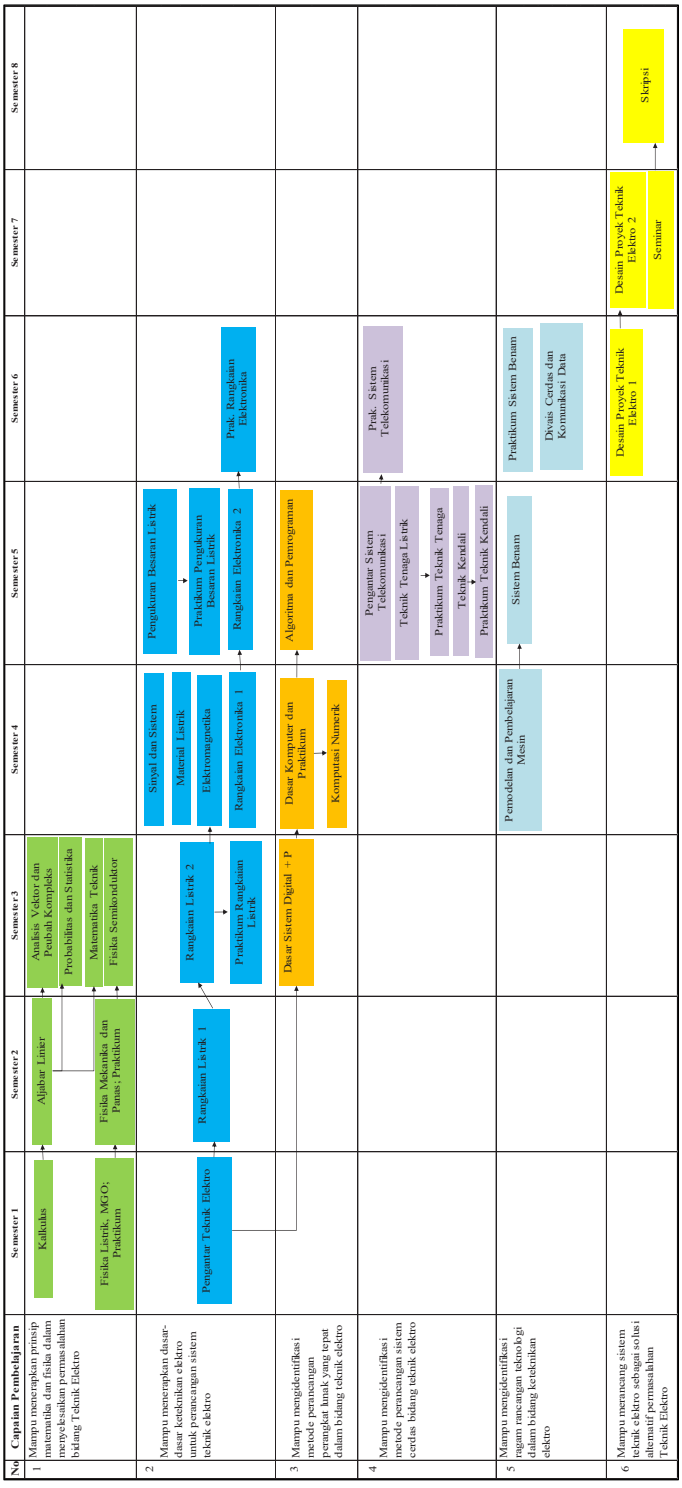
LEARNING OUTCOMES



Learning Outcome Matrix of Mandatory Subjects

Kode	Course	Credit	Sem	10	9	8	7	6	5	4	3	2	1
UIGE600010-15	Religion	2	1		X								
UIGE600003	English	2	1				X						
ENGE600003	Calculus	4	1			X							
ENGE600004	Linear Algebra	4	1			X							
ENGE600007	Physics of Electricity, Magnetism, Optics, and Waves	3	1			X							
ENGE600008	Physics of Electricity, Magnetism, Optics, and Waves Laboratory	1	1			X							
ENEE601001	Introduction to Electrical Engineering	2	1		X		X		X				
UIGE600001	Integrated Characteristic Building	5	2		X		X		X				
ENGE600005	Physics of Mechanics and Heats	3	2			X							
ENGE600006	Laboratory of Mechanics and Heats Physics	1	2			X							
ENEE602002	Probability and Statistics	4	2			X							
ENEE602003	Electric Circuit 1	3	2			X		X					
ENEE602004	Vector Analysis and Complex Variable	2	2			X							
ENEE602005	Fundamentals of Digital System and Laboratory	3	2			X		X					
ENEE603006	Electric Circuit 2	3	3			X		X					
ENEE603007	Electric Circuit Laboratory	1	3			X		X					
ENEE603008	Engineering Mathematics	4	3			X							
ENEE603009	Physics of Semiconductor	2	3			X							
ENEE603010	Advanced Linear Algebra	2	3			X							
ENEE603011	Electromagnetics	4	3			X		X					
ENEE603012	Electric Measurements	2	3			X		X					
ENEE603013	Electric Measurement Laboratory	1	3			X		X					
ENEE603014	Basic Computer and Laboratory	3	3			X		X					
ENEE604015	Electronic Circuits 1	2	4			X		X					
ENEE604016	Electronic Circuits Laboratory	1	4			X		X					
ENEE604017	Signal and Systems	3	4			X		X					
ENEE604018	Electric Power Engineering	3	4					X		X			
ENEE604019	Electric Power Engineering Laboratory	1	4			X		X					
ENEE604020	Numerical Computation	2	4			X		X					
ENEE604021	Electrical Materials	2	4					X					
ENEE604022	Embedded System 1	3	4					X		X			
ENEE604023	Algorithm and Programming	3	4					X		X			
ENEE605024	Introduction to Telecommunication System	3	5					X		X			
ENEE605025	Telecommunication System Laboratory	1	5					X		X			
ENEE605026	Electronic Circuits 2	2	5					X		X			
ENEE605027	Control Engineering	3	5					X		X			
ENEE605028	Control Engineering Laboratory	1	5					X		X			
ENEE605029	Embedded System 2	3	5							X			X
ENEE605030	Embedded System Laboratory	1	5					X		X			
ENEE605031	Modeling and a Machine Learning	3	5					X		X			
ENEE605032	Innovation and Entrepreneurship	2	5						X			X	
ENGE600012	Health, Safety & Environment	2	5	X									
ENEE606033	Electrical Engineering Project Design 1	2	6		X		X				X	X	
ENEE606034	Internship	2	6	X			X		X				
ENEE607035	Electrical Engineering Project Design 2	3	7	X	X		X				X		X
ENEE607036	Pra-Bachelor Theses	2	7				X		X			X	
ENEE608037	Bachelor Theses	4	8	X			X	X			X		X

Course Flow Diagram



Course Structure Undergraduate Program (Regular/Non Reguler) in Electrical Engineering

Code	Course	SKS
	1st Semester	
UIGE600010-15	Religion	2
UIGE600003	English	2
ENGE600003	Calculus	4
ENGE600004	Linear Algebra	4
ENGE600007	Physics of Electricity, Magnetism, Optics, and Waves	3
ENGE600008	Physics of Electricity, Magnetism, Optics, and Waves Laboratory	1
ENEE601001	Introduction to Electrical Engineering	2
	Subtotal	**18**
	2nd Semester	
UIGE600007	Integrated Characteristic Building	6
ENGE600005	Physics of Mechanics and Heats	3
ENGE600006	Laboratory of Mechanics and Heats Physics	1
ENEE602002	Probability and Statistics	4
ENEE602003	Electric Circuit 1	3
ENEE602004	Vector Analysis and Complex Variable	2
ENEE602005-MB	Fundamentals of Digital System and Laboratory	3
	Subtotal	**22**
	3rd Semester	
ENEE603006	Electric Circuit 2	3
ENEE603007	Electric Circuit Laboratory	1
ENEE603008	Engineering Mathematics	4
ENEE603009	Physics of Semiconductor	2
ENEE603010	Advanced Linear Algebra	2
ENEE603011	Electromagnetics	4
ENEE603012	Electric Measurements	2
ENEE603013	Electric Measurement Laboratory	1
ENEE603014-MB	Basic Computer and Laboratory	3
	Subtotal	**22**
	4th Semester	
ENEE604015	Electronic Circuits 1	2
ENEE604016	Electronic Circuits Laboratory	1
ENEE604017	Signal and Systems	3
ENEE604018	Electric Power Engineering	3
ENEE604019	Electric Power Engineering Laboratory	1
ENEE604020	Numerical Computation	2
ENEE604021	Electrical Materials	2
ENEE604022	Embedded System	3
ENEE604023-MB	Algorithm and Programming	3
	Subtotal	**20**
	5th Semester	
ENEE605024	Introduction to Telecommunication System	3
ENEE605025	Telecommunication System Laboratory	1
ENEE605026	Electronic Circuits 2	2
ENEE605027	Control Engineering	3
ENEE605028	Control Engineering Laboratory	1
ENEE605029	Embedded System 2	3
ENEE605030	Embedded System Laboratory	1
ENEE605031	Modeling anda Machine Learning	3
ENEE605032-MB	Innovation and Entrepreneurship	2
ENGE600012-MB	Health, Safety & Environment	2
	Subtotal	**21**

	6th Semester	
ENEE606033	Electrical Engineering Project Design 1	2
ENEE606034-MB	Internship	2
MB	Major Elective Course	8
MB	Electives	4
	Subtotal	**16**
	7th Semester	
ENEE607035	Electrical Engineering Project Design 2	3
ENEE607036	Pra-Bachelor Thesis	2
MB	Major Elective Course	8
MB	Electives	2
	Subtotal	**15**
	8th Semester	
ENEE608037	Bachelor Theses	4
MB	Major Elective Course	5
MB	Electives	2
	Subtotal	**11**
	TOTAL	**145**

Elective Courses of Electric Power Engineering Field

Code	Course	SKS
	6th Semester	
ENEE606101	Energy Conversion and Renewable Energy	2
ENEE606102	Power Electronics and Laboratory	3
ENEE606103	Management and Engineering Economics	2
	Subtotal	**7**
	7th Semester	
ENEE607104	Electric Power System and Laboratory	3
ENEE607105	High Current & Voltage Engineering and Laboratory	3
ENEE607106	Building Electrical Installation	2
ENEE607107	Special Topics of Electric Power Engineering 1	2
	Subtotal	**10**
	8th Semester	
ENEE608108	Smart Grid	2
ENEE608109	Electric Power System Protection	2
ENEE608110	Special Topics of Electric Power Engineering	2
	Subtotal	**6**

Elective Courses of Electronic Engineering Field

Code	Course	SKS
	6th Semester	
ENEE606201	Design of Electronic Circuits	3
ENEE606202	Advanced Electronic Devices	3
ENEE606203	Design of Electronics Instrumentation	2
	Subtotal	**8**
	7th Semester	
ENEE607204	Optoelectronic Devices	3
ENEE607205	Design of VLSI Circuits	3
ENEE607206	Introduction to Nano-electronics	2
ENEE607207	Special Topics of Electronics 1	2
	Subtotal	**10**
	8th Semester	
ENEE608208	Advanced Embedded System	3
ENEE608209	Special Topics of Electronics	2
	Subtotal	**5**

Elective Courses of Telecommunication Engineering Field

Code	Course	SKS
	6th Semester	
ENEE606301	Digital Communication	3
ENEE606302	Telecommunication System Devices	3
ENEE606303	Optical Communications	2

	Subtotal	**8**
	7th Semester	
ENEE607304	Antenna and Propagation	3
ENEE607305	Wireless Communication and Convergence Networks	3
ENEE607306	Capita Selecta of Telecommunication Ecosystems	2
ENEE607307	Special Topics of Telecommunication 1	2
	Subtotal	**10**
	8th Semester	
ENEE608308	Signal Processing and Multimedia Service	3
ENEE608309	Special Topics of Telecommunication	2
	Subtotal	**5**

Elective Courses of Control Engineering Field

Code	Course	SKS
	6th Semester	
ENEE606401	Electric Motor Control System	3
ENEE606402	Adaptive and Predictive Control System	3
ENEE606403	Industrial Automation System	2
	Subtotal	**8**
	7th Semester	
ENEE607404	Mechatronics	3
ENEE607405	Knowledge-based System	3
ENEE607406	Robotic System	2
ENEE607407	Special Topics of Control Engineering 1	2
	Subtotal	**10**
	8th Semester	
ENEE608408	Autonomous Vehicle System	3
ENEE608409	Special Topics of Control Engineering	2
	Subtotal	**5**

Course Structure of International Undergraduate Program

Code	Course	SKS
	1st Semester	
ENGE610003	Calculus	4
ENGE610007	Physics (Electric, Magnet, Optic, and Wave)	3
ENGE610008	Physics (Electric, Magnet, Optic, and Wave) Laboratory	1
ENGE610004	Linear Algebra	4
ENEE611001	Introduction to Electrical Engineering	2
ENEE611002	Fundamentals of Digital System and Laboratory	3
UIGE610002	Academic Writing	2
	Subtotal	**19**
	2nd Semester	
ENGE610005	Physics (Mechanics and Heat)	3
ENGE610006	Physics (Mechanics and Heat) Laboratory	1
ENEE612003	Basic Computer and Laboratory	3
ENEE612004	Probability and Statistics	4
ENEE612005	Vector and Complex Variable Analysis	2
ENEE612006	Electric Circuit 1	3
ENEE612007	Physics of Semiconductor	2
ENEE612008	Engineering Mathematics	4
	Subtotal	**22**
	3rd Semester	
ENEE613009	Electric Circuit 2	3
ENEE613010	Electric Circuit Laboratory	1
ENEE613011	Signal & Systems	3
ENEE613012	Electromagnetics	4
ENEE613013	Introduction to Telecommunication System	3

ENEE613014	Telecommunication system Laboratory	1
ENEE613015	Electronic Circuits 1	2
ENEE613016	Electronic Circuits Laboratory	1
ENEE613017	Electrical Measurements	2
ENEE613018	Advanced Linear Algebra	2
	Subtotal	**22**
	4th Semester	
ENEE614019	Control Engineering	3
ENEE614020	Control Engineering Laboratory	1
ENEE614021	Electronic Circuits 2	2
ENEE614022	Electrical Measurements Laboratory	1
ENEE614023	Numerical Computation	2
ENEE614024	Electrical Materials	2
ENEE614025	Embedded System 1	3
ENEE614026	Electrical Power Engineering	3
ENEE614027	Electrical Power Engineering Laboratory	1
ENEE614028	Algorithm and Programming	3
	Subtotal	**21**
	5th Semester	
UIGE610011	Integrated Characteristic Building	6
UIGE610005-9	Religion	2
ENEE615029	Embedded System 2	3
ENEE615030	Embedded System Laboratory	1
ENEE615031	Power Electronics and Laboratory	3
ENEE615032	Electric Motor Control System	3
ENEE615033	Wireless Communication and Convergence Networks	3
ENEE615034	Electronic Instrumentation Design	2
	Subtotal	**23**

	6th Semester	
ENEE616035	Autonomous Vehicle System	3
ENEE616036	Modeling and Machine Learning	3
ENEE616037	Electrical Engineering Project Design 1	2
ENEE616038	Introduction to Nanoelectronics	2
ENEE616039	Electric Power System and Laboratory	3
ENEE616040	Telecommunication System Devices	3
ENEE616041	Internship	2
ENEE616042	Innovation and Entrepreneurship	2
	Subtotal	**20**
	7th Semester	
ENGE610012	Health, Safety & Environment	2
ENEE617043	Electrical Engineering Project Design 2	3
ENEE617044	Optoelectronic Devices	2
ENEE617045	Pra-Bachelor Thesis	2
	Electives	3
	Subtotal	**12**
	8th Semester	
ENEE618047	Bachelor Thesis	4
	Electives	2
	Subtotal	**6**
	Total	**145**

Undergraduate Program in Computer Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program Title**	Undergraduate Program in Computer Engineering	
5.	**Vision and Mission**	**Vision** To be an excellent and competitive study program in education and research in the field of Computer Engineering to contribute to society nationally and globally. **Mission** The department has defined its mission to 1. Preparing graduates of computer engineering study program that is highly intellectual, innovative, adaptive to the needs of the society with ethics and integrity, has a spirit of nationality, and able to compete globally. 2. Conducting quality education and research, including improving community service, and being able to answer national and global challenges by responding, and providing solutions to problems in the community.	
6.	**Class**	Reguler, Non Reguler	
7.	**Final Award**	Sarjana Teknik (S.T)	
8.	**Accreditation Status**	BAN-PT: Accreditation-Excellent AUN: More than adequate (5) IABEE: General Accreditation	
9.	**Language(s) of Instruction**	Bahasa Indonesia	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11,	**Entry Requirements**	High Shool /equivalent graduates and pass the entrance selection	
12.	**Duration for Study**	8 (eight) semesters or 4 (four) years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**Aims of the programme:** Produce graduates who have professional profiles as follows: 1. Become a professional who is capable of designing, analyzing and developing systems, processes and applications in the field of computer engineering to produce alternative solutions to the problem in their fields. 2. To be an inclusive computer engineer professional, including being part of stakeholders who have concern for the development of computer technology that has an impact on improving people's quality of life 3. Become an individual or professional who has innovation and entrepreneurial spirit with integrity and ethics.		

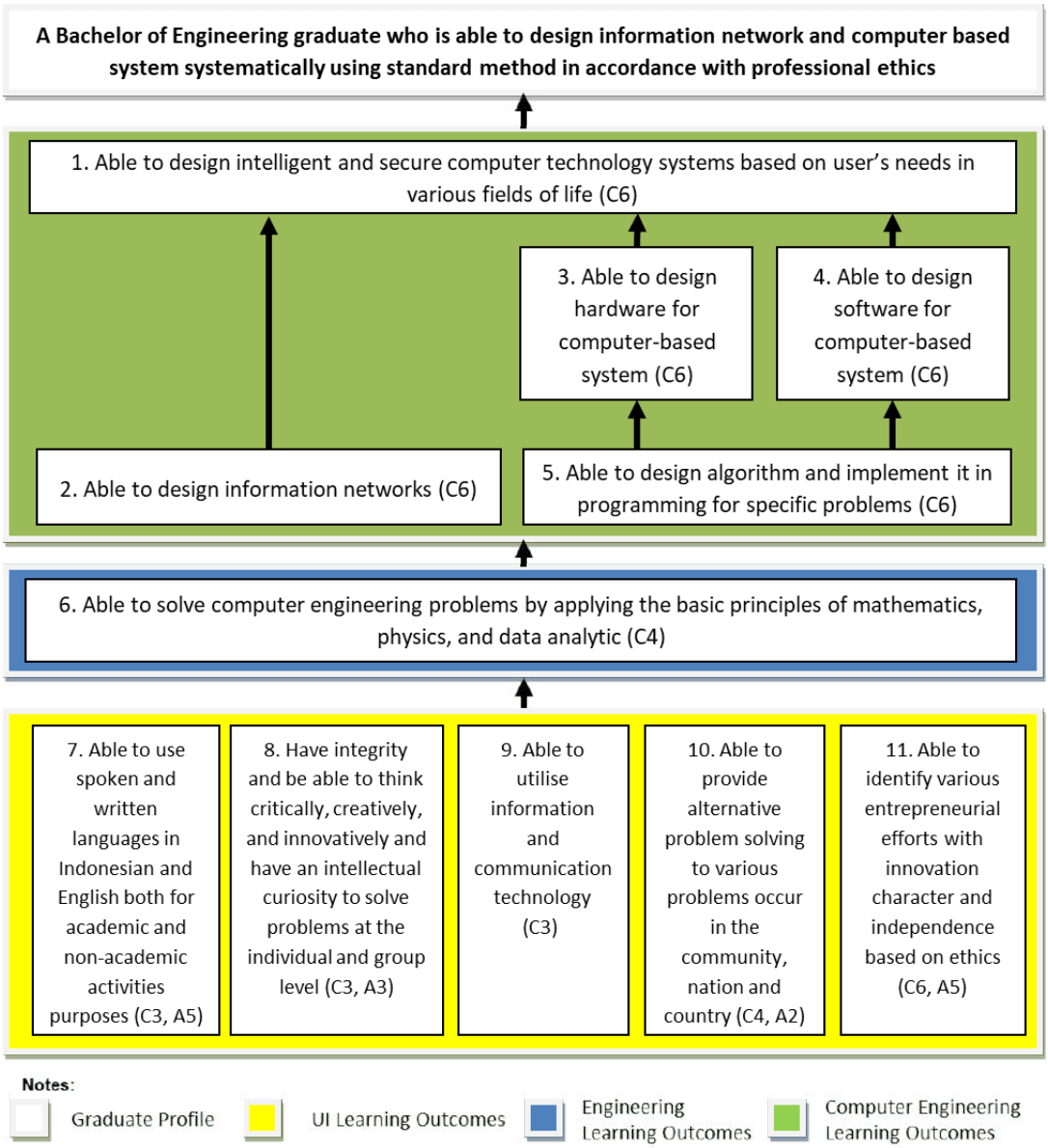
14.	**Graduate Profile:** Bachelor of Engineering who is able to design information networks and computer-based systems systematically using standard methods in accordance with professional ethics
15.	**Expected Learning Outcomes:** 1. Able to design intelligent and secure computer technology systems based on user's needs in various fields of life (C6) 2. Able to design information network plan (C6) 3. Able to design hardware for computer based system (C6) 4. Able to design software for computer based system (C6) 5. Able to design algorithm and implement it in programming (C6) 6. Able to implement the basic principles of mathematics, physics, and statistic in solving computer-engineering problems (C4) 7. Able to use spoken and written language of Bahasa Indonesia and English in academic and nonacademic activities (C3, A5) 8. Have integrity and able to think critically, creatively, and innovatively and have the intellectual knowledge to solve problems in individual and group level (C4, A4) 9. Able to utilize communication information technology(C3) 10. Able to provide alternatives of solutions for various problems within the society, country, and nation (C4, A2) 11. Able to identify the various entrepreneurship efforts characterized with innovation and independence based on ethics (C4, A5)
16.	**Composition of Subjects**

No.	Classification	Credit Hours (SKS)	Percentage
i	University General Subjects	10	6.3%
ii	Basic Engineering Subjects	16	11.0%
iii	Electrical Engineering Department Subjects	9	6.3%
iv	Computer Engineering Core Subjects	78	54.1%
v	Electives	24	16.7%
vi	Special Subjects (Practical Work, Seminars, Thesis)	8	5.6%
	Total Credit Hours to Graduate	145	100 %

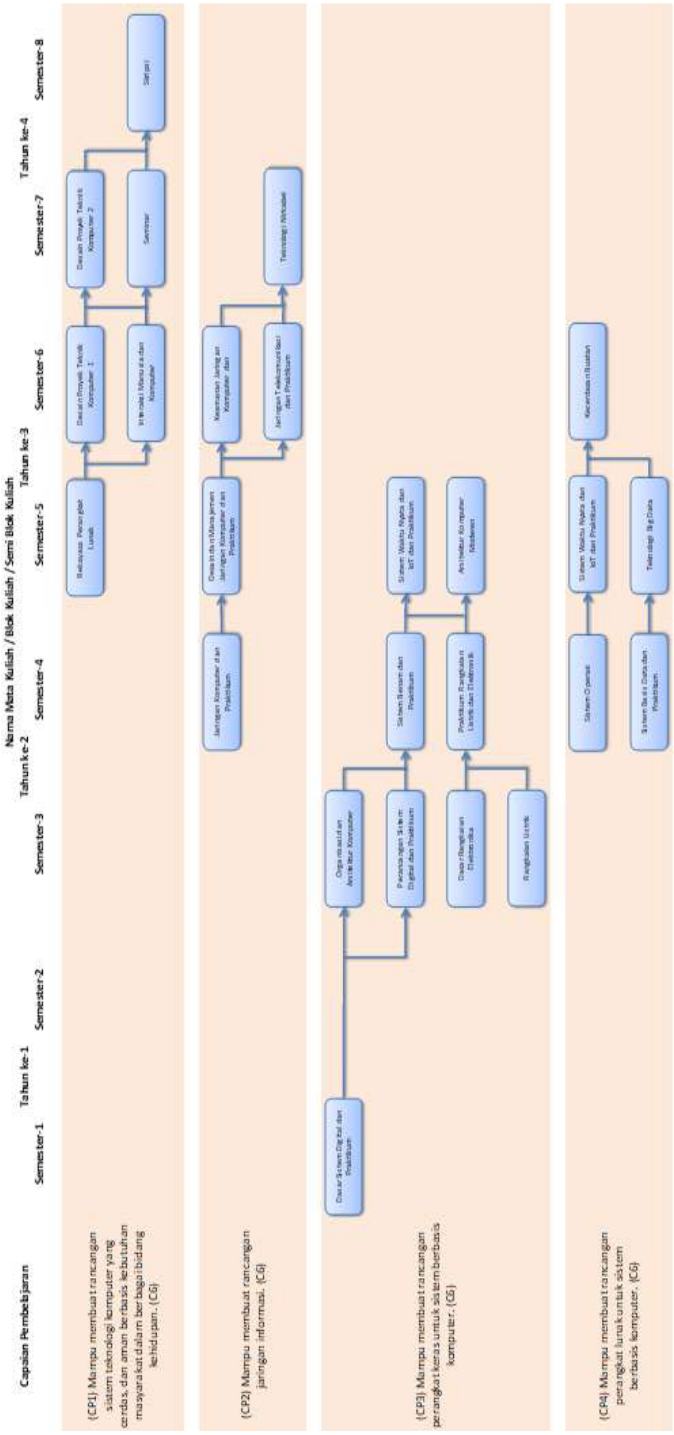
Employment Prospects

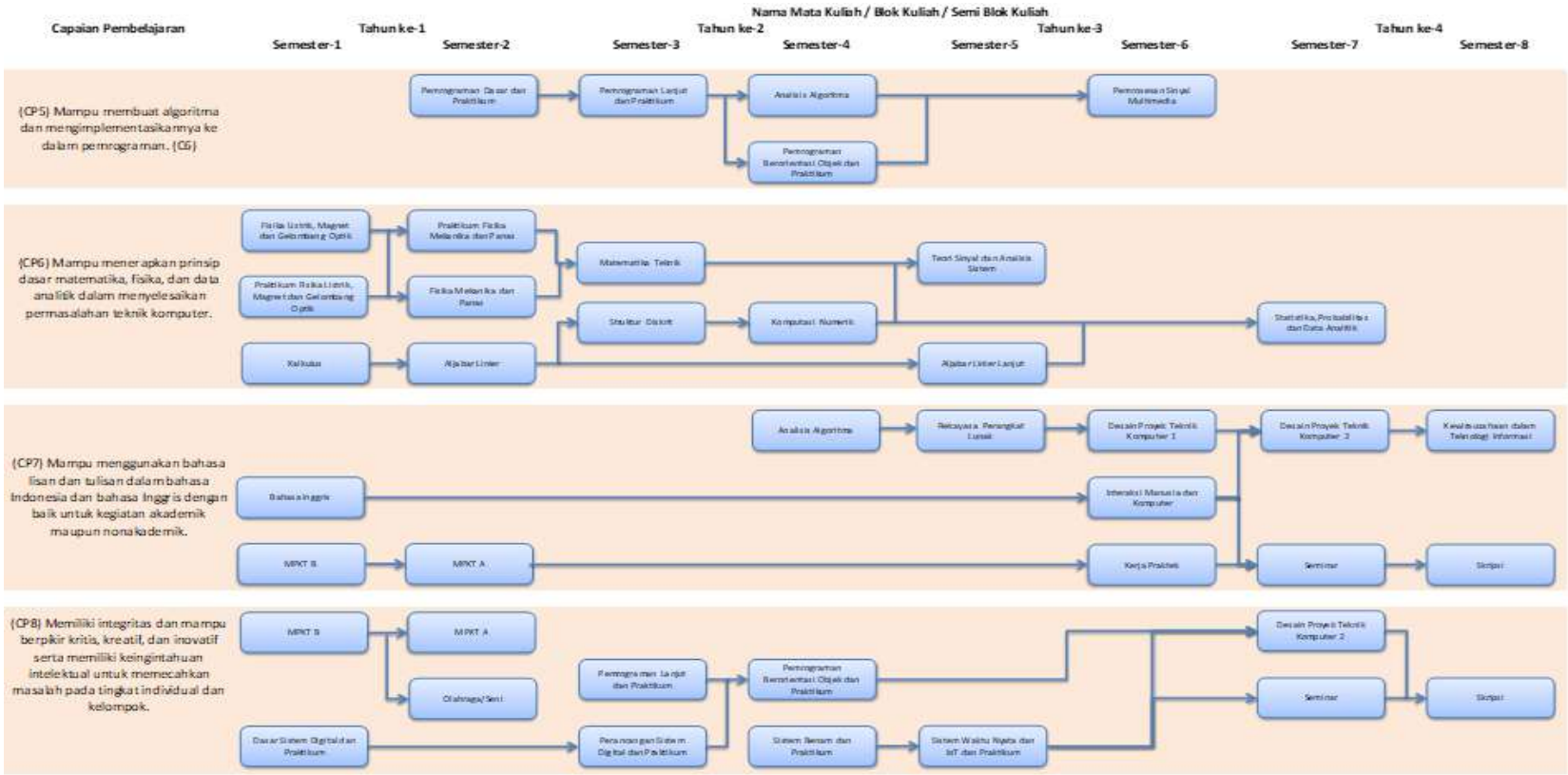
The program graduates are needed in almost all fields of work, e.g. industry, services, banking and all fields requiring the application IT (Information technology). Some professional profiles that are suited to this program's graduate are IT Manager, Project Manager, Program Manager, Programmer, System Analyst, Software Developer, Data Analyst, Product Specialist, Software Engineer, Computer Hardware Engineer, System Administrator, IT Support, etc.

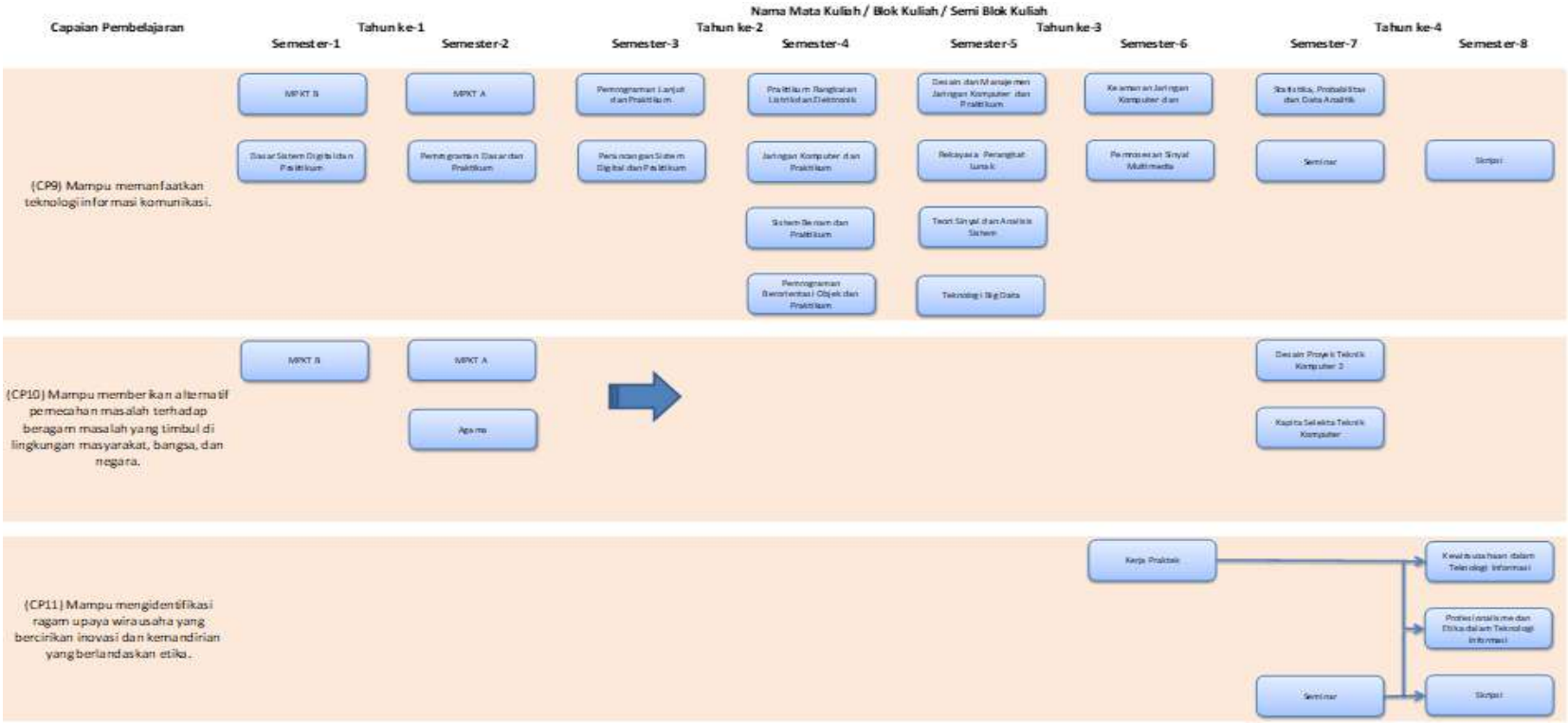
Block Diagram of Expected Learning Outcomes (ELO)



Flow Diagram for Achieving ELO in Computer Engineering Undergraduate Program




Nama Mata Kuliah / Blok Kuliah / Semi Blok Kuliah
Capaian Pembelajaran
Tahun ke-1
Tahun ke-2
Tahun ke-3
Tahun ke-4
Semester-1
Semester-2
Semester-3
Semester-4
Semester-5
Semester-6
Semester-7
Semester-8
(CP5) Mampu membuat algoritma dan mengimplementasikannya ke dalam pemrograman. (CG)
Pemrograman Dasar dan Praktikum
Pemrograman Lanjut dan Praktikum
Analisis Algoritma
Pemrograman Berorientasi Objek dan Praktikum
Pemrosesan Sinyal Multimedia
(CP6) Mampu menerapkan prinsip dasar matematika, fisika, dan data analitik dalam menyelesaikan permasalahan teknik komputer.
Fisika Listrik, Magnet dan Gelombang Optik
Praktikum Fisika Mekanika dan Panas
Praktikum Fisika Listrik, Magnet dan Gelombang Optik
Fisika Mekanika dan Panas
Matematika Teknik
Struktur Diskrit
Komputasi Numerik
Teori Sinyal dan Analisis Sistem
Kalkulus
Aljabar Linier
Aljabar Linier Lanjut
Statistika, Probabilitas dan Data Analitik
(CP7) Mampu menggunakan bahasa lisan dan tulisan dalam bahasa Indonesia dan bahasa Inggris dengan baik untuk kegiatan akademik maupun nonakademik.
Analisis Algoritma
Rekayasa Perangkat Lunak
Desain Proyek Teknik Komputer 1
Desain Proyek Teknik Komputer 2
Kewirausahaan dalam Teknologi Informasi
Bahasa Inggris
Interaksi Manusia dan Komputer
MPKT B
MPKT A
Kerja Praktek
Seminar
Skripsi
(CP8) Memiliki integritas dan mampu berpikir kritis, kreatif, dan inovatif serta memiliki keingintahuan intelektual untuk memecahkan masalah pada tingkat individual dan kelompok.
MPKT B
MPKT A
Olahraga/Seni
Dasar Sistem Digital dan Praktikum
Pemrograman Lanjut dan Praktikum
Perancangan Sistem Digital dan Praktikum
Pemrograman Berorientasi Objek dan Praktikum
Sistem Benam dan Praktikum
Sistem Waktu Nyata dan IoT dan Praktikum
Desain Proyek Teknik Komputer 2
Seminar
Skripsi


Nama Mata Kuliah / Blok Kuliah / Semi Blok Kuliah
Capaian Pembelajaran
Tahun ke-1
Semester-1
Semester-2
Tahun ke-2
Semester-3
Semester-4
Tahun ke-3
Semester-5
Semester-6
Tahun ke-4
Semester-7
Semester-8
(CP9) Mampu memanfaatkan teknologi informasi komunikasi.
MPKT B
MPKT A
Pemrograman Lanjut dan Praktikum
Praktikum Rangkaian Listrik dan Elektronik
Desain dan Manajemen Jaringan Komputer dan Praktikum
Keamanan Jaringan Komputer dan
Statistika, Probabilitas dan Data Analitik
Dasar Sistem Digital dan Praktikum
Pemrograman Dasar dan Praktikum
Perancangan Sistem Digital dan Praktikum
Jaringan Komputer dan Praktikum
Rekayasa Perangkat Lunak
Pemrosesan Sinyal Multimedia
Seminar
Skripsi
Sistem Berkas dan Praktikum
Teori Sinyal dan Analisis Sistem
Pemrograman Berorientasi Objek dan Praktikum
Teknologi Big Data
(CP10) Mampu memberikan alternatif pemecahan masalah terhadap beragam masalah yang timbul di lingkungan masyarakat, bangsa, dan negara.
MPKT B
MPKT A
Agama
Desain Proyek Teknik Komputer 2
Kapita Selekta Teknik Komputer
(CP11) Mampu mengidentifikasi ragam upaya wirausaha yang bercirikan inovasi dan kemandirian yang berlandaskan etika.
Kerja Praktek
Kewirausahaan dalam Teknologi Informasi
Profesionalisme dan Etika dalam Teknologi Informasi
Seminar
Skripsi

Course Structure Undergraduate Program in Computer Engineering

Code	Subject	SKS
	1st Semester	
UIGE600010-15	Religion	2
UIGE600003	English	2
ENGE600003	Calculus	4
ENGE600007	Physics (Electricity, MWO)	3
ENGE600008	Physics (Electricity, MWO) Laboratory	1
ENCE601001	Basic Programming and Laboratory	3
ENEE605033	Fundamental of Digital System and Laboratory	3
	Sub Total	**18**
	2nd Semester	
UIGE600007	Integrated Character Building	6
ENGE600004	Linear Algebra	4
ENGE600005	Physics (Mechanics and Thermal)	3
ENGE600006	Physics (Mechanics and Thermal) Laboratory	1
ENCE602002	Computer Organization and Architecture	3
ENCE602003	Advanced Programming and Laboratory	3
	Sub Total	**20**
	3rd Semester	
ENCE603004	Digital System Design and Laboratory	3
ENCE603005	Discrete Structures	3
ENCE603006	Computer Networks and Laboratory	4
ENCE603007	Object Oriented Programming and Laboratory	3
ENCE603008	Basics of Electronic Circuit	2
ENCE603009	Electric Circuit	2
ENCE603010	Statistics	3
	Sub Total	**20**
	4th Semester	
ENCE604011	Advanced Linear Algebra	2
ENCE604012	Cyber-physical System and Laboratory	3
ENCE604013	Algorithm Analysis	3
ENCE604014	Operating System	2
ENCE604015	Design and Management of Computer Networks and Laboratory	4
ENCE604016	Database System and Laboratory	3
ENEE603008	Engineering Mathematics	4
ENCE604017	Electric and Electronic Circuit Laboratory	1
	Sub Total	**22**
	5th Semester	
ENCE605018	Software Engineering	3
ENCE605019	Real Time System and IoT and Laboratory	3
ENCE605020	Computer Networks Security and Laboratory	3
ENCE605021	Telecommunication Networks and Laboratory	3
ENCE605022	Modern Computer Architecture	2
ENCE605023	Probability and Stochastic Process	2
ENCE605024	Signal Theory and System Analysis	2
	Electives	3
	Sub Total	**21**
	6th Semester	
ENCE606025	Computer Engineering Project Design 1	2
ENCE606026	Multimedia Signal Processing	3
ENCE606027	Artificial Intelligence	3
ENCE606028	Internship	2
ENCE606029	Entrepreneurship in Information Technology	2
ENCE606030	Professionalism and Ethics in Information Technology	2
	Electives	6
	Sub Total	**20**

	7th Semester	
ENCE607031	Computer Engineering Project Design 2	3
ENCE607032	Seminar	2
	Electives	9
	Sub Total	**14**
	8th Semester	
ENCE608033	Bachelor Thesis	4
	Electives	6
	Sub Total	**10**
	Total	**145**

Electives Computer Engineering Program

Code	Subject	SKS
	5th Semester	
ENCE605034	Big Data Technology	3
	Sub Total	3
	6th Semester	
ENCE600035	Cloud Computing	2
ENCE600036	Human Computer Interaction	**2**
ENCE600037	Wireless Technology	**2**
	6th Semester	
ENCE607038	Geospatial Technology	2
ENCE607039	Capita Selecta in Computer Engineering	2
ENCE607040	Professional Engineer Development - 1	**2**
ENCE607041	Regulation & Public Policy on ICT Sector	**3**
	Sub Total	9
	6th Semester	
ENCE607042	Blockchain Technology	3
ENCE607043	Professional Engineer Development - 2	2
ENCE607044	Cryptography	2
ENCE607045	VLSI Design	2
	Sub Total	9

Transition Guidance

1. Curriculum 2020 is implemented starting from the Even Semester 2020/2021. In principle, after the 2020 Curriculum is implemented, only courses in the 2020 Curriculum will be opened.
2. The 2020 curriculum is effective from the class of 2020.
3. Class of 2019 and previous will participate in Curriculum 2020 with transition rules.
4. A transition period of 1 year is applied, namely from the Even Semester of the academic year 2020/2021 to the Odd Semester of the academic year 2021/2022.
5. For courses that change in the location of the semester in Curriculum 2020 (from Even to Odd, or vice versa), if necessary, will be opened in both semesters during the transition period.
6. For students who have not passed the compulsory courses in curriculum 2016, it is required to take the same or equivalent compulsory courses in curriculum 2020 (refer to Table of Equality Courses).
7. In the event of a change in the credit (SKS) of the course, then the number of SKS taken into account is the number of SKS at the time the course was taken last.
   - For example, the same course or equivalent has a different SKS, if repeated will be listed with a new name and calculated with the weight of the new SKS.
8. New compulsory courses in Curriculum 2020 that do not have equality to the Curriculum 2016, are not required to be taken by students of the class of 2019 and earlier.
9. If the compulsory courses in Curriculum 2016 are removed and there is no equality in Curriculum 2020, for students who have passed the course, then it is still counted as a mandatory course in the calculation of SKS for graduation (145 SKS). For students who have not passed the course, he/she can take a new compulsory course or electives in Curriculum 2020 to complete 145 SKS.
10. Special rules for Integrated Character Building (MPKT A and B) courses: For the transition period, MPKT (5 credits) courses should only be taken by students of the Class of 2020. For students of class 2019 and previously who have passed one of the MPKT A or B courses, do not have to take both courses. For the transition period, students of Class 2019 and earlier can still repeat MPKT A and B courses.
11. Special rules for Class of 2017 (and before):

IT Project Management course is open for the Class of 2017 (and before) during the transition period. If a student does not pass the course in the transition period, then it is mandatory to take Computer Engineering Project Design 1 (in even semester 2021/2022) and Computer Engineering Project Design 2 (in Odd Semester 2022/2023). Class of 2018 and 2019 remains obliged to take Computer Engineering Project Design 1 &2.

Table of Equality Courses in Undergraduate Chemical Engineering Study Program in Curriculum 2016 and Curriculum 2020

Name of Courses in Curriculum 2016	SKS 2016	Semester	Name of Courses in Curriculum 2020	SKS 2020	Semester
MPKT A MPKT B	6 6	2 1	Integrated Character Building	6	2
Introduction to Computer Engineering +Lab.	3	2	Basic Programming and Laboratory	3	1
Advanced Programming	3	3	Advanced Programming and Laboratory	3	2
Vector Analysis and Complex Variables	2	3	Advanced Linear Algebra	2	4
Embedded Systems 1	2	5	Cyber Pyhsical Systems and Laboratory	3	4
Algorithm	3	4	Algorithm Analysis	3	4
Operating Systems	3	5	Operating Systems	2	4
Embedded Systems 2 and Laboratory	3	6	Real Time Systems and IoT and Laboratory	3	5
Telecommunication Networks	3	6	Telecommunication Networks and Laboratory	3	5
Probability and Stochastic Process	3	5	Probability and Stochastic Process	2	5
Signal and Systems	3	4	Signal Theory and System Analysis	2	5
Project Management in IT	3	8	Computer Engineering Project Design 1	2	6
			Computer Engineering Project Design 2	2	7
Data Analysis Engineering	3	P-1	Artifial Intelligence	3	6
Wireless Technology	1	4	Wireless Technology	2	P-6
Human Computer Interaction	4	4	Human Computer Interaction	2	P-6
Capita Selecta in Computer Engineering	2	6	Capita Selecta in Computer Engineering	2	P-7

Fast-Track Curriculum (S1 and S2)

Students of Computer Engineering Undergraduate Program can join fast track program to master degree. The curriculum structure for the fast track program for Semester 1 up to Semester 6 is similar to the regular program, while for Semester 7 to Semester 10 is differentiated based on the major chosen for the Graduate Program

Course structure for Fast Track Program Bachelor of Computer Engineering and Master of Electrical Engineering Majoring in Cyber Security and Future Internet

	7th Semester	
ENCE607031	Design of Computer Engineering Project 2	3
ENCE607032	Seminar	2
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801401	Network Security and Data Protection	2
ENEE801402	Advanced Network Computer Systems	
	Sub Total	**17**
	8th Semester	
ENCE607033	Bachelor Thesis	4
ENEE802405	Security Operation and Incident Handling	2
ENEE802406	Network & Digital Forensics	2
ENEE802407	Convergence Information Network NG	2
	Sub Total	**14**
	9th Semester	
ENEE801403	Network Security and Data Protection	2
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803408	Cyber Threat Intelligence and Incident Analysis	2
ENEE803409	Security Risk Assessment and Analysis	2
	Elective Course	**2**
	Sub Total	**11**
	10th Semester	
ENEE802404	Applied Cryptography & Blockchain Technology	3
	Elective Course	2
ENEE804004	Thesis	4
ENEE804005	Publication	2
	Sub Total	**11**
TOTAL		**49**

Course structure Fast Track Program for Bachelor of Computer Engineering and Master of Electrical Engineering Majoring in Data Engineering and Business Intelligence

	7th Semester	
ENCE607031	Design of Computer Engineering Project 2	3
ENCE607032	Seminar	2
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801601	Digital Enterprise Software Architecture	2
ENEE801603	Imaging Technology and Computer Vision	2
	Sub Total	**17**
	8th Semester	
ENCE607033	Bachelor Thesis	4
ENEE802604	Big Data Technology and Architecture	3
ENEE802605	Advanced Artificial Intelligence	2
ENEE802606	Advance Data Engineering	2
	Sub Total	**11**
	9th Semester	
ENEE801602	Business Analytics and Visualization	2
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803608	Enterprise Cyber Threat Analysis	2

ENEE803609	Advanced IT Project Management	2
	Elective Course	2
	Sub Total	**11**
	10th Semester	
ENEE802607	Ethics and Professionalism	2
	Elective Course	2
ENEE804004	Thesis	4
ENEE804005	Publication	2
	Sub Total	**10**
TOTAL		**49**

Undergraduate Program in Biomedical Engineering

Program Specification

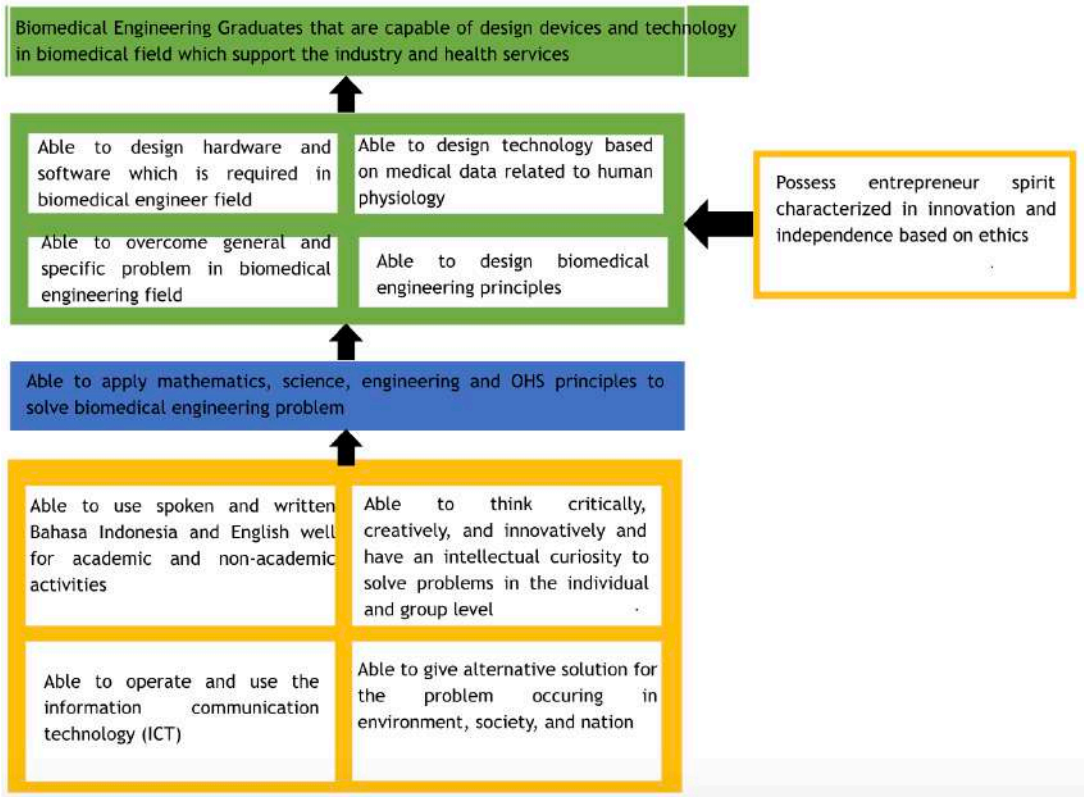
1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Programme Tittle**	Undergraduate Program in Biomedical Engineering	
4.	**Class**	Reguler, Non Reguler	
5.	**Final Award**	Sarjana Teknik (S.T)	
6 .	**Accreditation / Recognition**	Early accreditation by BAN PT for new study program	
7.	**Language(s) of Instruction**	Bahasa Indonesia	
8.	**Study Scheme (Full Time / Part Time)**	Full Time	
9.	**Entry Requirements**	High school / equivalent, AND pass the entrance exam.	
10.	**Study Duration**	Designed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
11.	**Graduate Profiles:** Biomedical Engineering Graduates that are capable of design devices and technology in biomedical field which support the industry and health services.		
12.	**Expected Learning Outcomes:** Biomedical Engineering Graduates are expected to have the following competence: 1. Able to design hardware and software which is required in biomedical engineer field. 2. Able to overcome general and specific problem in biomedical engineering field. 3. Able to design technology based on medical data related to human physiology. 4. Able to design biomedical engineering principles. 5. Able to apply basic mathematics, chemistry, and physics to solve biomedical engineering problem. 6. Able to think critically, creatively, and innovatively and have an intellectual curiosity to solve problems in the individual and group level. 7. Possess entrepreneur spirit characterized in innovation and independence based on ethics. 8. Able to use spoken and written Bahasa Indonesia and English well for academic and non-academic activities. 9. Able to give alternative solution for the problem occurring in environment, society, and nation. 10. Able to operate and use the information communication technology (ICT).		
13.	**Classification of Subjects**		

No.	Classification	Credit Hours (SKS)	Percentage
i	**University General Subjects**	**10**	**6.30%**
ii	**Faculty Subjects**	**18**	**12.50%**
iii	**Expertise Subjects**	**84**	**58.30%**
iv	**Elective Subjects**	**25**	**17.30%**
v	**Special Subjects (Internship, Pre-Thesis, and Undergraduate Thesis)**	**8**	**5.60%**
	Total	**145**	**100 %**
	Total Credit Hours to Graduate		**145 SKS**

Career Prospects

Biomedical Engineering Study Program Graduate could work in various types of companies and health industries, information technology, education, government or regulator, and other industries related to health facilities, such as hospitals and health clinics.

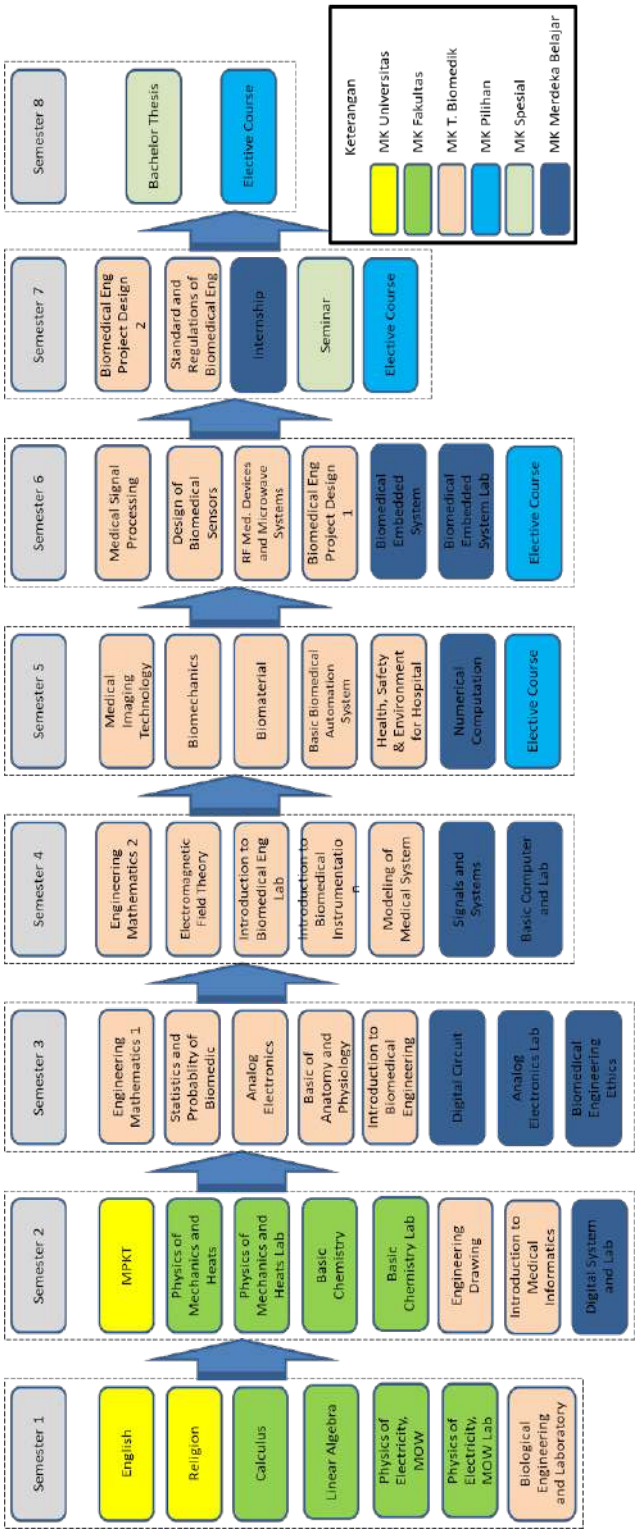
Learning Outcomes



Learning Output

No	KKNI Level 6	General Competency	Output
1	Able to apply their expertise and use science, technology, and/ or art in their respective fields in solving problems and able to adapt to any situation faced	Able to design system, component, or process n biomedical engineering field Able to apply tecnique, skill and modern assist tools such as hardware and software required in biomedical engineering Able to design imaging technique for biomedical engineering	• Undergraduate Thesis • Paper • Publication, including a summary article of undergraduate thesis with journal format on UI repository. • Internship training report.
2	Able to master theoretical concept in certain knowledge of a field in general and deep specialized theoretical concept in in said field and able to formulate problem-solving procedures	Able to design biomedical engineering principles Able to apply basic mathematics, chemistry, and physics to solve biomedical engineering problem	• Undergraduate Thesis • Paper • Publication, including a summary article of undergraduate thesis with journal format on UI repository. • Internship training report.
3	Able to make the correct decision based on information and data, and able to give instruction in choosing from a variety of solution alternatives both independently and in group.	Able to think critically, creatively, and innovatively and have an intellectual curiosity to solve problems in the individual and group level Able to give alternative solution for the problem occurring in environment, society, and nation	• Undergraduate Thesis • Paper • Publication, including a summary article of undergraduate thesis with journal format on UI repository. • Internship training report.
4	Be responsible for their own work and can be given responsibility in achieving organization's output	Able to give alternative solution for the problem occurring in environment, society, and nation Possess entrepreneur spirit characterized in innovation and independence based on ethics	• Undergraduate Thesis • Paper • Publication, including a summary article of undergraduate thesis with journal format on UI repository. • Internship training report.

Flow Diagram of Subjects



Course Structure Undergraduate Program in Biomedical Engineering

Code	Subject	SKS
	1st Semester	
UIGE600003	English	2
UIGE600010-15	Religion	2
ENGE600003	Calculus	4
ENGE600009	Basic Chemistry	2
ENGE600007	Physics of Electricity, Magnetism, Optics, and Waves	3
ENGE600008	Physics of Electricity, Magnetism, Optics, and Waves Laboratory	1
ENBE601001	Engineering Biology and Laboratory	3
ENEE602005	Digital System and Laboratory	3
	Sub Total	**20**
	2nd Semester	
UIGE600007	Integrated Characteristic Building Subject	6
ENGE600005	Physics of Mechanics and Heats	3
ENGE600006	Physics of Mechanics and Heats Laboratory	1
ENGE600004	Linear Algebra	4
ENBE602002	Basic Chemistry Laboratory	1
ENBE602003	Engineering Drawing	3
ENBE602004	Introduction to Medical Informatics	3
	Sub Total	**21**
	3rd Semester	
ENBE603005	Engineering Mathematics 1	3
ENBE603006	Statistics and Probablity of Biomedical Engineering	3
ENBE603007	Analog Electronics	3
ENBE603008	Basic of Anatomy and Physiology	3
ENBE603009	Introduction to Biomedical Engineering	3
ENBE603010	Electric Circuit	3
ENBE603011	Analog Electronics Laboratory	1
ENBE603012	Biomedical Engineering Ethics	2
	Sub Total	**21**
	4th Semester	
ENBE604013	Engineering Mathematics 2	4
ENBE604014	Electromagnetics	3
ENBE604015	Introduction to Biomedical Engineering Laboratory	1
ENBE604016	Introduction to Biomedical Instrumentation	3
ENBE604017	Modeling of Medical System	3
ENEE604017	Signals and Systems	3
ENEE603014	Basic Computer and Laboratory	3
	Sub Total	**20**
	5th Semester	
ENBE605018	Medical Imaging Technology	3
ENBE605019	Biomechanics	3
ENBE605020	Biomaterial	3
ENBE605021	Basic to Biomedical Automation System	3
ENEE604020	Numerical Computation	2
	Elective Course	5
	Sub Total	**19**
	6th Semester	
ENBE606022	Medical Signal Processing	3
ENBE606023	Biomedical Sensor Design	3
ENBE606024	RF Medical Devices and Microwave Systems	3
ENBE606025	Biomedical Engineering Project Design 1	2
ENBE606026	Standard and Regulations of Biomedical Engineering	2
	Elective Course	8
	Sub Total	**21**
	7th Semester	
ENBE607027	Biomedical Engineering Project Design 2	3
ENBE607028	Pre-Thesis	2
ENBE607029	Internship	2

	Elective Course	6
	Sub Total	**13**
	th Semester	
ENBE608030	Bachelor Thesis	4
	Elective Course	6
	Sub Total	**10**
	Total	**145**

Electives Subjects for Biomedical Study Program

Code	Subject	SKS
ENBE605031	Medical Communication System	3
ENBE605032	Health, Safety & Environment for Hospital	2
ENBE607033	Biomedical Special Topic 1	3
ENBE607034	Immune Engineering	3
ENBE607035	Basic Thermodynamics	3
ENBE607036	Artificial Intelligent	3
ENBE606037	Biomedical Embedded System	4
ENBE606038	Biomedical Embedded System Laboratory	1
ENBE608039	Biomedical Special Topic 2	3
ENBE608040	Bioinformatics and Genomics	3

Undergraduate Program in Metallurgical & Materials Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia Double Degree: Universitas Indonesia & Partner Universities	
2.	**Teaching Institution**	Universitas Indonesia Double Degree: Universitas Indonesia & Partner Universities	
3.	**Faculty**	Engineering	
4.	**Name of Study Program**	Undergraduate Program in Metallurgy and Materials Engineering	
5.	**Vission and Mission**	**Vision:** To be a research-based center of excellence, as well as referral center and solution provider for problems in the field of metallurgical and materials engineering in national and global levels **Mission:** • To provide broad access to education and research for the public and industry • To produce high quality graduates with strong academic background and comprehensive skills in process technology, material engineering and design, who are capable of undertaking active and dynamic role in national, regional and international arenas • To perform quality Tridharma (three duties) relevant to the national and global challanges. • To create conducive academic environment to support the vision of the Department of Metallurgical and Materials Engineering	
6.	**Type of Class**	Reguler, Non Reguler, International	
7.	**Awarding Degree**	Sarjana Teknik (S.T.) Double Degree: Sarjana Teknik (S.T.) and Bachelor of Engineering (B.Eng.)	
9.	**Accreditation / Recognition**	BAN-PT: Excellent AUN-QA: Accredited IABEE: Accredited	
10.	**Language Course**	Bahasa (Indonesia) and English	
11.	**Learning Scheme (Full Time / Part Time)**	Full Time	
12.	**Entry Requirements**	High school graduate/equivalent, or Vocational/Polytechnique/Community College	
11.	**Term of Study**	Programmed for 4 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**Aims of the programme** 1. To produce high quality graduates with a strong academic foundation 2. To produce graduates who are comprehensively capable in process technology and material engineering 3. To produce graduates who are able to contribute an active and dynamic role in the national, regional and international community.		

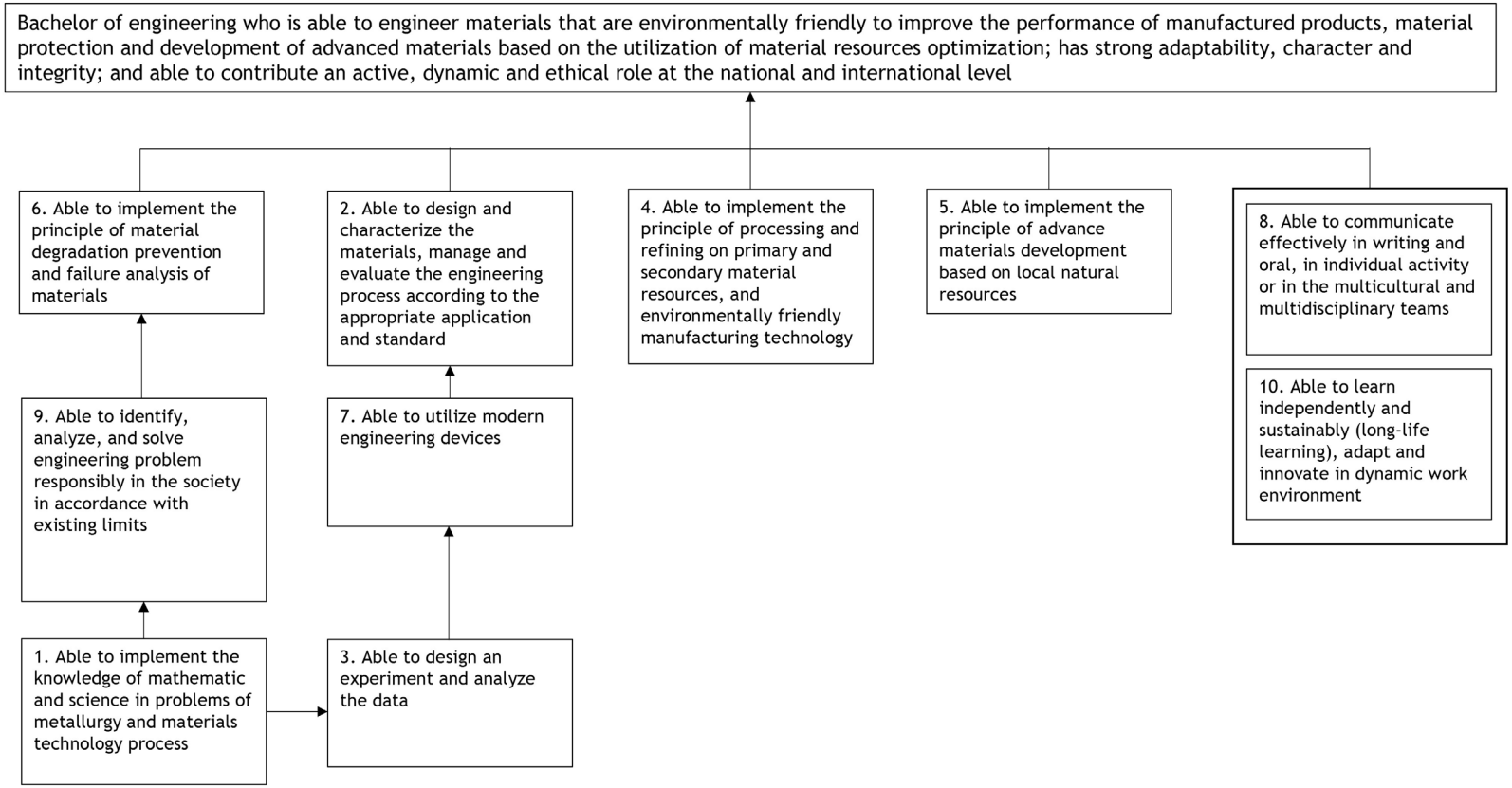
14.	**Profile of Graduates** Bachelor of Engineering who is able to engineer materials that are environmentally friendly to improve the performance of manufactured products, material protection and development of advanced materials based on the utilization of material resources optimization; has strong adaptability, character and integrity; and able to contribute an active, dynamic and ethical role at the national and international level
15.	**Expected Learning Outcomes:** The graduates of Metallurgical and Materials Engineering will have the following outcomes: 1. Able to implement the knowledge of mathematic and science in problems of metallurgy and materials technology process 2. Able to design and characterize the materials, manage and evaluate the engineering process according to the appropriate application and standard 3. Able to design an experiment and analyze the data 4. Able to implement the principle of processing and refining on primary and secondary material resources, and environmentally friendly manufacturing technology 5. Able to implement the principle of advance materials development based on local natural resources 6. Able to implement the principle of material degradation prevention and failure analysis of materials 7. Able to utilize modern engineering devices 8. Able to communicate effectively in writing and oral, in individual activity or in the multicultural and multidisciplinary teams 9. Able to identify, analyze, and solve engineering problem responsibly in the society in accordance with existing limits 10. Able to learn independently and sustainably (long-life learning), adapt and innovate in dynamic work environment

No.	Type of Courses	Credits	Percentage
i	**Basic University Courses**	10	6,25 %
ii	**Basic Engineering Courses**	22	15,28 %
iii	**Metallurgical and Materials Engineering Courses**	77	53,47%
iv	**Elective Courses**	28	19,44%
v	**Internship, Seminar, Final Year Projects**	8	5,56 %
	Total	145	100 %
	Total Credit Hours to Graduate		145 credits

Job Prospects

Graduates of this study program can work in various sectors both private, state-owned and government such as in the automotive industry, manufacturing, heavy equipment, mining, oil and gas, research and development fields such as Pertamina, LIPI, BATAN, BPPT, LAPAN, Ministry of Industry, and Ministry of Energy and Mineral Resources.

Expected Learning Outcomes Matrix



Course Flowchart for Learning Outcome Achievement
Bachelor Program Metallurgical & Materials Engineering

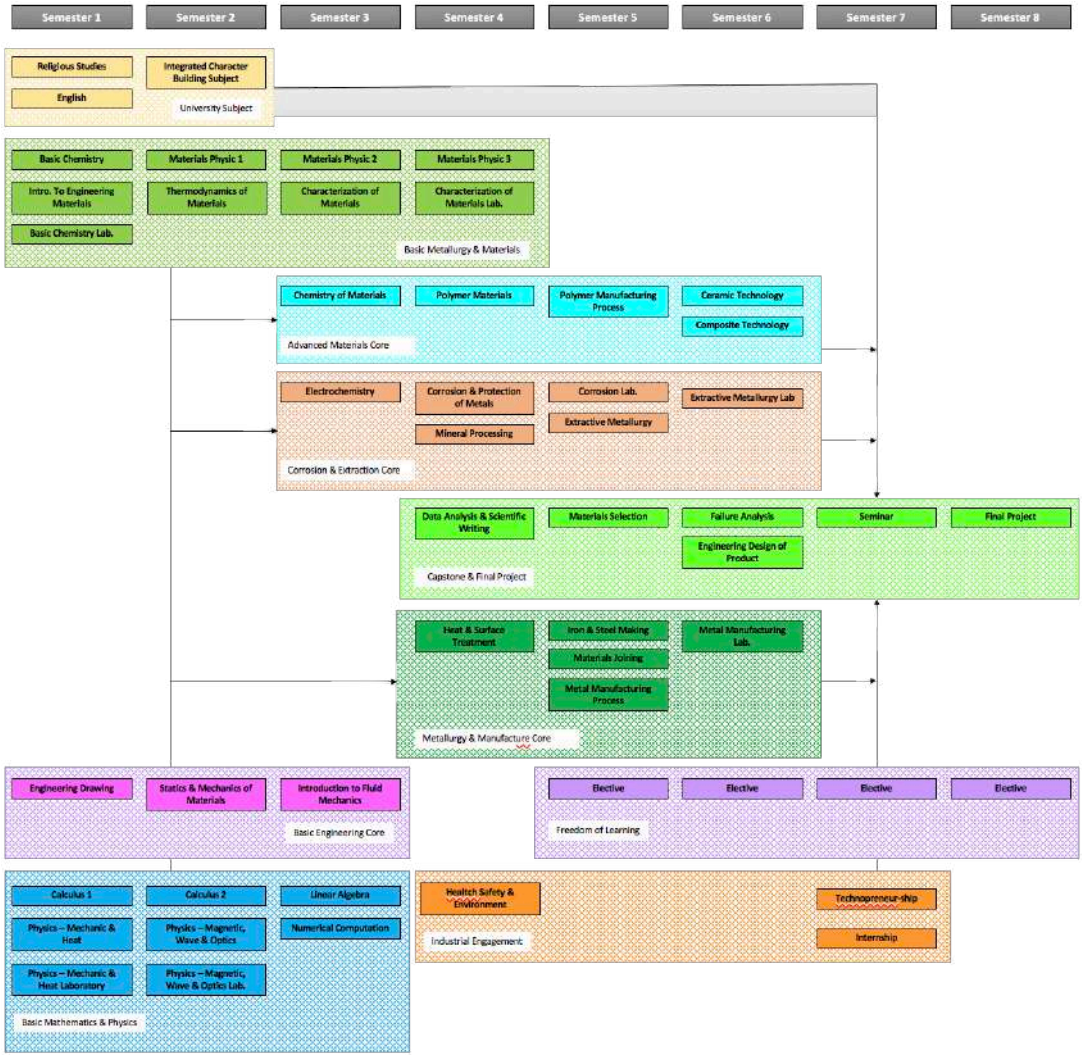
Learning Outcome	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
1. Able to implement the knowledge of mathematic and science in problems of metallurgy and materials technology process	Calculus 1	Calculus 2	Numerical Computation					
	Basic Chemistry	Materials Physic 1	Characterization of Materials					
	Basic Chemistry Laboratory	Static & Mechanic of Materials	Materials Physic 2					
	Introduction to Engineering Materials	Physics - Electricity, MWO	Electrochemistry					
	Physics - Mechanics and Heat	Physics - Electricity, MWO Laboratory	Linear Algebra					
		Thermodynamics of Materials	Introduction to Fluids Mechanics					
2. Able to design and characterize the materials, manage and evaluate the engineering process according to the appropriate application and standard			Characterization of Materials		Materials Selection	Engineering Design of Products		
3. Able to design an experiment and analyze the data				Data Analysis & Scientific Writing			Seminar	Final Project

4. Able to implement the principle of processing and refining on primary and secondary material resources, and environmentally friendly manufacturing technology				Mineral Processing	Extractive Metallurgy			
				Heat Treatment & Surface Engineering	Iron & Steel Making			
					Materials Joining			
					Metal Manufacturing			
5. Able to implement the principle of advance materials development based on local natural			Materials Physic 2	Materials Physic 3	Polymer Manufacturing Process	Ceramic Technology		
				Polymer Materials		Composite Technology		
6. Able to implement the principle of material degradation prevention and failure analysis of materials				Corrosion & Protection of Metals		Failure Analysis		
7. Able to utilize modern engineering devices	Basic Chemistry Laboratory	Physics - Electricity, MWO Laboratory		Materials Characterization Laboratory	Corrosion Laboratory	Extractive Metallurgy Laboratory		
	Engineering Drawing					Metals Manufacturing Laboratory		
	Physics - Mechanics and Heat Laboratory							

8. Able to communicate effectively in writing and oral, in individual activity or in the multicultural and multidisciplinary teams	English	Integrated Character Building Subject	Numerical Computation	HSE Protection	Extractive Metallurgy	Metals Manufacturing Laboratory	Technopreneurship	
	Engineering Drawing			Data Analysis & Scientific Writing	Iron & Steel Making	Extractive Metallurgy Laboratory	Internship	
				Materials Characterization Laboratory	Materials Selection		Seminar	
					Corrosion Laboratory			
9. Able to identify, analyze, and solve engineering problem responsibly in the society in accordance with existing limits			Materials Physic 2	Materials Physic 3		Failure Analysis	Internship	Final Project
			Characterization of Materials	Corrosion & Protection of Metals		Engineering Design of Products		
				Polymer Materials				
				Mineral Processing				
10. Able to learn independently and sustainably (long-life learning), adapt and innovate in dynamic work environment	Religious Studies	Integrated Character Building Subject	Electrochemistry	Heat Treatment & Surface Engineering	Materials Joining	Ceramic Technology	Technopreneurship	
	Introduction to Engineering Materials	Materials Physic 1	Chemistry of Materials		Metal Manufacturing Process	Composite Technology		
		Static & Mechanic of Materials	Introduction to Fluids Mechanics		Polymer Manufacturing Process			
		Thermodynamics of Materials						

Course Type Distribution in Curriculum 2020

Course Correlation in Curriculum 2020



Course Structure for Undergraduate Metallurgical & Materials Engineering Program (Regular & Non Reguler Class)

Code	Subject	SKS
	1st Semester	
UIGE600004	Religious Studies	2
UIGE600003	English for Academic Writing	2
ENGE600001	Calculus 1	3
ENGE600005	Physics - Mechanics and Heat	3
ENGE600006	Physics - Mechanics and Heat Laboratory	1
ENGE600009	Basic Chemistry	2
ENMT601001	Engineering Drawing	2
ENMT601002	Introduction to Engineering Materials	2
ENMT601003	Basic Chemistry Laboratory	1
	Sub Total	**18**
	2nd Semester	
UIGE600007	Integrated Character Building Subject	6
ENGE600002	Calculus 2	3
ENGE600007	Physics - Electricity, MWO	3
ENGE600008	Physics - Electricity, MWO Laboratory	1
ENMT602004	Materials Physic 1	2
ENMT602005	Static & Mechanic of Materials	3
ENMT602006	Thermodynamics of Materials	3
	Sub Total	**21**
	3rd Semester	
ENGE600004	Linear Algebra	4
ENMT603007	Electrochemistry	3
ENMT603008	Materials Physic 2	3
ENMT603009	Characterization of Materials	3
ENMT603010	Chemical Characterization of Materials	2
ENMT603011	Numerical Computation	2
ENMT603012	Introduction to Fluids Mechanics and Heat Transfer	2
	Sub Total	**19**
	4th Semester	
ENGE600012	HSE Protection	2
ENMT604013	Data Analysis and Scientific Writing	3
ENMT604014	Materials Physics 3	2
ENMT604015	Corrosion & Protection of Metals	3
ENMT604016	Polymer Materials	3
ENMT604017	Mineral Processing	3
ENMT604018	Heat Treatment and Surface Engineering	1
ENMT604019	Materials Characterization Laboratory	1
	Sub Total	**18**
	5th Semester	
ENMT605020	Extractive Metallurgy	3
ENMT605021	Iron & Steel Making	2
ENMT605022	Materials Selection	2
ENMT605023	Materials Joining	3
ENMT605024	Metal Manufacturing Process	4
ENMT605025	Polymer Manufacturing Process	3
ENMT606026	Corrosion Laboratory	1
ENMT607937-51	Elective	3
	Sub Total	**20**
	6th Semester	
ENMT606027	Failure Analysis	3
ENMT606028	Engineering Design of Products and Process	3
ENMT606029	Ceramics Technology	3
ENMT606030	Composite Technology	3
ENMT606031	Metal Manufacturing Laboratory	1
ENMT606032	Extractive Metallurgy Laboratory	1
ENMT608952-60	Elective	5
	Sub Total	**19**

	7th Semester	
ENMT607033	Technopreneurship	2
ENMT607034	Internship	2
ENMT607035	Seminar	2
ENMT607939-49	Elective	14
	Sub Total	**20**
	8th Semester	
ENMT600036	Final Project	4
ENMT608950-60	Elective	7
	Sub Total	**11**
	Total	**145**

Resume

Semester	Course	Prerequisite
4	HSE Protection	Minimum 50 credits
4	Materials Physic 3	Termodynamics of Materials, Introduction to Fluid Mechanics
4	Capita Selecta, Technology, and Society	Minimum 50 credits
4	Corrosion & Protection of Metals	Electrochemistry
4	Polymer Materials	
4	Mineral Processing	Materials Physics 1
4	Materials Characterization Laboratory	Characterization of Materials
4	Chemical Characterization of Materials Laboratory	Materials Characterization Laboratory
5	Extractive Metallurgy	Mineral Processing
5	Iron & Steel Making	Mineral Processing
5	Heat Treatment and Surface Engineering	Materials Physic 3
5	Metal Manufacturing Process	Materials Physic 3
5	Polymer Manufacturing Process	Polymer Materials
5	Corrosion Laboratory	Corrosion & Protection of Metals
6	Data Analysis and Scientific Writing	Minimum 90 credits
6	Materials Selection	Characterization of Materials, Materials Physics 2, Materials Physics 3
6	Materials Joining	Characterization of Materials, Materials Physics 3
6	Ceramics Technology	Materials Physics 3
6	Composite Technology	Polymer Materials
6	Metals Manufacturing Laboratory	Metal Manufacturing Process
6	Extractive Metallurgy Laboratory	Extractive Metallurgy
7	Failure Analysis	Materials Selection
7	Engineering Design of Products	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramics Technology, Composite Technology, Materials Selection
7	Technopreneurship	Minimum 100 credits
7	Internship	Minimum 100 credits
7	Seminar	Minimum 105 credits
8	Final Project	Minimum 125 credits

Prerequisite List For Curriculum 2020 Courses

Code	Subject	SKS
	1st Semester	
ENMT607939	Special Alloyed Steels	2
ENMT607940	Biomaterial	2
ENMT607941	Engineering Ethics	2
ENMT607942	Computational Materials	2
ENMT607943	High Temperature Corrosion	2
ENMT607944	Electron Microscopy	2
ENMT607945	Polymer Compounding	2
ENMT607946	Quality Management Systems	2
ENMT607947	Advanced Solidification	2
ENMT607948	Special Processing and Assembly Technologies	2
ENMT607949	1st Term Advanced Internship	3
ENMT803918	Risk Based-Inspection and Integrity	3
ENMT803919	Advanced Polymer Manufacturing	3
ENMT803920	Electronic Materials	3
ENMT803921	Nanotechnology	3
	2nd Semester	
ENMT608950	Industrial Ecology	2
ENMT608951	Concrete Corrosion	2
ENMT608952	Energy Materials	2
ENMT608953	Refractory Materials	2
ENMT608954	Mechanics of Material Forming	2
ENMT608955	Industrial Mechanic Equipment	2
ENMT608956	Material Standardization	2
ENMT608957	Polymer Recycling Technology	2
ENMT608958	Rubber Technology	2
ENMT608959	Quenching Technology	2
ENMT608960	2nd Term Adv. Internship	3
ENMT804922	Advanced Manufacture	3
ENMT804923	Smart Materials	3
ENMT804924	Advanced Extractive Metallurgy	3
ENMT804925	Advanced Surface Engineering	3

Prerequisite for Elective Courses

Semester	Course	Prerequisite	Recommended Semester
1st Term	Special Alloyed Steels	Iron & Steel Making	7
1st Term	Biomaterial	Corrosion & Protection of Metals	5 or 7
1st Term	Engineering Ethics		5 or 7
1st Term	Computational Materials	Numerical Computation	5 or 7
1st Term	High Temperature Corrosion	Corrosion & Protection of Metals	5 or 7
1st Term	Electron Microscopy	Characterization of Materials	5 or 7
1st Term	Polymer Compounding	Polymer Materials	5 or 7
1st Term	Quality Management Systems	Data Analysis and Scientific Writing	7
1st Term	Advanced Solidification	Materials Physic 3	5 or 7
1st Term	Special Processing and Assembly Technologies	Materials Selection	7
1st Term	1st Term Advanced Internship	Minimum 125 credits	

1st Term	Risk Based-Inspection and Integrity	Characterization of Materials, Corrosion & Protection of Metals	(for fast-track / by department approval)
1st Term	Advanced Polymer Manufacturing	Polymer Manufacturing Process	(for fast-track / by department approval)
1st Term	Electronic Materials	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramics Technology, Composite Technology	(for fast-track / by department approval)
1st Term	Nanotechnology	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramics Technology, Composite Technology	(for fast-track / by department approval)
2nd Term	Industrial Ecology	Mineral Processing	6 or 8
2nd Term	Concrete Corrosion	Corrosion & Protection of Metals	8
2nd Term	Energy Materials		6 or 8
2nd Term	Refractory Materials	Ceramics Technology	8
2nd Term	Mechanics of Material Forming	Metal Manufacturing Process	6 or 8
2nd Term	Industrial Mechanic Equipment	Metal Manufacturing Process	6 or 8
2nd Term	Material Standardization	Characterization of Materials	6 or 8
2nd Term	Polymer Recycling Technology	Polymer Manufacturing Process	8
2nd Term	Rubber Technology	Polymer Manufacturing Process	8
2nd Term	Quenching Technology	Heat Treatment and Surface Engineering	6 or 8
2nd Term	2nd Term Advanced Internship	Minimum 125 credits	
2nd Term	Advanced Manufacture	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramics Technology, Composite Technology	(for fast-track / by department approval)

2nd Term	Smart Materials	Metal Manu-facturing Process, Polymer Manu-facturing Process, Ceramics Tech-nology, Compos-ite Technol-ogy	(for fast-track / by depart-ment approval)

Course Structure for Undergraduate Metallurgical & Materials Engineering Program (International Class)

Code	Subject	SKS
	1st Semester	
UIGE610003	Religious Studies	2
UIGE610002	English for Academic Writing	2
ENGE610001	Calculus 1	3
ENGE100005	Physics - Mechanics and Heat	3
ENGE610006	Physics - Mechanics and Heat Laboratory	1
ENGE610009	Basic Chemistry	2
ENMT611001	Engineering Drawing	2
ENMT611002	Introduction to Engineering Materials	2
ENMT611003	Basic Chemistry Laboratory	1
	Sub Total	**18**
	2nd Semester	
UIGE610011	Integrated Character Building Subject	6
ENGE610002	Calculus 2	3
ENGE610007	Physics - Electricity, MWO	3
ENGE610008	Physics - Electricity, MWO Laboratory	1
ENMT612004	Materials Physic 1	2
ENMT612005	Static & Mechanic of Materials	3
ENMT612006	Thermodynamics of Materials	3
	Sub Total	**21**
	3rd Semester	
ENGE610004	Linear Algebra	4
ENMT613007	Electrochemistry	3
ENMT613008	Materials Physic 2	3
ENMT613009	Characterization of Materials	3
ENMT613010	Chemical Characterization of Materials	2
ENMT613011	Numerical Computation	2
ENMT613012	Introduction to Fluids Mechanics and Heat Transfer	2
	Sub Total	**19**
	4th Semester	
ENGE610012	HSE Protection	2
ENMT614013	Data Analysis and Scientific Writing	3
ENMT614014	Materials Physics 3	2
ENMT614015	Corrosion & Protection of Metals	3
ENMT614016	Polymer Materials	3
ENMT614017	Mineral Processing	3
ENMT614018	Heat Treatment and Surface Engineering	1
ENMT614019	Materials Characterization Laboratory	1
	Sub Total	**18**
	5th Semester	
ENMT615020	Extractive Metallurgy	3
ENMT615021	Iron & Steel Making	2
ENMT615022	Materials Selection	2
ENMT615023	Materials Joining	3
ENMT615024	Metal Manufacturing Process	4
ENMT615025	Polymer Manufacturing Process	3
ENMT616026	Corrosion Laboratory	1
ENMT607937-51	Elective	3
	Sub Total	**20**
	6th Semester	
ENMT616027	Failure Analysis	3
ENMT616028	Engineering Design of Products and Process	3
ENMT616029	Ceramics Technology	3
ENMT616030	Composite Technology	3
ENMT616031	Metal Manufacturing Laboratory	1
ENMT616032	Extractive Metallurgy Laboratory	1
ENMT608952-66	Elective	5

	7th Semester	
ENMT617033	Technopreneurship	2
ENMT610034	Internship	2
ENMT610035	Seminar	2
ENMT607939-51	Elective	14
	Sub Total	**20**
	8th Semester	
ENMT610036	Final Project	4
ENMT608950-66	Elective	7
	Sub Total	**11**
	Total	**145**

Resume

Semester	Course	Prerequisite
4	HSE	Minimum 50 credits
4	Data Analysis and Scientific Writing	Minimum 50 credits
4	Material Physics 3	Materials Physics 1, Materials Physics 2, Thermodynamics of Materials, Introduction to Fluids Mechanics and Heat Transfer
4	Corrosion and Protection of Metals	Electrochemistry
4	Polymer Materials	-
4	Mineral Processing	Materials Physics 1
4	Heat Treatment and Surface Engineering	Materials Physics 1, Materials Physics 2
4	Materials Characterization Laboratory	Characterization of Materials
5	Extractive Metallurgy	Mineral Processing
5	Iron & Steel Making	Mineral Processing
5	Metal Manufacturing Process	Materials Physics 1, Materials Physics 2, Materials Physics 3
5	Polymer Manufacturing Process	Polymer Materials
5	Corrosion Laboratory	Corrosion and Protection of Metals
5	Materials Selection	Characterization of Materials, Materials Physics 1, Materials Physics 2, Materials Physics 3
5	Materials Joining	Characterization of Materials, Materials Physics 2, Materials Physics 3
6	Ceramics Technology	Materials Physics 3
6	Composite Technology	Polymer Materials
6	Metal Manufacturing Laboratoy	Metal Manufacturing Process
6	Extractive Metallurgy Laboratory	Extractive Metallurgy
6	Failure Analysis	Materials Selection
6	Engineering Design of Products and Process	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramic Technology, Composite Technology, Materials Selection
7	Technopreneurship	Minimum 100 credits
7	Internship	Minimum 100 credits
7	Seminar	Minimum 105 credits
8	Final Project	Minimum 125 credits
8	Final Project	Minimum 125 credits

Prerequisite List For Curriculum 2020 Courses

Code	Subject	SKS
	1st Semester	
ENMT617937	Special Alloyed Steels	2
ENMT617938	Biomaterial	2
ENMT617939	Engineering Ethics	2
ENMT617940	High Temperature Corrosion	2
ENMT617941	Polymer Compounding	2
ENMT617942	Quality Management Systems	2
ENMT617943	Rubber Technology	2
ENMT617944	Special Processing and Assembly Technologies	2
ENMT617945	General Apprenticeship	6
ENMT817946	Risk Based-Inspection and Integrity	3
ENMT817947	Computational Materials	2
ENMT817948	Electronic Materials	3
ENMT817949	Electron Microscopy	2
ENMT817950	Advanced Solidification	2
ENMT817951	Nanotechnology	3
	2nd Semester	
ENMT618952	Industrial Ecology	2
ENMT618953	Concrete Corrosion	2
ENMT618954	Refractory Materials	2
ENMT618954	Mechanics of Material Forming	2
ENMT618956	Industrial Mechanic Equipment	2
ENMT618957	Material Standardization	2
ENMT618958	Polymer Recycling Technology	2
ENMT618959	Quenching Technology	2
ENMT618960	Industrial Apprenticeship	6
ENMT818961	Advanced Manufacture	3
ENMT818962	Advanced Polymer Manufacture	2
ENMT818963	Smart Materials	3
ENMT818964	Energy Materials	2
ENMT819865	Advanced Extractive Metallurgy	3
ENMT818966	Advanced Surface Engineering	3

Prerequisite for Elective Courses

Semester	Course	Prerequisite	Recommended Semester
1st Term	Special Alloyed Steels	Iron & Steel Making	7
1st Term	Biomaterial	Corrosion & Protection of Metals	5 or 7
1st Term	Engineering Ethics	-	5 or 7
1st Term	Computational Materials	Numerical Computation	5 or 7
1st Term	High Temperature Corrosion	Corrosion & Protection of Metals	5 or 7
1st Term	Electron Microscopy	Characterization of Materials	5 or 7
1st Term	Polymer	Polymer Materials	5 or 7
1st Term	Quality Management Systems	Data Analysis & Scientific Writing	7
1st Term	Advanced Solidification	Materials Physic 3	5 or 7
1st Term	Special Processing and Assembly Technologies	Materials Selection	7
1st Term	General Apprenticeship	Minimum110 credits	
1st Term	Risk Based-Inspection and Integrity	Characterization fo Materials, Corrosion & Protection of Metals	for fast-track / by department approval

1st Term	Advanced Polymer Manufacturing	Polymer Manufacturing Process	for fast-track / by department approval
1st Term	Electronic Materials	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramic Technology, Composite Technology	for fast-track / by department approval
1st Term	Nanotechnology	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramic Technology, Composite Technology	for fast-track / by department approval
2nd Term	Industrial Ecology	Mineral Processing	6 or 8
2nd Term	Concrete Corrosion	Corrosion & Protection of Metals	8
2nd Term	Energy Materials	-	6 or 8
2nd Term	Refractory Materials	Ceramic Technology	8
2nd Term	Mechanics of Material Forming	Metal Manufacturing Process	6 or 8
2nd Term	Industrial Mechanic Equipment	Metal Manufacturing Process	6 or 8
2nd Term	Material Standardization	Characterization of Materials	6 or 8
2nd Term	Polymer Recycling Technology	Polymer Manufacturing Process	8
2nd Term	Rubber Technology	Polymer Manufacturing Process	8
2nd Term	Quenching Technology	Heat Treatment & Surface Engineering	6 or 8
2nd Term	Industrial Apprenticeship	Minimum 110 credits	
2nd Term	Advanced Manufacture	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramic Technology, Composite Technology	for fast-track / by department approval
2nd Term	Smart Materials	Metal Manufacturing Process, Polymer Manufacturing Process, Ceramic Technology, Composite Technology	for fast-track / by department approval
2nd Term	Advanced Extractive Metallurgy	Extratcive Metallurgy	for fast-track / by department approval
2nd Term	Advanced Surface Engineering	Heat Treatment & Surface Engineering	for fast-track / by department approval

Transition Policy from Curriculum 2016 to Curriculum 2020

1. The Curriculum 2020 takes effect from the Second Term 2020/2021. After this curriculum is implemented, only the subjects in the Curriculum 2020 will be counted for the graduation: any subject in the Curriculum 2016 follows the transition rules.
2. Transition rules will be valid for 1 (one) year, starting from the Second Term of 2020/2021 until the First Term 2021/2022 for any subject changing in its place (from the first term to second term or vice versa). If it is necessary, the subject will be opened in both semesters.
3. Students who have not passed the compulsory subjects in the Curriculum 2016 are required to take the same or equivalent subjects in the Curriculum 2020.
4. If there is a change in the credit hours, the credits at the first time the subject taken will be considerred. The same or equivalent subjects with different credit hours, if repeated or newly taken, will be counted with the new name and credit hours.
5. The equivalence subjects for Curriculum 2016 and Curriculum 2020 can be seen in the Equivalency Table. Any unlisted subject in the Curriculum 2016 has been removed and is no longer offered.
6. If the compulsory subjects in the Curriculum 2016 are removed and there are no equivalencies in the Curriculum 2020:
   a. For students who have passed the subjects, the subjects will be counted as compulsory credits with the same name and credit hours.
   b. For students who have not passed the subjects, students can take new compulsory subjects or elective subjects with the new name and credit hours.
7. If a subject has a reduction in the credit hours while the student has already taken the subject required for the graduation, then the student is still allowed to graduate even though the total number of credits is less than the required one.

Equivalency of Curriculum 2016 and 2020

No	Course Name in Curriculum 2016	Credits	Course Name in Curriculum 2020	Credits
1	Academic Writing	3	Academic Writing	2
2	Integrated Character Building A	6	Integrated Character Building	6
3	Integrated Character Building B	6		
4	Statistics & Probability	2	Data Analysis and Scientific Writing	2
5	Physical Metallurgy 1	4	Materials Physics 1	2
6			Materials Physics 2	3
7	Testing of Materials	2	Characterization of Materials	3
8	Tech. of Microstructural Analysis	2		
9	Chemical Characterizations of Materials	2	Chemistry of Materials	2
10	Polymer Chemistry	4	Polymer Materials	3
11	Physical Metallurgy 2	3	Materials Physics 3	3
12	Mineral Processing	4	Mineral Processing	3
13	Transport Phenomenon	3	Introduction to Fluids Mechanic	2
14	Industrial Management	2	Technopreneurship	2
15	Polymer Technology	3	Polymer Manufacturing Process	3

16	Tech. of Microstructural Analysis Laboratory	1	Characterizations of Materials Laboratory	1
17	Testing of Materials Laboratory	1		
18	Chemical Characterization Laboratory	1		
19	Metal Manufacturing Process Laboratory	2	Metal Manufacturing Process Laboratory	1
20	Engineering Design of Products	3	Engineering Design of Products & Process	3
21	Capita Selecta	2	Technopreneurship	2
22	Fracture Mechanics & Failure Analysis	4	Failure Analysis	3

Other subjects that are not listed in this table do not change except for the subject code and curriculum code (full list is given in the SIAK-NG website)

Undergraduate Program in Architecture

Program Specification

1.	**Awarding Institution**	Universitas Indonesia For Double Degree Program: Universitas Indonesia & Partner Universities	
2.	**Teaching Institution**	Universitas Indonesia For Double Degree Program : Universitas Indonesia & Partner Universities	
3.	**Faculty**	Engineering	
4.	**Program**	Undergraduate Program in Architecture	
5.	**Vision and Mission of Study Program**	Vision: "Establishing a high-quality Architecture Education Institution that receives national and international recognition, to foster future leaders who are critical, knowledgeable, and creative thinkers, with sensibility to local wisdom and environment sustainability." Mission: "Establishing the Architecture Education institutional system with excellent quality, adaptive, and inclusive towards the implementation of teaching, research and community engagement in higher education."	
6 .	**Class**	Reguler, Non Reguler, International	
7.	**Degree Offered**	Sarjana Arsitektur (S.Ars.), for Double Degree: Sarjana Arsitektur (S.Ars) and Bachelor of Architecture (B.Arch)	
8.	**Accreditation / Recognition**	Accredited 'Unggul' by BAN-PT dan internationally assessed by AUN-QA	
9.	**Language of Instruction**	Bahasa Indonesia and English	
10.	**Study Scheme (Full time/Part time)**	Full Time	
11.	**Entry Requirement**	SMA Graduate/equal or D3/Polytechnique graduate	
12.	**Period of Study**	4 years	
	Semester	Total Semester	Weeks / semester
	Regular	8	17
	Short (optional)	3	8
13.	**Aims of the programme:** 1. **Education**: creating architecture graduates who master certain competencies in accordance with the level of education in a superior and quality manner. 2. **Research**: encouraging excellent research works that are able to compete at the regional and international levels. 3. **Community Service**: encouraging the application of architectural knowledge in the form of the empowerment of the community		

14.	**Graduate Profiles:** Bachelor Architecture is a graduate who has the ability to design architecture with respect to context and local needs and is based on the application of basic knowledge of architecture. Graduate of this program are expected to have the ability as: • **The Initiator** – able to provide solutions to spatial problems critically and creatively with respect to local context and needs • **The Designer** – have the skill in assembling architectural elements and materials, have an understanding of built aspects, and have a sensibility in creating meaningful architectural design • **The Communicator** – able to communicate ideas through words, writings, drawings, modeling and other media. • **The Collaborator** – able to work together with various stakehoders to propose creative solutions for real problems.
15.	**Graduates Competencies:** Bachelor Architecture will have graduate competencies as follow: 1. Able to create architectural design by integrating basic architectural knowledge, applying design and communication skill, applying ability for imagination, creative thinking, innovation and three-dimensional thinking. 2. Able to synthesize the knowledge of architectural history and theories, including knowledge on art, culture and humanities that could influences the quality of architectural design. 3. Able to integrate analysis of the context into architectural design. 4. Able to analyses the needs and characteristic of the users and integrate them as the basis to define contextual and functional requirement on different types of space. 5. Able to construct the basic knowledge of architectural design methods. 6. Able to integrate the basic knowledge of structure, material, construction and building technology into architectural design. 7. Able to integrate the basic knowledge of natural and environmental system into a sustainable architecture design. 8. Aware of various roles of architects in the society. 9. Able to gather information, formulate, analyses and synthesize problems that are related to architecture. 10. Able to apply mathematics, science, and basic engineering into the solution of complex technical problems. 11. Have integrity, able to demonstrate critical, creative, and innovative thinking, and have intellectual curiosity in solving the problems both at individual and group levels. 12. Able to offer alternative solutions towards various problems in the society, the community, and the nation. 13. Able to utilize information and communication technology. 14. Able to use verbal and written language in Bahasa Indonesia and English fluently in academic and non-academic activities. 15. Able to identify various innovative and independent entrepreneurial endeavors with respect to ethics.

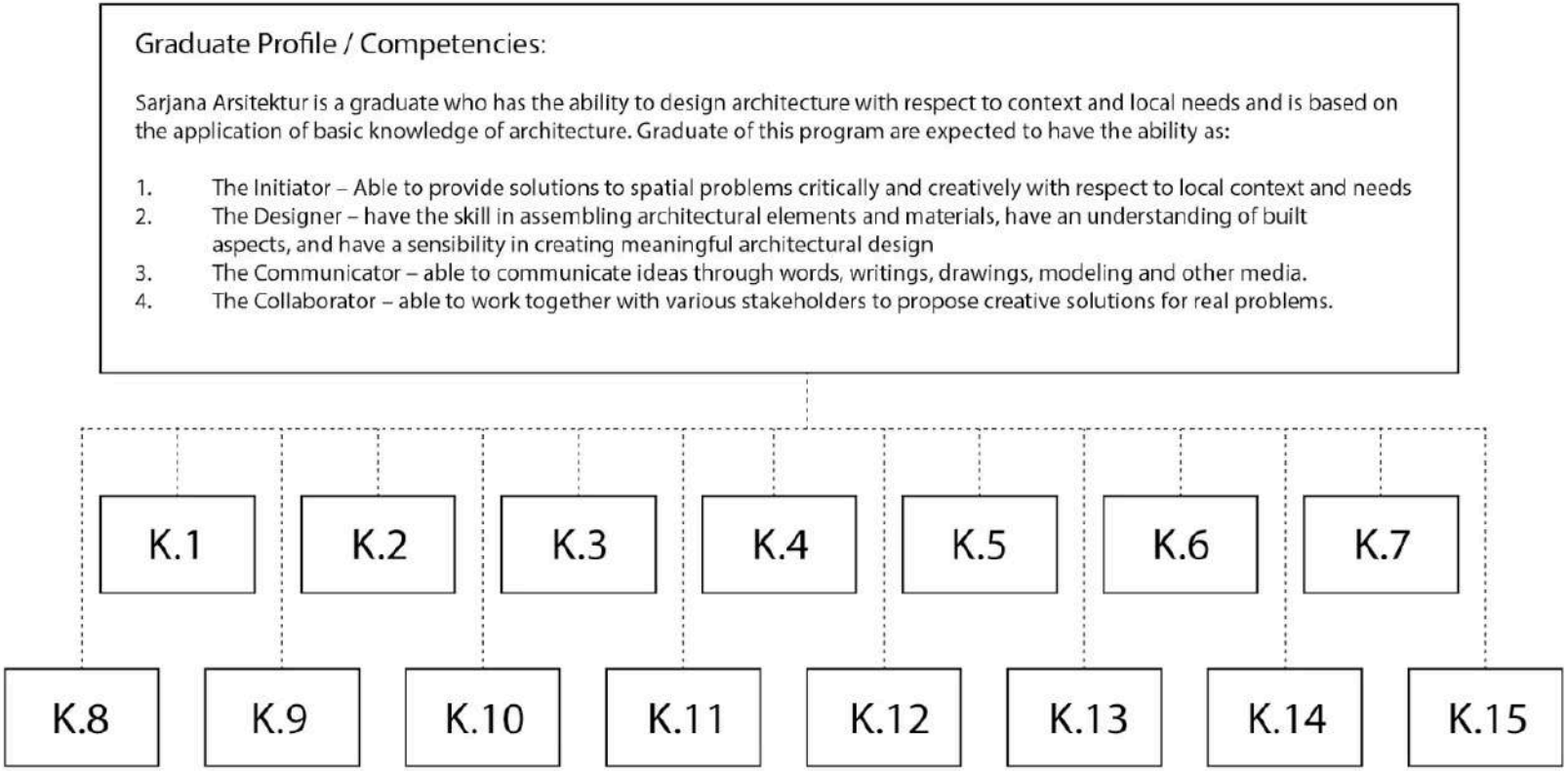
16.	Course Composition		
No.	**Type of Courses**	**Credits**	**Percentage**
I	University General Subjects	10	6.25 %
II	Basic Engineering Subjects	10	6.94 %
III	Architecture Core Course	81	56.25 %
IV	Specialization Course	-	-
V	Electives	38	26.39 %
VI	Undergraduate Thesis or Final Project	6	4.17 %
	Total	145	100 %
	Total Credits for Graduation		**145 sks**

Job Opportunity

Graduates of Strata-1 Architecture Program UI hold a Sarjana Arsitektur with pre-professional qualifications. The graduate can or will be able to work as an intern in a professional practice or to continue on to a Professional Architectural Education Program (PPARS) (Architect). To obtain professional certification, a graduate has to perform an internship and pass the qualification assessment by the professional association (IAI/Indonesian Institute of Architects).

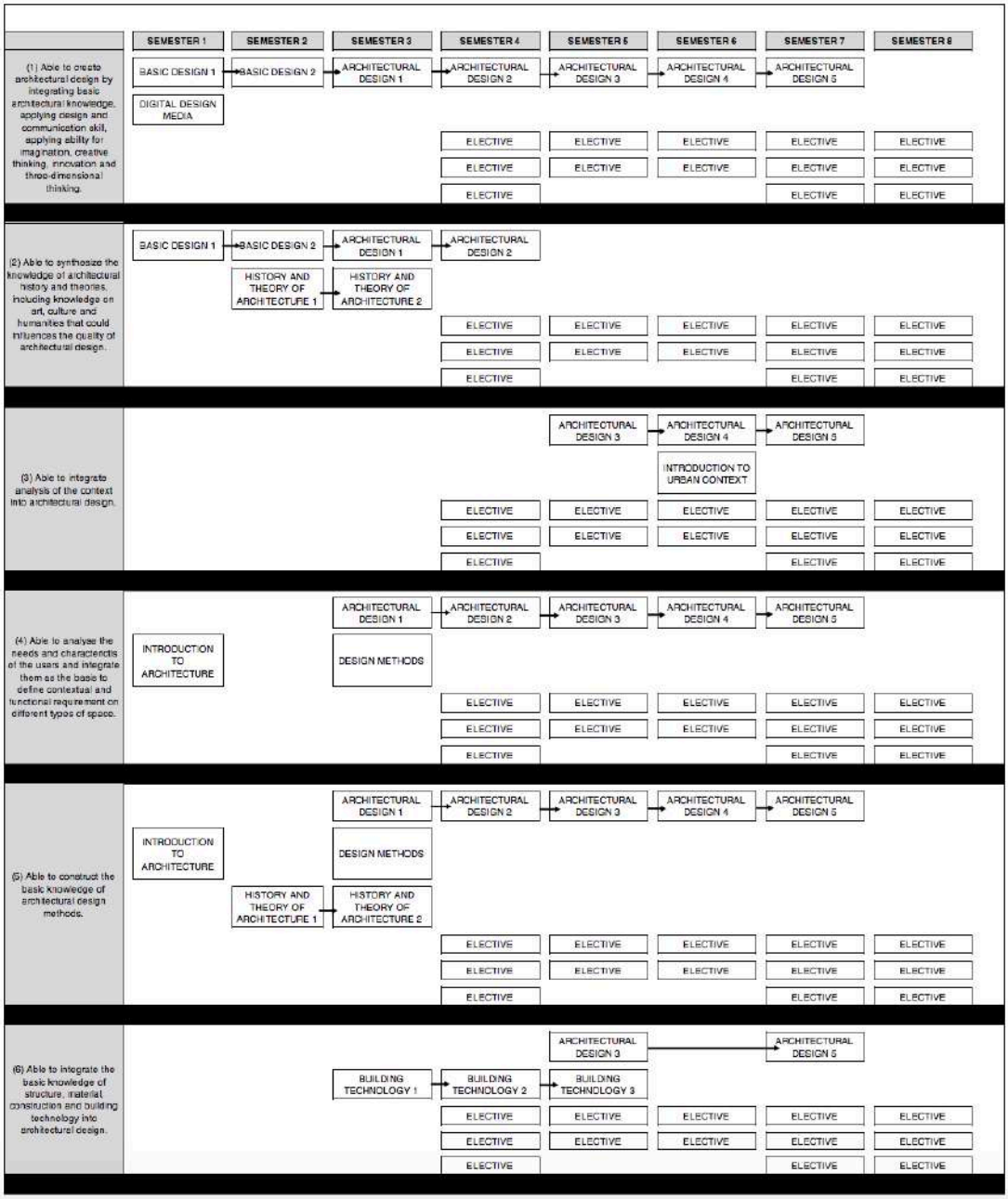
A graduate holding a Sarjana Arsitektur UI can work in various fields of the construction industry such as architecture, interior design or construction supervision. In addition to pursuing a career in the architectural field, graduates are able to develop a career as an assessor for project feasibility studies, building and environmental management, to work in the building materials industries as well as working in the public sector related to government buildings, construction and the built environment. In addition to these areas, graduates can also work in various fields of work that employ creative abilities and critical thinking skills.

Diagram of Graduate Compentencies



Course Diagram in Achieving Compentencies

Undergraduate Program in Architecture



S1 Arsitektur

	GENERAL AND BASIC ENGINEERING	BASIC	SKILL	ENRICHMENT	
8			Undergraduate Thesis/Final Project [6]	Elective [3] Elective [3] Elective [3]	15 SKS
7			Arch. Design 5 [9]	Elective [3] Elective [3] Elective [2]	17 SKS
6		Introduction to Urban Context [3]	Arch. Design 4 [9]	Elective [3] Elective [3]	18 SKS
5		Building Technology 3 [3]	Arch. Design 3 [9]	Elective [3] Elective [3]	18 SKS
4		Building Technology 2 [3]	Arch. Design 2 [8]	Elective [3] Elective [3] Elective [3]	20 SKS
3	Mechanics and Thermal Physics [3]	Design Methods [3] Building Technology 1 [3] History and Theory of Architecture 2 [3]	Arch. Design 1 [7]		19 SKS
2	Integrated Character Building [5] Linear Algebra [4]	History and Theory of Architecture 1 [3]	Basic Design 2 [7]		19 SKS
1	English [2] Religion [2] Calculus 1 [3]	Introduction to Architecture [3] Digital Design Media [3]	Basic Design 1 [5]		18 SKS

S1 Architecture KKI (single degree)

	GENERAL AND BASIC ENGINEERING	BASIC	SKILL	ENRICHMENT	
8			Undergraduate Thesis/Final Project [6]	Elective [2] Elective [3] Elective [3]	14 SKS
7			Arch. Design 5 [9]	Elective [3] Elective [3]	15 SKS
6	Integrated Character Building [5]	Introduction to Urban Context [3]	Arch. Design 4 [9]	Elective [3]	20 SKS
5	Religion [2]	Building Technology 3 [3]	Arch. Design 3 [9]	Elective [2] Elective [3]	19 SKS
4		Building Technology 2 [3]	Arch. Design 2 [8]	Elective [3] Elective [3] Elective [3]	20 SKS
3		Design Methods [3] Building Technology 1 [3] History and Theory of Architecture 2 [3]	Arch. Design 1 [7]	Elective [3]	19 SKS
2	Linear Algebra [4]	History and Theory of Architecture 1 [3]	Basic Design 2 [7]	Elective [3]	17 SKS
1	Academic Writing [3] Calculus 1 [3] Mechanics and Thermal Physics [3]	Introduction to Architecture [3] Digital Design Media [3]	Basic Design 1 [5]		20 SKS

Curriculum Structure Undergraduate Program in Architecture

KODE	MATA AJAR	SUBJECT	SKS
	Semester 1	**1st Semester 1**	
UIGE600003	MPK Bahasa Inggris	MPK English	2
UIGE600004	MPK Agama	MPK Religion	2
ENGE600001	Kalkulus 1	Calculus 1	3
ENAR600001	Desain Dasar 1	Basic Design 1	5
ENAR600009	Pengantar Arsitektur	Introduction to Architecture	3
ENAR600015	Media Desain Digital	Digital Design Media	3
		Sub Total	**18**
	Semester 2	**2nd Semester**	
UIGE600007	MPK Terintegrasi	Integrated Character Building	6
ENGE600004	Aljabar Linear	Linear Algebra	4
ENAR600002	Desain Dasar 2	Basic Design 2	7
ENAR600010	Sejarah dan Teori Arsitektur 1	History and Theory of Architecture 1	3
		Sub Total	**20**
	Semester 3	**3rd Semester**	
ENGE600005	Fisika Mekanika dan Panas	Mechanics and Thermal Physics	3
ENAR600003	Perancangan Arsitektur 1	Architectural Design 1	7
ENAR600011	Metode Perancangan	Design Methods	3
ENAR600012	Teknologi Bangunan 1	Building Technology 1	3
ENAR600013	Sejarah dan Teori Arsitektur 2	History and Theory of Architecture 2	3
		Sub Total	**19**
	Semester 4	**4th Semester**	
	Perancangan Arsitektur 2	Architectural Design 2	8
	Teknologi Bangunan 2	Building Technology 2	3
ENAR600004	Pilihan *	Elective *	3
ENAR600014	Pilihan *	Elective *	3
	Pilihan *	Elective *	3
		Sub Total	**20**
	Semester 5 **	**Semester 5 ****	
	Perancangan Arsitektur 3	Architectural Design 3	9
ENAR600005	Teknologi Bangunan 3	Building Technology 3	3
ENAR600016	Pilihan *	Elective *	3
	Pilihan *	Elective *	3
		Sub Total	**18**
	Semester 6 **	**6th Semester ****	
	Perancangan Arsitektur 4	Architectural Design 4	9
ENAR600006	Pengantar Konteks Perkotaan	Introduction to Urban Context	3
ENAR600017	Pilihan *	Elective *	3
	Pilihan *	Elective *	3
		Sub Total	**18**

	Semester 7	7th Semester	
ENAR600007	Perancangan Arsitektur 5	Architectural Design 5	9
	Pilihan *	Elective *	3
	Pilihan *	Elective *	3
	Pilihan *	Elective *	2
		Sub Total	**17**
	Semester 8	**8th Semester**	
ENAR600008	Skripsi/Tugas Akhir	Undergraduate Thesis/Final Project	6
	Pilihan *	Elective *	3
	Pilihan *	Elective *	3
	Pilihan *	Elective *	3
		Sub Total	**15**
		Total	**145**

*) Students are required to take 2 courses outside of the Undergraduate Architecture Program with the approval of the Academic Supervisor and Credit Transfer Team. Students can take Minor packages outside the Undergraduate Architecture Program with the approval of the Academic Supervisor and Credit Transfer Team.

**) Students can take an exchange program with a partner university with the approval of the Academic Advisor and the Credit Transfer Team

As the application of Merdeka Belajar, students can take electives in the form of internship, excursion/research project, community engagement, community development, etc.

Students who want to pursue double degree with partner university should learn two years at the Department of Architecture Universitas Indonesia and two years in partner university.

Elective Introduction to Sustainability is mandatory for those planning to take double degree in Curtin University or QUT

***Design Studies is mandatory for students taking Final Project

ELECTIVE COURSES			
KODE	**MATA AJAR**	**SUBJECT**	**CREDIT**
ENAR600018	Akustik	Acoustics	3
ENAR600019	Arsitektur dan Spasial Etnografi	Architecture and Spatial Ethnography	3
ENAR600020	Arsitektur dan Teks	Architecture and Text	3
ENAR600021	Arsitektur di Kawasan Pesisir	Coastal Architecture	3
ENAR600022	Arsitektur Etnik	Ethnic Architecture	3
ENAR600023	Arsitektur, Kota dan Kuasa	Architecture, City, and Power	3
ENAR600024	Arsitektur, Media dan Konteks	Architecture, Media and Context	3
ENAR600025	BIM: Dokumentasi Proyek Dasar	BIM: Project Documentation - Basic	3
ENAR600026	Diagram dan Arsitektur	Diagram and Architecture	3
ENAR600027	Ekologi Perkotaan	Urban Ecology	3
ENAR600028	Fabrikasi Digital	Digital Fabrication	3
ENAR600029	Fasad Bangunan Tinggi	High Rise Building Facades	3
ENAR600030	Fotografi	Photography	3
ENAR600031	Geometri dan Arsitektur	Geometry Architecture	3
ENAR600032	Kajian Lapangan	Field Study	3
ENAR600033	Kajian Mandiri	Independent Study	3
ENAR600034	Kajian Perancangan***	Design Study***	3
ENAR600035	Kapita Selekta	Capita Selecta	3

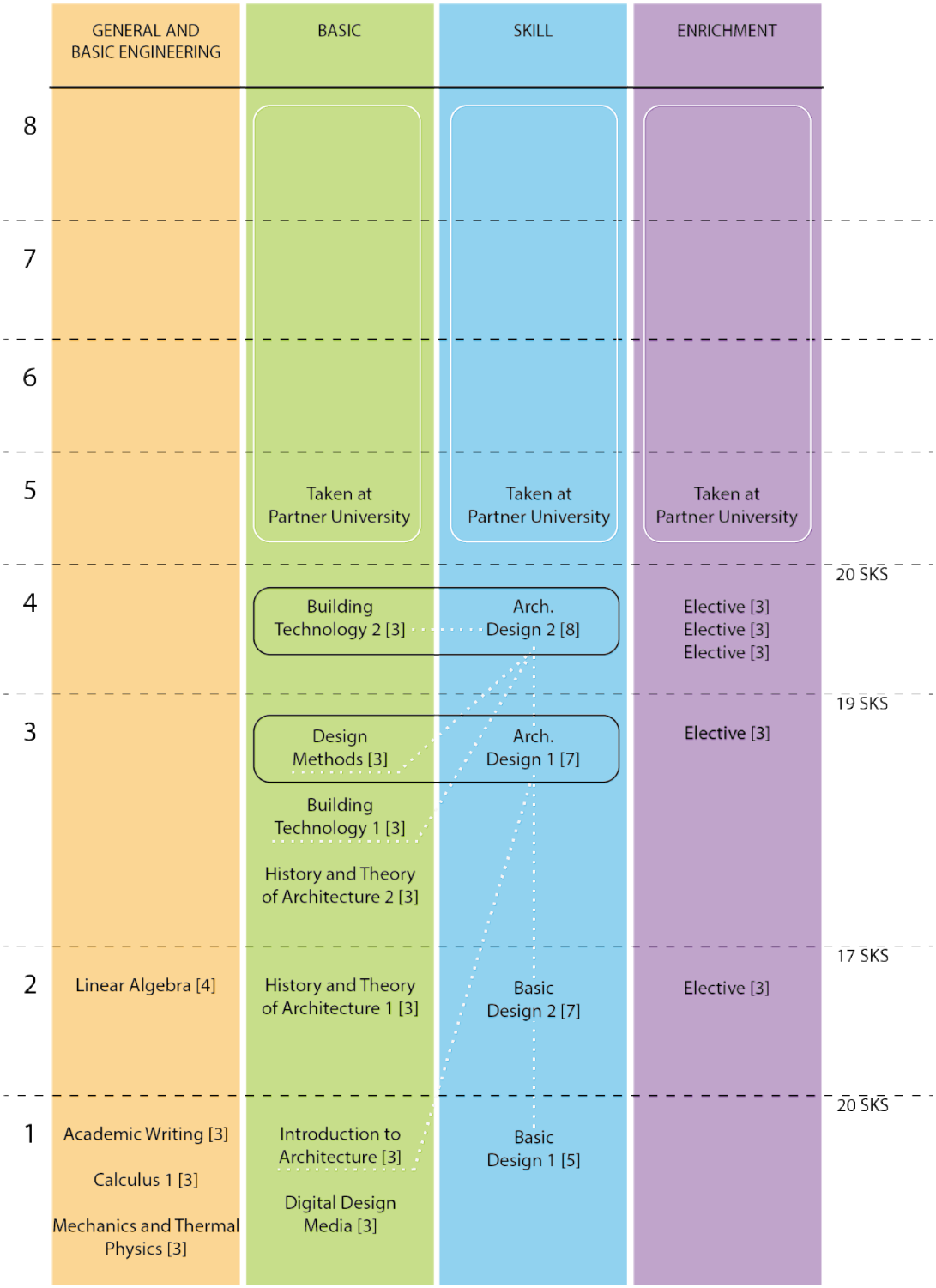
ENAR600036	Kerja Praktek/KKN	Internship/Community Outreach	3
ENAR600037	Keseharian dan Arsitektur	Everyday and Architecture	3
ENAR600038	Komunikasi Desain Digital 2D	2D Digital Design Communication	3
ENAR600039	Komunikasi Desain Digital 3D	3D Digital Design Communication	3
ENAR600040	Lingkungan Daur Hidup	Lifecycle Environment	3
ENAR600041	Pengantar Analisis Spasial	Introduction to Spatial Analysis	3
ENAR600042	Perancangan Ruang Dalam	Interior Design	3
ENAR600043	Perencanaan Kota	City Planning	3
ENAR600044	Prinsip Perancangan Kota	Urban Design Principles	3
ENAR600045	Psikologi Arsitektur	Architectural Psychology	3
ENAR600046	Real Estate	Real Estate	3
ENAR600047	Studi Kelayakan Proyek	Project Feasibility Study	3
ENAR600048	Tata Cahaya	Lighting Design	3
ENAR600049	Tata Ruang Luar	Site Planning and Design	3
ENAR600050	Teori Perumahan Kota	Urban Housing Theory	3
ENAR600051	Topik Khusus Kolaborasi	Special Topic of Collaboration	3
ENAR600052	Topik Khusus Perancangan Arsitektur	Special Topic on Architectural Design	3
ENAR600053	Topik Khusus Perkotaan	Special Topic on Urban Design	3
ENAR600054	Topik Khusus Perumahan dan Permukiman	Special Topic on Urban Housing and Settlement	3
ENAR600055	Topik Khusus Sejarah, Teori dan Kritik Arsitektur	Special Topic on Architectural History, Theory and Criticism	3
ENAR600056	Topik Khusus Teknologi Bangunan	Special Topic on Building Technology	3
ENAR600057	Utilitas Bangunan	Building Utility	3
ENAR600058	Workshop Tektonik	Tectonic Workshop	3

***) The Design Studies Elective Lecture is mandatory for students taking the Final Project

Elective courses open to study programs outside of architecture/interior architecture:

ELECTIVE COURSES			
KODE	**MATA AJAR**	**SUBJECT**	**CREDIT**
ENAR600021	Arsitektur di Kawasan Pesisir	Coastal Architecture	3
ENAR600023	Arsitektur, Kota dan Kuasa	Architecture, City, and Power	3
ENAR600027	Ekologi Perkotaan	Urban Ecology	3
ENAR600047	Studio Kelayakan Proyek	Project Feasibility Study	3

S1 Architecture KKI (double degree)



1st SEMESTER			2nd SEMESTER		
CODE	**COURSE SUBJECT**	**CREDIT**	**CODE**	**COURSE SUBJECT**	**CREDIT**
CORE			**CORE**		
UIGE610002	Academic Writing	3	ENGE610004	Linear Algebra	4
ENGE610001	Calculus 1	3	ENAR610002	Basic Design 2	7
ENGE610005	Physics (Mechanics and Thermal)	3	ENAR610010	History & Theory of Architecture 1	3
ENAR611001	Basic Design 1	5			
ENAR610009	Introduction to Architecture	3			
ENAR610015	Digital Design Media	3			
	Total	20		Total	14
ELECTIVE			**ELECTIVE**		
				Elective***	3
	Total	0		Total	3
	Total Credit 1st Semester	20		Total Credit 2nd Semester	17

3rd SEMESTER			4th SEMESTER		
CODE	**COURSE SUBJECT**	**CREDIT**	**CODE**	**COURSE SUBJECT**	**CREDIT**
CORE			**CORE**		
ENAR610003	Architectural Design 1	7	ENAR610004	Architectural Design 2	8
ENAR610011	Design Methods	3	ENAR610014	Building Technology 2	3
ENAR613012	Building Technology 1	3			
ENAR610013	History & Theory of Architecture 2	3			
	Total	16		Total	11
ELECTIVE			**ELECTIVE**		
	Elective *	3		Elective *	3
				Elective *	3
				Elective *	3
	Total	3		Total	9
	Total Credit 3rd Semester	19		Total Credit 4th Semester	20

5th SEMESTER **			6th SEMESTER **		
CODE	**COURSE SUBJECT**	**CREDIT**	**CODE**	**COURSE SUBJECT**	**CREDIT**
CORE			**CORE**		
UIGE610004	MPK Religion	2	UIGE610011	Integrated Character Building	6
ENAR610005	Architectural Design 3	9	ENGE610006	Architectural Design 4	9
ENAR610016	Building Technology 3	3	ENAR610017	Introduction to Urban Context	3
	Total	14		Total	18
ELECTIVE	Elective *	3	**ELECTIVE**	Elective *	3
	Elective *	2			

	Total	5		Total	3
	Total Credit 5th Semester	19		Total Credit 6th Semester	20

7th SEMESTER			8th SEMESTER		
CODE	**COURSE SUBJECT**	**CREDIT**	**CODE**	**COURSE SUBJECT**	**CREDIT**
CORE			**CORE**		
ENAR610007	Architectural Design 5	9	ENAR610008	Undergraduate Thesis	6
	Total	9		Total	6
ELECTIVE			**ELECTIVE**		
	Elective *	3		Elective *	3
	Elective *	3		Elective *	3
				Elective *	2
	Total	6		Total	8
	Total Credit 7th Semester	15		Total Credit 8th Semester	14

*) Students are required to take 2 courses outside of the Undergraduate Architecture Program with the approval of the Academic Supervisor and Credit Transfer Team. Students can take Minor packages outside the Undergraduate Architecture Program with the approval of the Academic Supervisor and Credit Transfer Team.

**) Students can take an exchange program with a partner university with the approval of the Academic Advisor and the Credit Transfer Team

***) Elective Introduction to Sustainability is mandatory for those planning to take double degree in Curtin University or QUT

As the application of Merdeka Belajar, students can take electives in the form of internship, excursion/research project, community engagement, community development, etc.

For students taking single degree, all 144 credits will be taken in Universitas Indonesia. Students who want to pursue double degree with partner university should learn two years at the Department of Architecture Universitas Indonesia and two years in partner university.

Elective Courses		
Code	**Elective Course Subject**	**Credits**
ENAR610018	2D-Digital Design Communication	3
ENAR610019	3D-Digital Design Communication	3
ENAR610020	Acoustics	3
ENAR610021	Architecture, City and Power	3
ENAR610022	Capita Selecta	3
ENAR610023	Design Studies**	3
ENAR610024	Ethnic Architecture	3
ENAR610025	Field Study	3
ENAR610026	Heritage Architecture	3
ENAR610027	Independent Study	3
ENAR610028	Internship	3
ENAR610029	Introduction to Sustainability***	3

ENAR610030	Life Cycle Environment	3
ENAR610031	Lighting Design	3
ENAR610032	Photography	3
ENAR610033	Site Planning and Design	3
ENAR610034	Special Topic on Architectural Design	3
ENAR610035	Special Topic on Architectural History, Theory, and Criticism	3
ENAR610036	Special Topic on Building Technology	3
ENAR610037	Special Topic on Urban Design	3
ENAR610038	Special Topic on Urban Housing and Settlement	3

***) Design Study are mandatory for students taking Final Project

Course Structure at Curtin University

Code	Course Title	Credits
	Year 3-Semester 5 (July)	
COMS1010	Academic and Professional Communications	25
ARCH2022	Architectural Contexts Studio	25
ARCH2023	Architectural Contexts Methods	25
ARCH2004	Architecture and Identity	25
	Sub Total	100
	Year 3-Semester 6 (February)	
ARCH3026	Architectural Discourse and Spatial Intelligence Studio	25
ARCH3027	Architectural Discourse and Spatial Intelligence Methods	25
ARCH3009	Urban Contexts	25
ARCH3006	Environmental and Technological Systems in Architecture 1	25
	Sub Total	100
	Year 4-Semester 7 (July)	
ARCH3024	Architectural Discourse and Spatial Intelligence Studio	25
ARCH3025	Architectural Discourse and Spatial Intelligence Methods	25
ARCH3007	Environmental and Technological Systems in Architecture 2	25
ARCH3009	Architecture, Theory and Critique	25
	Sub Total	100
	Total Credits taken at Curtin University	300

Course Structure at Queensland University of Technology (QUT)

QUT Study Plan – February Entry

Code	Subject
	Year 1 - February (First Semester at QUT)
DYB102	Impact Lab 2: People
DAB311	Systems and Structures
DAB301	Architectural Design : Commercial
	One Elective Unit
	Year 1 - July (Second Semester at QUT)
DAB212	Small Scale Building Construction
DAB302	Architectural Design 6: Communities
DAB303	Integrated Architectural Technology
DAB312	Building Services
	Year 2 - February (Third Semester at QUT)
DYB201	Impact Lab 3: Planet
DYB112	Spatial Materiality
DAB200	Modern Architecture
DAB312	Select one unit from the Impact Lab Unit Options List: • DYB301 Impact Lab 4: Purpose OR • KKB341 Work Integrated Learning 1 OR • KKB350 Creative Industries Study Tour

QUT Study Plan – July ntry

Code	Subject
	Year 1 - July semester (First Semester at QUT)
DYB102	Impact Lab 2: People
DAB303	Integrated Architectural Technology
DAB212	Small Scale Building Construction
	One Elective Unit
	Year 2 - Feb semester (Second Semester at QUT)
DYB112	Spatial Materiality
DAB200	Modern Architecture
DAB311	Systems and Structures
DAB301	Architectural Design 5: Commercial
	Year 2 - July semester (Third Semester at QUT)
DAB302	Architectural Design 6: Communities
DYB201	Impact Lab 3: Planet
DAB312	Building Services
	Select one unit from the Impact Lab Unit Options List: • DYB301 Impact Lab 4: Purpose OR • KKB341 Work Integrated Learning 1 OR • KKB350 Creative Industries Study Tour

Transition Rules

1. The implementation of 2020 curriculum will start at the Odd Semester 2020/2021. In principle, after the 2020 Curriculum is implemented, only the subjects listed in the 2020 curriculum will be offered.
2. Class of 2019 and earlier should follow the 2020 curriculum by referring to the transition rules.
3. The transition period takes place for one year in the academic year of 2020/2021. When necessary, courses with changes on its semester's placement (from Even to Odd, or vice versa) will be opened in both semesters of the transition period (Academic Year 2020 / 2021).
4. If there is a change in a subject's credit, the number of credits that will be calculated for graduation are the number of credits applied when the students took the course. Students who need to retake such subjects after the 2020 Curriculum is implemented will acquire the subjects with its new credit numbers.
5. If a compulsory subject in the 2016 Curriculum is removed without any equivalence in the 2020 Curriculum, then credits obtained from such subject will still be included in the calculation of total 145 credits required for graduation. Students who have not passed such course can take either newly required subjects or other elective courses in the 2020 Curriculum to complete their 145 credits.
6. Students who have not passed the compulsory subjects in the 2016 Curriculum will need to take the similar or equivalent subjects in the 2020 Curriculum. The 2016 Curriculum courses that are not listed in the transition table below will have a similar name and credit numbers in the 2020 Curriculum.
7. Students from the 2018 class or earlier who have not passed the Physics (Mechanical and Thermal) Laboratory in Curriculum 2016 should take any Elective subject in the 2020 Curriculum.
8. The Digital Design Media and History and Theory of Architecture 2 subjects are now offered in the odd semester. In the transition period, Digital Design Media and History and Theory of Architecture 2 subjects will be open in the even semester for students of 2019 and above who need to take/retake the subjects.

Table 8. Subject Equivalence of 2016 Curriculum and 2020 Curriculum for Undergraduate Architecture Program

No.	Subject name in Curriculum 2016	Credit 2016	Subject name in Curriculum 2020	Credit 2020
1.	Integrated Character Building A	6	Integrated Character Building (MPKT)	6
	Integrated Character Building B	6		
2.	English	3	English	2
3.	Sports/Arts	1	Can be changed into Electives	1-3
4.	Physics (Mechanical and Thermal) Laboratory	1	Can be changed into Electives	1-3

Undergraduate Program in Interior Architecture

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program**	Undergraduate Program in Interior Architecture	
5.	**Vision and Mission of Study Program**	Vision: "To establish an excellence in Higher Education Institutions in Interior Architecture with national and international recognition, in order to nurture future leaders who think critically, act prudently and creatively with global insights and respect to the local wisdom and environmental sustainability." Mission: "Establishing the Architecture Education institutional system with excellent quality, adaptive, and inclusive towards the implementation of teaching, research and community engagement in higher education."	
6 .	**Class**	Reguler, Non Reguler	
7.	**Degree Offered**	Sarjana Arsitektur (S.Ars.)	
8.	**Accreditation / Recognition**	Accredited 'Unggul' by BAN-PT dan internationally assessed by AUN-QA	
9.	**Language of Instruction**	Bahasa Indonesia and English	
10.	**Study Scheme (Full time/Part time)**	Full Time	
11.	**Entry Requirement**	SMA Graduate/ equal or D3/ Politeknik	
12.	**Period of Study**	4-year Program	
	Semester	Total Semester	Weeks / semester
	Regular	8	17
	Short (optional)	3	8
13.	**Aims of the Program** 1. **Education**: promoting graduates of interior architecture who master certain competencies in accordance with the level of education in a superior and quality manner. 2. **Research**: encouraging superior scientific research works that are able to compete at the international level. 3. **Community Service**: encouraging the implementation of practical/applied knowledge to the community in the form of empowerment.		
14.	**Profile of Graduates** Sarjana Arsitektur Interior is a graduate who has the ability to design interior architectural works with respect to context and local needs and based on the application of basic knowledge of interior architecture. Graduates are expected to demonstrate the ability as: 1. **An Initiator** – able to provide solutions to spatial problems critically and creatively with respect to local contexts and needs. 2. **A Designer** – have the skill in assembling interior architectural elements and materials, have an understanding of buildability aspects, and have sensitivity in creating meaningful interior architectural design. 3. **A Communicator** – able to communicate ideas verbally and through writings, drawings, models and other media. 4. **A Collaborator** – able to work together with various stakeholders in the society to propose creative solutions for real problems.		

15.	**Graduate's Competencies:** A bachelor of Interior Architecture has the expected learning outcomes as follow: 1. Able to create interior architectural design based on interiority by integrating basic interior architectural knowledge, applying design and communication skill, applying ability for imagination, creative thinking, innovation and three-dimensional thinking. 2. Able to synthesize the knowledge of interior architectural history and theories, including knowledge on art, culture and humanities that could influence the quality of interior architectural design. 3. Able to analyze context in which interior architecture is designed and integrate it through design that responds appropriately to the context. 4. Able to analyze the needs and characteristics of the users, knowledge of ergonomics and anthropometric and integrate them as the basis to define contextual and functional requirement on different types of interior space. 5. Able to construct the basic knowledge of interior architectural design methods. 6. Able to construct the basic knowledge of structural systems, construction, and building technology aspects that are relevant to interior architectural design. 7. Able to construct the basic knowledge of materials both technically and in relation to tactility and human experience in interior space. 8. Able to integrate the basic knowledge of natural and environmental systems into a sustainable interior architectural design. 9. Aware of various roles of interior architects in the society and professional aspects of interior architecture. 10. Able to gather information, formulate, analyze and synthesize problems that are related to interior architecture. 11. Able to apply mathematics, science, and basic engineering into the solution of complex technical problems. 12. Have integrity, able to demonstrate critical, creative, and innovative thinking, and have intellectual curiosity in solving the problems both at individual and group levels. 13. Able to offer alternative solutions towards various problems in the society, the community, and the nation. 14. Able to utilize information and communication technology. 15. Able to use verbal and written language in Bahasa Indonesia and English fluently in academic and non-academic activities. 16. Able to identify various innovative and independent entrepreneurial endeavors with respect to ethics.
16.	**Course Composition**

No.	Type of Courses	Credits	Percentage
I	University General Subjects	10	6.25 %
II	Basic Engineering Subjects	10	6.94 %
III	Architecture Core Course	84	58.33%
IV	Specialization Course	-	-
V	Electives	35	24.31%
VI	Undergraduate Thesis or Final Project	6	4.17 %
	Total	145	100 %
	Total Credits for Graduation		**145 sks**

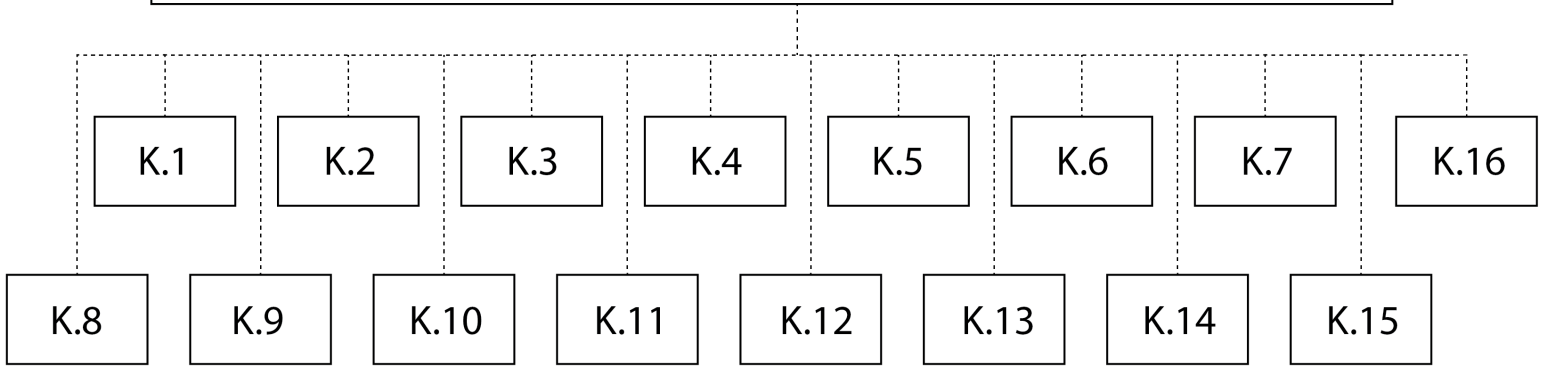
Job Opportunity

A graduate is able to work as an interior architect in the design of interior spaces of residential buildings; commercial buildings; hospitals and other public buildings. S/he can also work as a design principal in an interior design consultancy, act as a corporate designer or a designer of movie, TV, theater sets as well as working as an academic and as a critic.

Graduate Profile / Competencies:

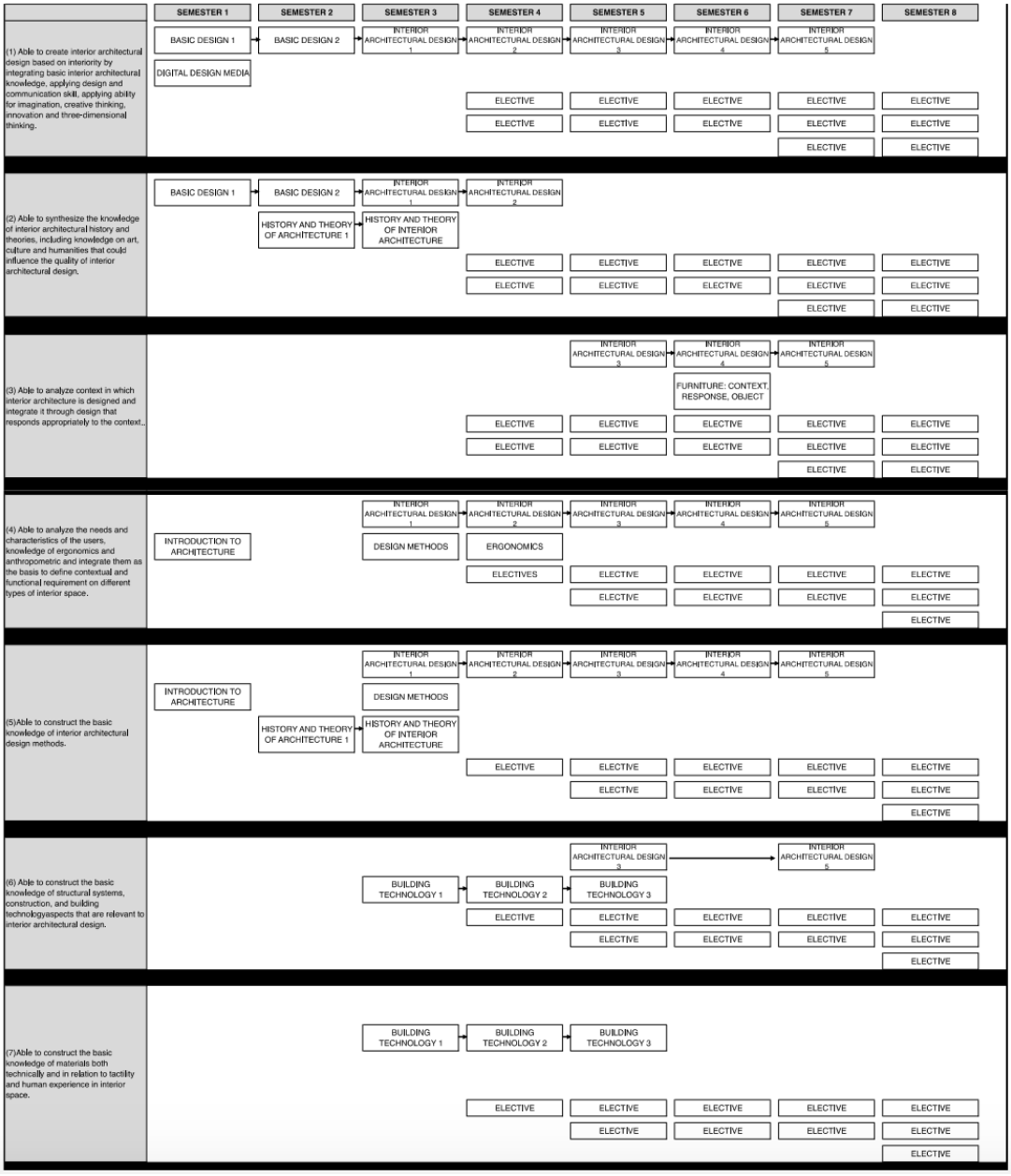
Sarjana Arsitektur Interior is a graduate who has the ability to design interior architectural works with respect to context and local needs and based on the application of basic knowledge of interior architecture. Graduates are expected to demonstrate the ability as:

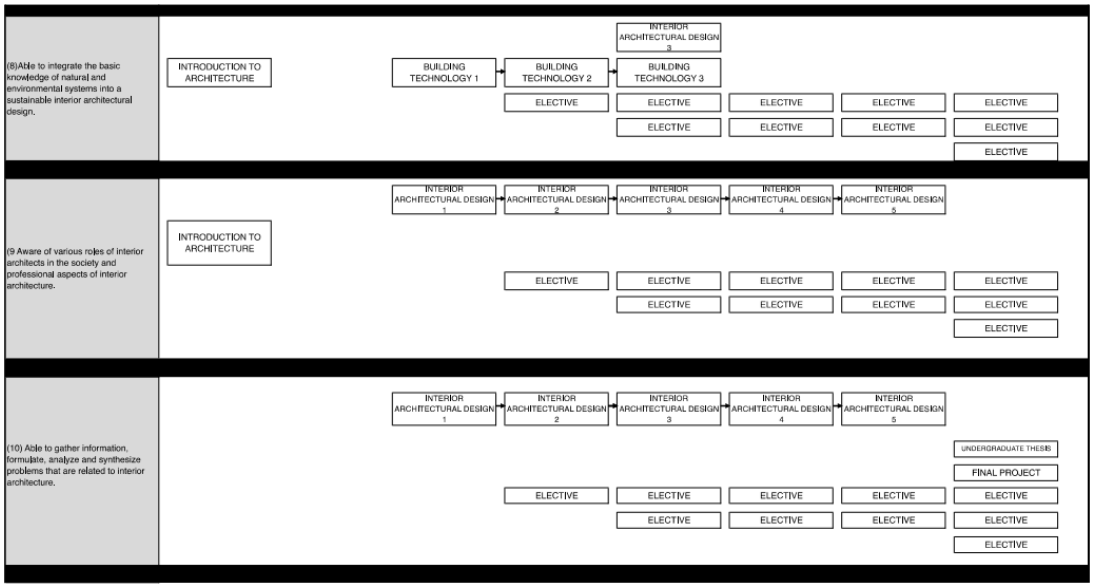
1. An Initiator – able to provide solutions to spatial problems critically and creatively with respect to local contexts and needs.
2. A Designer – have the skill in assembling interior architectural elements and materials, have an understanding of buildability aspects, and have sensitivity in creating meaningful interior architectural design.
3. A Communicator – able to communicate ideas verbally and through writings, drawings, models and other media.
4. A Collaborator – able to work together with various stakeholders in the society to propose creative solutions for real problems.



Course Diagram in Achieving Compentencies

Undergraduate Program in Interior Architecture




(8)Able to integrate the basic knowledge of natural and environmental systems into a sustainable interior architectural design.
INTRODUCTION TO ARCHITECTURE
BUILDING TECHNOLOGY 1
BUILDING TECHNOLOGY 2
BUILDING TECHNOLOGY 3
INTERIOR ARCHITECTURAL DESIGN 3
ELECTIVE
(9 Aware of various roles of interior architects in the society and professional aspects of interior architecture.
INTRODUCTION TO ARCHITECTURE
INTERIOR ARCHITECTURAL DESIGN 1
INTERIOR ARCHITECTURAL DESIGN 2
INTERIOR ARCHITECTURAL DESIGN 3
INTERIOR ARCHITECTURAL DESIGN 4
INTERIOR ARCHITECTURAL DESIGN 5
ELECTIVE
(10) Able to gather information, formulate, analyze and synthesize problems that are related to interior architecture.
UNDERGRADUATE THESIS
FINAL PROJECT

S1 Arsitektur Interior

	GENERAL AND BASIC ENGINEERING	BASIC	SKILL	ENRICHMENT	
8			Undergraduate Thesis/Final Project [6]	Elective [3] Elective [3] Elective [3]	15 SKS
7			Interior Arch. Design 5 [9]	Elective [3] Elective [3] Elective [2]	17 SKS
6		Furniture: Context, Response, Object [3]	Interior Arch. Design 4 [9]	Elective [3] Elective [3]	18 SKS
5		Building Technology 3 [3]	Interior Arch. Design 3 [9]	Elective [3] Elective [3]	18 SKS
4		Building Technology 2 [3] Ergonomi [3]	Interior Arch. Design 2 [8]	Elective [3] Elective [3]	20 SKS
3	Mechanics and Thermal Physics [3]	Design Methods [3] Building Technology 1 [3] History and Theory of Interior Architecture 2 [3]	Interior Arch. Design 1 [7]		19 SKS
2	Integrated Character Building [5] Linear Algebra [4]	History and Theory of Architecture 1 [3]	Basic Design 2 [7]		19 SKS
1	English [2] Religion [2] Calculus 1 [3]	Introduction to Architecture [3] Digital Design Media [3]	Basic Design 1 [5]		18 SKS

Curriculum Structure Undergraduate Interior Architecture Program

Code	Subject	SKS
	1st Semester	
UIGE600003	English	2
UIGE600004	Religion	2
ENGE600001	Calculus 1	3
ENAI600001	Basic Design 1	5
ENAR600009	Introduction to Architecture	3
ENAI600015	Digital Design Media	3
	Sub Total	**18**
	2nd Semester	
UIGE600007	Integrated Character Building	6
ENGE600004	Linear Algebra	4
ENAI600002	Basic Design 2	7
ENAI600010	History and Theory of Architecture 1	3
	Sub Total	**20**
	3rd Semester	
ENGE600005	Mechanics and Thermal Physics	3
ENAI600003	Interior Architectural Design 1	7
ENAR600011	Design Methods	3
ENAI600012	History and Theory of Interior Architecture	3
ENAI600013	Building Technology 1	3
	Sub Total	**19**
	4th Semester	
ENAI600004	Interior Architectural Design 2	8
ENAI600014	Building Technology 2	3
ENAI600018	Ergonomics	3
	Elective *	3
	Elective *	3
	Sub Total	**20**
	5th Semester	
ENAI600005	Interior Architectural Design 3	9
ENAI600016	Building Technology 3	3
	Elective *	3
	Elective *	3
	Sub Total	**18**
	6th Semester	
ENAI600006	Interior Architectural Design 4	9
ENAI600017	Furniture: Context, Response, Object	3
	Elective *	3
	Elective *	3
	Sub Total	**18**
	7th Semester	
ENAI600007	Interior Architectural Design 5	9
	Elective *	3
	Elective *	3
	Elective *	2
	Sub Total	**17**
	8th Semester	
ENAI600008	Undergraduate Thesis/ Final Project	6
	Elective *	3
	Elective *	3
	Elective *	2
	Sub Total	**15**
	Total	**145**

*) Students are required to take 2 courses outside of the Undergraduate Architecture Program with the approval of the Academic Supervisor and Credit Transfer Team. Students can take Minor packages outside the Undergraduate Architecture Program.

Students can take an exchange program/ credit earning with a partner university with the approval of the Academic Advisor and the Credit Transfer Team.

As the application of Merdeka Belajar, students can take electives in the form of internship, excursion/ research project, community engagement, community development, etc.

***) Design Study is required as elective for students who choose to take Final Project

Electives

Code	Elective Course	SKS
ENAI600019	Acoustics	3
ENAI600020	Anatomy of Space	3
ENAI600021	Art Appreciation	3
ENAI600022	Furniture Design	3
ENAI600023	Lifestyle and Interior Architecture	3
ENAI600024	Field Study	3
ENAI600025	**Independent Study**	**3**
ENAI600026	**Design Study****	**3**
ENAI600027	Internship/ Community Outreach	3
ENAI600028	2D Digital Design Communication	3
ENAI600029	3D Digital Design Communication	3
ENAI600030	Materiality in Interior Architecture	3
ENAI600031	Spatial Object	3
ENAI600032	Architectural Psychology	3
ENAI600033	Exhibition Space and Narrative	3
ENAI600034	Art and Architecture	3
ENAI600035	Lighting Design in Interior Architecture	3
ENAI600036	Special Topic on Interior Architecture	3
ENAI600037	Special Topic of Collaboration	3

Undergraduate Program in Chemical Engineering

Program Specification

1.	**Awarding Institution**	a. Regular and Non Reguler: Universitas Indonesia b. International Program: - Double Degree: Universitas Indonesia and Partner University - Single Degree: Universitas Indonesia	
2.	**Host Institution**	a. Regular and Non Reguler: Universitas Indonesia b. International Program: - Double Degree: Universitas Indonesia and Partner University - Single Degree: Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program Tittle**	Undergraduate Program in Chemical Engineering	
5.	**Vision and Mission**	**Vision** Becoming a superior and competitive Chemical Engineering Study Program, through efforts to educate the nation's life to improve people's welfare, thus contributing to the development of Indonesian and world society **Missions** • Providing broad and fair access, as well as quality education and teaching in Chemical Engineering; • Organizing quality Tridharma activities that are relevant to national and global challenges; • Creating graduates of Chemical Engineering who are of high quality, noble character, and able to compete globally; • Creating an academic climate that can support the realization of the vision of the Department	
6.	**Class**	Regular, Parale, International Program	
7.	**Final Award**	a. Regular and Non Reguler: Sarjana Teknik (ST) b. International Program: - Double Degree: Sarjana Teknik (S.T) And Bachelor of Engineering (B.ENG) - Single Degree: Sarjana Teknik (ST)	
8.	**Accreditation / Recognition**	Accredited: BAN-PT (Excellent), JABEE and IABEE Assessment: AUN QA	
9.	**Language(s) of Instruction**	• Regular and Non Reguler: Bahasa Indonesia • International Program: English	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	• Regular and International Program: High Shool / equivalent • Non Reguler: High School /Equivalent, or D3 / Polytechnique / Equivalent, and Pass The Entrance Exam.	
12.	**Study Duration**	8 (eight) Semesters or 4 (Four) years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8

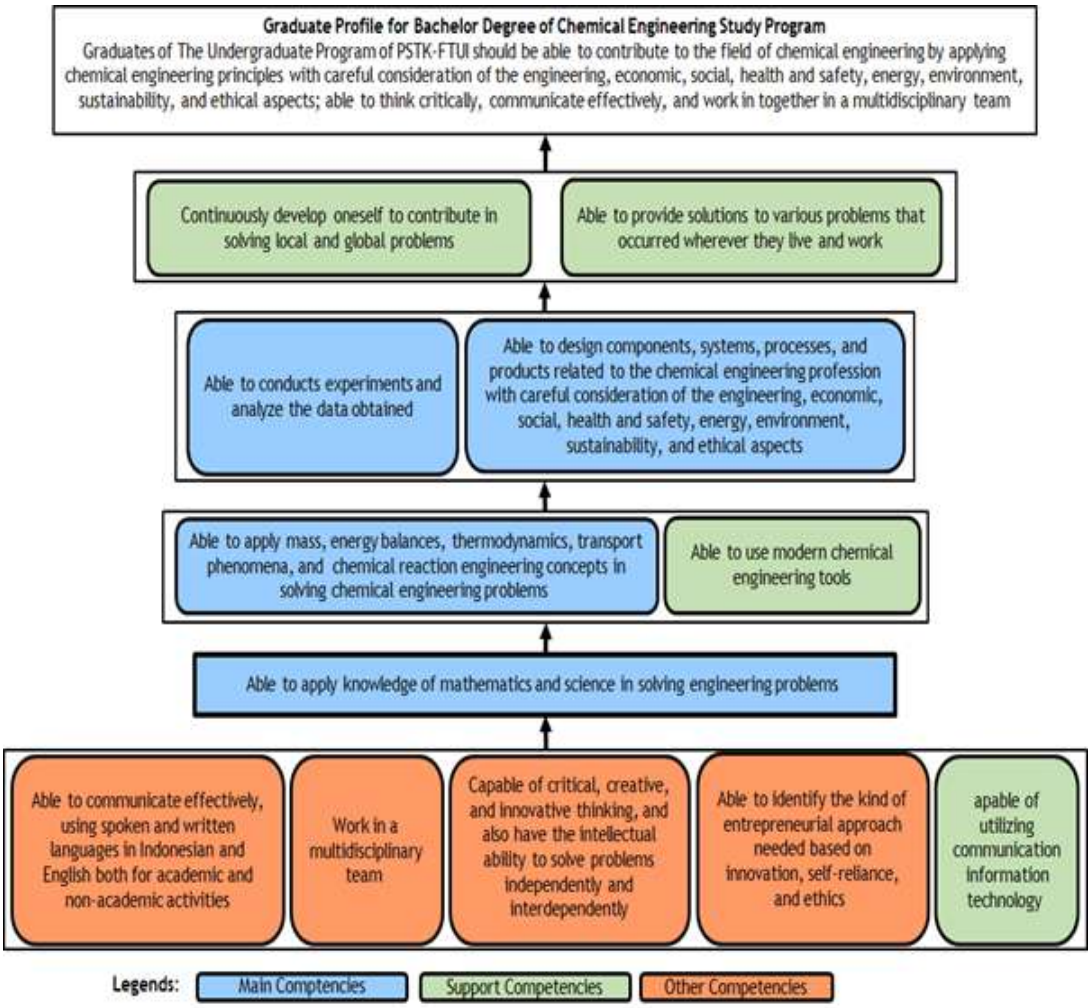
13.	**Aims of the program is to provide the highest quality education so that graduates have:** 1. Able to apply their knowledge in working in the field of chemical process technology 2. Able to develop themselves as industrial planners and managers 3. Able to contribute to science and technology
14.	**Graduate Profile:** Graduates of The Undergraduate Program of PSTK-FTUI should be able to contribute to the field of chemical engineering by applying chemical engineering principles with careful consideration of the engineering, economic, social, health and safety, energy, environment, sustainability, and ethical aspects; able to think critically, communicate effectively, and work in together in a multidisciplinary team.
15.	**Expected Learning Outcomes:** 1. Able to communicate effectively, using spoken and written languages in Indonesian and English both for academic and non-academic activities 2. Able to work in a multidisciplinary team. 3. Capable of critical, creative, and innovative thinking, and also have the intellectual ability to solve problems independently and interdependently. 4. Capable of utilizing communication information technology 5. Able to apply knowledge of mathematics and science in solving engineering problems. 6. Able to apply mass and energy balances, thermodynamics, transport phenomena, and chemical reaction engineering concepts in solving chemical engineering problems. 7. Able to use modern chemical engineering tools. 8. Able to conducts experiments and analyze the data obtained. 9. Able to design components, systems, processes, and products related to the chemical engineering profession with careful consideration of the engineering, economic, social, health and safety, energy, environment, sustainability, and ethical aspects. 10. Able to provide solutions to various problems that occurred wherever they live and work. 11. Able to identify the kind of entrepreneurial approach needed based on innovation, self-reliance, and ethics. 12. Continuously develop oneself to contribute in solving local and global problems.

No.	Classification	Credit Hours (SKS)	Percentage
i	**University General Subjects**	**10**	**6,25%**
ii	**Basic Engineering Subjects**	**25**	**17,36%**
iii	**Core Subjects**	**75**	**52,08%**
iv	**Elective Subjects**	**26**	**18,06%**
v	**Special Subject (Internship, Seminar, Undergraduate Thesis or Skripsi)**	**9**	**6,25%**
	Total	**145**	**100 %**
	Total Credit Hours to Graduate		**145 SKS**

Employment Prospects

A graduate of the Chemical Engineering Study Program at UI can be described as a "Universal Engineer" as they learn the basics of engineering such as thermodynamics, reaction kinetics, reactor design, separation processes, as well as transport phenomena (momentum, energy, and mass). Graduates of the Chemical Engineering Department at UI have contributed in the following areas: energy (oil and gas industry), engineering contractor companies (engineering, procurement, construction, and trial operation), chemical industry (petrochemicals, bulk, and specialty chemicals), research and development of process and/or chemical products, and processing and synthesis of food products and pharmaceuticals.

The Network of Expected Learning Outcome (ELO)



Expected Learning Outcome (ELO)	Name of Course							
	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
Able to communicate effectively, using spoken and written languages in Indonesian and English both for academic and non-academic activities	Communication Skills English	Integrated Character Building	Instrumental Analytical Chemistry Physical Chemistry	Heat Transfer Chemical Engineering Thermodynamics		Chemical Product Design	Plant Design	
Able to work in a multidisciplinary team	Communication Skill Religion	Integrated Character Building				Chemical Product Design	Plant Design	
Capable of critical, creative, and innovative thinking, and also have the intellectual ability to solve problems independently and interdependently			Instrumental Analytical Chemistry Physical Chemistry	Heat Transfer Chemical Engineering Thermodynamics				
Capable of utilizing communication information technology			Numerical Computation	Chemical Engineering Modelling	Chemical Process Simulation			
Able to apply knowledge of mathematics and science in solving engineering problems	Basic Chemistry Calculus Physics (Electricity, MWO)	Linear Algebra Physics (Mechanics and Thermal) Statistic and Probability Organic Chemistry Organic and Basic Chemistry Lab	Biochemistry Numerical Computation Instrumental Analytical Chemistry Physical Chemistry Phys. & Anal. Chem. Lab	Material Science & Corrosion Chemical Engineering Modelling	Engineering Economics			
Able to apply mass, energy balances, thermodynamics, transport phenomena, and chemical reaction engineering concepts in solving chemical engineering problems	Introduction to chemical engineering		Transport Phenomena Mass and Energy Balance	Fluid and Particle Mechanics Heat Transfer	Chemical Reaction Engineering 1 Mass Transfer	Chemical Reaction Engineering 2 Process Control		

Expected Learning Outcome (ELO)	Name of Course							
	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
				Chemical Engineering Thermodynamics				
Able to use modern chemical engineering tools			Numerical Computation	Process Engineering Drawing Chemical Engineering Modelling	Chemical Process Simulation	Process Equipment Design Chemical Product Design Process Control	Plant Design	
Able to conduct experiments and analyze the data obtained	Physics (Electricity, MWO) Lab	Organic and Basic Chemistry Lab Physics (Mechanics and Thermal) Lab	Phys. & Anal. Chem. Lab		Unit Operation Process Lab I	Unit Operation Process Lab II	Research Methodology & Seminar	Undergraduat Thesis
Able to design components, systems, processes, and products related to the chemical engineering profession with careful consideration of the engineering, economic, social, health and safety, energy, environment, sustainability, and ethical aspects					HSE Protection Engineering Economics	Process Equipment Design Chemical Product Design Process Control	Industrial Project Management Plant Design Research Methodology & Seminar	Undergraduat Thesis
Able to provide solutions to various problems that occurred wherever they live and work					HSE Protection	Chemical Product Design	Plant Design	Undergraduat Thesis
Able to identify the kind of entrepreneurial approach needed based on innovation, self-reliance, and ethics.						Chemical Product Design	Plant Design	Undergraduat Thesis Capita Select
Continuously develop oneself to contribute to solving local and global problems						Chemical Product Design	Plant Design	Undergraduat Thesis

List of Course

Code	Name of Course	Credit
University Courses (9 Credits)		
UIGE600007	MPK Terintegrasi / Integrated Character Building	6
UIGE600003	MPK Bahasa Inggris / English	2
UIGE600004	MPK Agama / Religion	2
Faculty Courses (25 Credits)		
ENGE600003	Kalkulus / Calculus	4
ENGE600004	Aljabar Linear / Linear Algebra	4
ENGE600005	Fisika Mekanik dan Panas / Physics (Mechanics and Thermal)	3
ENGE600006	Praktikum Fisika Mekanik dan Panas / Physics (Mechanics and Thermal) Lab	1
ENGE600007	Fisika Listrik, Magnet, Gelombang dan Optik / Physics [Electricity, Magnetic, Wave, Ophtics (MWO)]	3
ENGE600008	Praktikum Fisika Listrik, Magnet, Gelombang dan Optik / Physics (Electricity, MWO) Lab	1
ENGE600009	Kimia Dasar / Basic Chemistry	2
ENGE600010	Statistik dan Probablitas / Statistic and Probability	2
ENGE600011	Ekonomi Teknik / Engineering Economics	3
ENGE600012	Kesehatan, Keselamatan Kerja & Lindung Lingkungan / HSE Protection	2
Special Courses (9 Credits)		
ENCH600028/ENCH610031	Kerja Praktek / On The job Training (Internship)	2
ENCH600029/ENCH610032	Metodologi Penelitian dan Seminar / Research Methodology & Seminar	2
ENCH600033/ENCH610033	Skripsi / Undergraduate Thesis	5
Chemical Engineering Courses (75 Credits)		
ENCH600001/ENCH610001	Pengantar Teknik Kimia / Introduction to chemical engineering	3
ENCH600002/ENCH610002	Kecakapan Komunikasi / Communication Skills	2
ENCH600003/ENCH610003	Kimia Organik / Organic Chemistry	3
ENCH600004/ENCH610004	Praktikum Kimia Dasar dan Kimia Organik / Basic and Organic Chemistry Lab	1
ENCH600005/ENCH610007	Komputasi Numerik / Numerical Computation	3
ENCH600006/ENCH610008	Kimia Nalaitik Intrumental / Instrumental Analytical Chemistry	3
ENCH600007/ENCH610005	Kimia Fisika / Physical Chemistry	3
ENCH600008/ENCH610009	Praktikum Kimia Fisika dan Kimia Analitik / Phys. & Anal. Chem. Lab	1
ENCH600009/ENCH610006	Neraca Massa dan Energi / Mass and Energy Balance	3
ENCH600010/ENCH610010	Peristiwa Perpindahan / Transport Phenomena	3
ENCH600011/ENCH610014	Pemodelan Teknik Kimia / Chemical Engineering Modelling	3

ENCH600012/ENCH610011	Mekanika Fluida dan Partikel / Fluid and Particle Mechanics	3
ENCH600013/ENCH610012	Termodinamika Teknik Kimia / Chemical Engineering Thermodynamics	4
ENCH600014/ENCH610015	Perpindahan Kalor / Heat Transfer	3
ENCH600015/ENCH610017	Menggambar Teknik Proses / Process Engineering Drawing	3
ENCH600016/ENCH610013	lmu Bahan dan Korosi / Material Science & Corrosion	2
ENCH600017/ENCH610016	Perpindahan Massa / Mass Transfer	3
ENCH600018/ENCH610020	Praktikum UOP 1 / Unit Operation Process Lab I	1
ENCH600019/ENCH610021	Chemical Reaction Engineering 1	3
ENCH600020/ENCH610018	Chemical Process Simulation	3
ENCH600021/ENCH610023	Process Control	3
ENCH600022/ENCH610024	Unit Operation Process Lab II	1
ENCH600023/ENCH610025	Chemical Reaction Engineering 2	3
ENCH600024/ENCH610026	Process Equipment Design	3
ENCH600025/ENCH610027	Chemical Product Design	4
ENCH600026/ENCH610028	Industrial Project Management	2
ENCH600027/ENCH610029	Plant Design	4
ENCH600030/ENCH610030	Capita Selecta	2
Elective Courses (26 Credits)		
	Mata Kuliah Pilihan 1 / Elective 1	3
	Mata Kuliah Pilihan 2 / Elective 2	3
	Mata Kuliah Pilihan 3 / Elective 3	3
	Mata Kuliah Pilihan 4 / Elective 4	3
	Mata Kuliah Pilihan 5 / Elective 5	3
	Mata Kuliah Pilihan 6 / Elective 6	3
	Mata Kuliah Pilihan 7 / Elective 7	3
	Mata Kuliah Pilihan 8 / Elective 8	3
	Mata Kuliah Pilihan 9 / Elective 9	2

Courses Structure of Undergraduate Program in Chemical Engineering for Regular and Non Reguler Class Program

Code	Subject	SKS
	1st Semester	
UIGE600004	Religion	2
UIGE600003	English	2
ENGE600003	Calculus	4
ENGE600007	Physics (Electricity, MWO)	3
ENGE600008	Physics (Electricity, MWO) Lab	1
ENGE600009	Basic Chemistry	2
ENCH600001	Introduction to chemical engineering	2
ENCH600002	Communication Skills	2
	Sub Total	**18**
	2nd Semester	
UIGE600007	Integrated Character Building	6
ENGE600004	Linear Algebra	4
ENGE600005	Physics (Mechanics and Thermal)	3
ENGE600006	Physics (Mechanics and Thermal) Lab	1
ENGE600010	Statistic and Probability	2
ENCH600003	Organic Chemistry	3
ENCH600004	Organic and Basic Chemistry Lab	1
	Sub Total	**20**
	3rd Semester	
ENCH600005	Numerical Computation	3
ENCH600006	Instrumental Analytical Chemistry	3
ENCH600007	Physical Chemistry	3
ENCH600008	Phys. & Anal. Chem. Lab	1
ENCH600009	Mass and Energy Balance	3
ENCH600010	Transport Phenomena	3
	Elective 1	3
	Sub Total	**19**
	4th Semester	
ENCH600011	Chemical Engineering Modelling	3
ENCH600012	Fluid and Particle Mechanics	3
ENCH600013	Chemical Engineering Thermodynamics	4
ENCH600014	Heat Transfer	3
ENCH600015	Process Engineering Drawing	2
ENCH605016	Material Science & Corrosion	3
	Elective 2	3
	Sub Total	**21**
	5th Semester	
ENGE600011	Engineering Economics	3
ENGE600012	HSE Protection	2
ENCH600017	Mass Transfer	4
ENCH600018	Unit Operation Process Lab I	1
ENCH600019	Chemical Reaction Engineering 1	3
ENCH600020	Chemical Process Simulation	3
	Elective 3	3
	Sub Total	**19**
	6th Semester	
ENCH600021	Process Control	3
ENCH600022	Unit Operation Process Lab II	1
ENCH600023	Chemical Reaction Engineering 2	3
ENCH600024	Process Equipment Design	3
ENCH600025	Chemical Product Design	4
	Elective 4	3
	Elective 5	3
	Sub Total	**20**
	7th Semester	
ENCH600026	Industrial Project Management	2
ENCH600027	Plant Design	4
ENCH600028	On The Job Training (Internship)	2
ENCH600029	Research Methodology & Seminar	2
	Elective 6	3
	Elective 7	3
	Elective 8	3
	Elective 9	2
	Sub Total	**21**

	8th Semester	
ENCH600030	Capita Selecta	2
ENCH600031	Undergraduate Thesis	5
	Sub Total	**7**
	Total	**145**

List of Elective Courses in Odd Semester

Code	Subject	SKS
	Odd Semester	
ENCH800014	Oleochemical Industry	3
ENCH800015	Food Technology	3
ENCH800016	Protein Engineering	3
ENCH800017	Herbal Technology	3
ENCH800018	Composite Material	3
ENCH800019	Applied Thermodynamics	3
ENCH800020	Dynamic System	3
ENCH800021	Thermodynamic Properties of Hydrocarbon	3
ENCH800022	Lubricant Technology	3
ENCH800023	Cryogenic Technology	3
ENCH800024	Combustion Technology	3
ENCH800025	Plasma and Ozone Technology	3
ENCH800026	Heterogeneous Catalytic	3
ENCH800027	Sustainable Energy	3
ENCH800028	Risk Management	3
ENCH800029	Electrochemical Technology	3
ENCH800030	Extraction Technology & Isolation for Natural Products	3
ENCH800031	Special Topic 1	3
ENCH800032	Biochemistry	3
ENCH800033	Natural Gas Processing	3

List of Elective Courses in Even Semester

Code	Subject	SKS
	Even Semester	
ENCH800034	Storage and Packing Technology	3
ENCH800035	Bioinformatics	3
ENCH800036	Drugs and Cosmetics Technology	3
ENCH800037	Petroleum Processing	3
ENCH800038	Petrochemical Processing	3
ENCH800039	Photocatalytic Technology	3
ENCH800040	Hydrocarbon Exploration and Production	3
ENCH800041	Waste Management and Prevention	3
ENCH800042	Microalgae Cultivation and Development Technology	3
ENCH800043	Plant Utility and Maintenance	3
ENCH800044	Transportation and Utilization of Natural Gas	3
ENCH800045	Mixing Technology	3
ENCH800046	Problem Solving Skills	3
ENCH800047	Polymer Technology	3
ENCH800048	Genetically Modified Organism	3
ENCH800049	Controlled Drug Release Technology	3
ENCH800050	Special Topic 2	3
ENCH800051	Biomass Thermochemical Conversion	3
ENCH800052	Basic Computer Programming	3

Curriculum 2020 for Fast-Track Undergraduate to Master in Chemical Engineering Study Program

Courses Placement of Fast Track Undergraduate to Master Courses in Chemical Engineering Study Program from Chemical Engineering Undergraduate Program

Code	Subject	SKS
	7th Semester	
ENCH800033	Natural Gas Processing	3
ENCH600028	Industrial Project Management	2
ENCH600027	Plant Design	4
ENCH600028	Internship	2

ENCH600029	Research Methodology & Seminar	2
ENCH800001	Advanced Chemical Engineering Termodynamics	3
ENCH800027	Sustainable Energy	3
	Elective 6	3
	Total	**22**
	8th Semester	
ENCH600033	Undergraduate Thesis	5
ENCH600030	Capita Selecta	2
ENCH800003	Advanced Transport Phenomenon	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800005	Advanced Chemical Engineering Modelling	3
	Elective 7	3
	Elective 8	3
	Total	**22**
	9th Semester	
ENCH800006	Research Methodology	3
ENCH800007	Pre-Thesis	2
	Elective 9	3
	Elective 10	3
	Elective 11	3
	Elective 12	2
	Total	**16**
	10th Semester	
ENCH800008	Thesis	6
ENCH800055	Research Publication	2
	Total	**8**

Curriculum 2020 for Fast-Track Undergraduate to Doctor in Chemical Engineering Study Program

Courses Placement of Fast Track Undergraduate to Doctor Courses in Chemical Engineering Study Program from Chemical Engineering Undergraduate

Code	Subject	SKS
	7th Semester	
ENCH600027	Natural Gas Processing	3
ENCH600028	Industrial Project Management	2
ENCH600027	Plant Design	4
ENCH600028	Internship	2
ENCH600029	Research Methodology & Seminar	2
ENCH800001	Advanced Chemical Engineering Termodynamics	3
ENCH800027	Sustainable Energy	3
	Elective 6	3
	Total	**22**
	8th Semester	
ENCH600033	Undergraduate Thesis	5
ENCH600030	Capita Selecta	2
ENCH800003	Advanced Transport Phenomenon	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800006	Advanced Chemical Engineering Modelling	3
	Elective 7	3
	Elective 8	3
	Total	**22**
	9th Semester	
ENCH800006	Research Methodology	3
ENCH800007	Pre-Thesis	2
	Elective 9	3
	Elective 10	3
	Elective 11	3
ENCH900003	Research Group Periodic Seminar	8
	Total	**22**
	10th Semester	
ENCH800008	Thesis	4
ENCH800055	Research Publication	2
	Elective 12	2
ENCH900005	Research Proposal	6
	Total	**14**
	11th Semester	
ENCH900007	Publication 1 – International Conference	6
	Total	**6**
	12th Semester	
ENCH900008	Research Defense	10
	Total	**10**

	13th Semester	
ENCH900010	Publication 2 – International Journal	8
	Total	**8**
	14th Semester	
ENCH900011	Publication 3 – International Journal	8
ENCH900012	Doctoral Promotion	6
	Total	**14**

Transition Guidance from Curriculum 2016 to 2020 for Regular and Non Reguler Undergraduate Class

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow these transition rules.
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd Semester while in the previous curriculum in even Semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in the equivalence table have not changed, both in names and credits.

Table of Equality Courses in Undergraduate Chemical Engineering Study Program in Curriculum 2016 and Curriculum 2020

No	Name of Courses in Curriculum 2016	Semester	Credits 2016	Name of Courses in Curriculum 2020	Semester	Credits 2020
1	MPKT A (Integrated Character Building A)	2	6	MPKT Terintegrasi (Integrated Character Building)	2	6
2	MPKT B (Integrated Character Building B)	1	6			
3	MPK Bahasa Inggris (English)	3	3	MPK Bahasa Inggris (English)	1	2
4	Pengantar Teknik Kimia (Introduction to Chemical Engineering	2	3	Pengantar Teknik Kimia (Introduction to Chemical Engineering)	1	2
5	Biologi Molekular (Molecular Biology)	4	3	Biokimia (Biochemistry)	Elective (Odd)	3
6	Pengolahan Gas Bumi (Natural Gas Processing)	7	3	Pengolahan Gas Bumi (Natural Gas Processing)	Elective (Odd)	3
7	MPK Olah raga/seni (Sport/ Art)	1	1	MPK Olah raga/seni (Sport/ Art)	-	-
8	Skripsi (Undergraduate Thesis)	8	4	Skripsi (Undergraduate Thesis)	8	5
9	Statistik & Probabilistik (Statistic and Probability)	4	2	Statistik & Probabilistik (Statistic and Probability)	2	2

5. When there is a change in the course credits, then the number of graduation credits counted in is the number of credits when it was taken. The same or equivalent courses, when are equated with different credits, if retaken, or just taken, will be acknowledged under a new name and credits.
6. When a compulsory subject in the curriculum 2016 is deleted, and there is no equivalence in the curriculum 2020 then:
   a. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 145 credits.
   b. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 145 credits.
7. In addition to changes in curriculum structure from 2016 to 2020, there are also the addition of several elective courses: Teknologi Elektrokimia), Teknologi Pencampuran (Mixing Technology), Teknologi Pengembangan dan Pemanfaatan Mikroalga (Microalgae Cultivation and Development Technology), Teknologi Ekstraksi dan Isolasi Bahan Alam (Extraction & Isolation Technology for Natural Products), Konversi Termokimia Biomassa (Biomass Termochemical Conversion Technology), Modifikasi Genetik Makhluk Hidup (Genetically Modified Organism), and Dasar Pemrograman Computer (Basic Computer Programming)

Course Structure of Undergraduate Program in Chemical Engineering for International Class

Code	Subject	SKS
	1st Semester	
UIGE600004	Religion Studies	2
ENGE610003	Calculus	4
ENGE610007	Physics (Electric, Magnet, Wave & Optic)	3
ENGE610008	Physics (Electric, Magnet, Wave & Optic) Laboratory	1
ENGE610009	Basic Chemistry	2
ENCH610001	Introduction to Chemical Engineering	2
ENCH610002	Communication Skills	2
ENCH610006	Mass and Energy Balances	3
	Total	**19**
	2nd Semester	
UIGE600002	Academic Writing	2
ENGE610004	Linear Algebra	4
ENGE610005	Physics (Mechanics and Thermal)	3
ENGE610006	Physics(Mechanics and Thermal) Laboratory	1
ENCH610003	Organic Chemistry	3
ENCH610004	Basic Chem. and Org. Chem. Lab.	1
ENCH610005	Physical Chemistry	3
ENGE610010	Statistics and Probabilistic	2
	Sub Total	**19**
	3rd Semester	
ENCH610007	Numerical Computation	3
ENCH610008	Instrumental Analytical Chemistry	3
ENCH610009	Phys. Chem. and Anal. Chem. Lab.	1
ENCH610010	Transport Phenomena	3
ENCH610011	Fluid and Particle Mechanics	3
ENCH610012	Chemical Engineering Thermodynamics	4
ENCH610013	Material Science and Corrosion	3
	Sub Total	**20**
	4th Semester	
ENGE610012	Health, Safety and Environmental Protection	2
ENCH610014	Chemical Engineering Modeling	3
ENCH610015	Heat Transfer	3
ENCH610016	Mass Transfer	4
ENCH610017	Process Engineering Drawing	2
ENCH610018	Chemical Process Simulation	3
	Elective 1	3
	Sub Total	**20**
	5th Semester	
ENGE610011	Engineering Economics	3
ENCH610020	Unit Operation Laboratory 1	1
ENCH610021	Chemical Reaction Engineering 1	3

	Elective 2	3
	Elective 3	3
	Elective 4	3
	Elective 5	3
	Sub Total	**19**
	6th Semester	
UIGE610011	Integrated Character Building	6
ENCH610023	Process Control	3
ENCH610024	Unit Operation Laboratory 2	1
ENCH610025	Chemical Reaction Engineering 2	3
ENCH610026	Process Equipment Design	3
ENCH610027	Chemical Product Design	4
	Sub Total	**20**
	7th Semester	
ENCH610028	Industrial Project Management	2
ENCH610029	Plant Design	4
ENCH610030	Capita Selecta	2
ENCH610031	On the Job Training (Internship)	2
ENCH610032	Research Methodology and Seminar	2
	Elective 6	3
	Elective 7	3
	Sub Total	**18**
	8th Semester	
ENCH610033	Undergraduate Thesis	5
	Elective 8	3
	Elective 9	2
	Sub Total	**10**
	Total	**145**

List of Elective Courses in Odd Semester

Code	Subject	SKS
	Odd Semester	
ENCH800014	Oleochemical Industry	3
ENCH800015	Food Technology	3
ENCH800016	Protein Engineering	3
ENCH800017	Herbal Technology	3
ENCH800018	Composite Material	3
ENCH800019	Applied Thermodynamics	3
ENCH800020	Dynamic System	3
ENCH800021	Thermodynamic Properties of Hydrocarbon	3
ENCH800022	Lubricant Technology	3
ENCH800023	Cryogenic Technology	3
ENCH800024	Combustion Technology	3
ENCH800025	Plasma and Ozone Technology	3
ENCH800026	Heterogeneous Catalytic	3
ENCH800027	Sustainable Energy	3
ENCH800028	Risk Management	3
ENCH800029	Electrochemical Technology	3
ENCH800030	Extraction Technology & Isolation for Natural Products	3
ENCH800031	Special Topic 1	3
ENCH800032	Biochemistry	3
ENCH800033	Natural Gas Processing	3

List of Elective Courses in Even Semester

Code	Subject	SKS
	Even Semester	
ENCH800034	Storage and Packing Technology	3
ENCH800035	Bioinformatics	3
ENCH800036	Drugs and Cosmetics Technology	3
ENCH800037	Petroleum Processing	3
ENCH800038	Petrochemical Processing	3
ENCH800039	Photocatalytic Technology	3
ENCH800040	Hydrocarbon Exploration and Production	3
ENCH800041	Waste Management and Prevention	3
ENCH800042	Microalgae Cultivation and Development Technology	3
ENCH800043	Plant Utility and Maintenance	3
ENCH800044	Transportation and Utilization of Natural Gas	3
ENCH800045	Mixing Technology	3
ENCH800046	Problem Solving Skills	3

ENCH800047	Polymer Technology	3
ENCH800048	Genetically Modified Organism	3
ENCH800049	Controlled Drug Release Technology	3
ENCH800050	Special Topic 2	3
ENCH800051	Biomass Thermochemical Conversion	3
ENCH800052	Basic Computer Programming	3

Courses Structure of Undergraduate Program in Chemical Engineering at Partner Universities

Couse Structure in Chemical Engineering at Monash University

3rd Year	Courses	
Code	**Semester 5 (in July)**	Credits
CHE3162	Process control	6
CHE3164	Reaction engineering	6
CHE3166	Process design	6
	Choose one stream	6
	Subtotal	24
Code	**Semester 6 (in February)**	**Credits**
CHE3162	Chemistry and chemical thermodynamics	6
CHE3164	Sustainable processing I	6
CHE3166	Separation processes	6
	Transport phenomena and numerical methods	6
	Subtotal	24
4th Year	**Courses**	
Code	**Semester 7 (in July)**	**Credits**
CHE4162	Particle technology	6
CHE4170	Design project	12
	Choose one stream	6
	Subtotal	24
Code	**Semester 8 (in February)**	**Credits**
CHE4161	Engineers in society	6
CHE4180	Chemical engineering project	12
	Choose one stream	6
	Subtotal	24

Elective Courses

3rd Year		
Code	**Courses**	Credits
Biotechnology Stream		
CHE3171	Bioprocess technology	6
Nanotechnology and Materials Stream		
CHE3172	Nanotechnology and materials I	6
Sustainable Processing Stream		
CHE3175	Process engineering	6
4th Year		
Code	**Courses**	Credits
Biotechnology Stream		
BCH2011	Structure and function of cellular biomolecules	6
CHE4171	Biochemical engineering	6
Nanotechnology and Materials Stream		
CHE4172	Nanotechnology and materials II	6
MTE2541	Nanostructure of materials	6
Sustainable Processing Stream		
CHE4173	Sustainable processing II	6
ENE3608	Environmental impact and management systems	6

Couse Structure in Chemical Engineering at Curtin University

3rd Year	Courses	
Code	Semester 5 (in July)	Credits
CHE 223	Thermodynamics	25
CHE 324	Fluid & Particle Processes	25
CHE 325	Reaction Engineering	25
CHE 328	Process Instrumentation & Control	25
	Subtotal	100
Code	**Semester 6 (in February)**	**Credits**
ChE 322	Process Plant Engineering	25
ChE 312	Proc Syn & Design 1	12.5
ChE 479	Advanced Special Topics	12.5
CHE	Mass Transfer Operations	25
ChE 421	Risk Management	25
	Subtotal	100
4th Year	**Courses**	
Code	**Semester 7 (in July)**	**Credits**
ChE 423	Process Economics & Management	25
ChE 422	Advanced Separation Processes	25
ChE 499	Design Project (Lectures/Feasibility Studies)	50
	Subtotal	100
Code	**Semester 8 (in February)**	**Credits**
ChE 481	Process Laboratory Projects	25
ChE 414	Proc Syn & Design II	12.5
ChE 411	Advanced Process Control	12.5
CHE 491	Research Project	12.5
CHE 493	Research Project	12.5
	Optional Unit	12.5
	Optional Unit	12.5
	Subtotal	100

Elective Courses

Code	Courses	Credits
CHE374	Mineral processing	12.5
CHE475	Petroleum processing	12.5
CHE39	Special topics (biochemical engineering	12.5
CHE493	Research project	12.5
CHE477	Computational fluid dynamics	12.5
CHE313	Fundamentals of air pollution control	12.5

Couse Structure in Chemical Engineering at University of Queensland

3rd Year	Courses	
Code	Semester 5 (in July)	Credits
CHEE3004	Unit operations	2
CHEE3005	Reaction engineering	2
CHEE3006	Process and control system synthesis	2
CHEE3007	Process modeling and dynamics	2
	Subtotal	8
Code	**Semester 6 (in February)**	**Credits**
CHEE4002	Environmental risk assessment	2
CHEE4009	Transport phenomena	2
CHEE1001	Principles of biological engineering	2
	Part B2 Advanced Elective	2
	Subtotal	8
4th Year	**Courses**	
Code	**Semester 7 (in July)**	**Credits**
CHEE4001	Process engineering design project	4

	Part B2 Advanced Elective	2
	Part B2 Advanced Elective	2
	Subtotal	8
Code	**Semester 8 (in February)**	**Credits**
	Part B2 Advanced Elective	2
	Part B2 Advanced Elective	2
	Part B2 Advanced Elective	2
	Subtotal	6

Elective Courses

Code	Courses	Credits
Part B2 Advanced Electives		
CHEE4003	Special Topics A	2
CHEE4005	Polymer rheology & processing	2
CHEE4006	Individual inquiry A	2
CHEE4007	Individual inquiry B	2
CHEE4012	Industrial wastewater & solid waste management	2
CHEE4015	Special Topics VII	2
CHEE4020	Biomolecular engineering	2
CHEE4021	Particle design & processing	2
CHEE4022	Principles of adsorption	2
CHEE4024	Energy systems in sustainable development	2
CHEE4028	Metabolic engineering	2
CHEE4301	Cell & tissue engineering	2
CHEE4302	Nanomaterials and their characterization	2
CHEE4101	Electrochemistry and corrosion	2
CHEE4102	Systems engineering & design management	2
CHEE4103	Advanced product design method	2
Part B3 Process Engineering Electives		
CHEE2005	Chemical product design	2
CHEE3008	Special Topics C	12.5
CHEE3301	Polymer engineering	12.5
CHEE3305	Biomaterials: Materials in Medicine	12.5
CHEM2002	Biophysical chemistry	
CIVL3150	Modeling of environmental systems	
MINE2201	Physical & chemical processing of minerals	

Transition Guidance from Curriculum 2016 to 2020 for International Undergraduate Class

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow these transition rules.
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd Semester while in the previous curriculum in even Semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in the equivalence table have not changed, both in names and credits.
5. When there is a change in the course credits, then the number of graduation credits counted in is the number of credits when it was taken. The same or equivalent courses, when are equated with different credits, if retaken, or just taken will be acknowledged under a new name and credits.

Table of Equality Courses in Undergraduate Chemical Engineering Study Program in Curriculum 2016 and Curriculum 2020

No	Name of Courses in Curriculum 2016	Semester	Credits 2016	Name of Courses in Curriculum 2020	Semester	Credits 2020
1	MPKT A (Integrated Character Building A)	2	6	MPKT Terintegrasi (Integrated Character Building)	2	6
2	MPKT B (Integrated Character Building B)	1	6			
3	Academic Writing	3	3	MPK Bahasa Inggris (English)	1	2
4	Introduction to Chemical Engineering	2	3	Introduction to Chemical Engineering	1	2
5	Biologi Molekular (Molecular Biology)	4	3	Biokimia (Biochemistry)	Elective (Odd)	3
6	Pengolahan Gas Bumi (Natural Gas Processing)	7	3	Pengolahan Gas Bumi (Natural Gas Processing)	Elective (Odd)	3
7	Sport/Art	1	1	Sport/Art	-	-
8	Undergraduate Thesis	8	4	Undergraduate Thesis	8	5

6. When a compulsory subject in the curriculum 2016 is deleted, and there is no equivalence in the curriculum 2020 then:
   a. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 145 credits.
   b. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 145 credits.
7. In addition to changes in curriculum structure from 2016 to 2020, there are also the addition of several elective courses: Teknologi Elektrokimia), Teknologi Pencampuran (Mixing Technology), Teknologi Pengembangan dan Pemanfaatan Mikroalga (Microalgae Cultivation and Development Technology), Teknologi Ekstraksi dan Isolasi Bahan Alam (Extraction & Isolation Technology for Natural Products), Konversi Termokimia Biomassa (Biomass Termochemical Conversion Technology), Modifikasi Genetik Makhluk Hidup (Genetically Modified Organism), dan Dasar Pemrograman Computer (Basic Computer Programming)

Undergraduate Program in Bioprocess Engineering

Program Specification

Employment Prospects

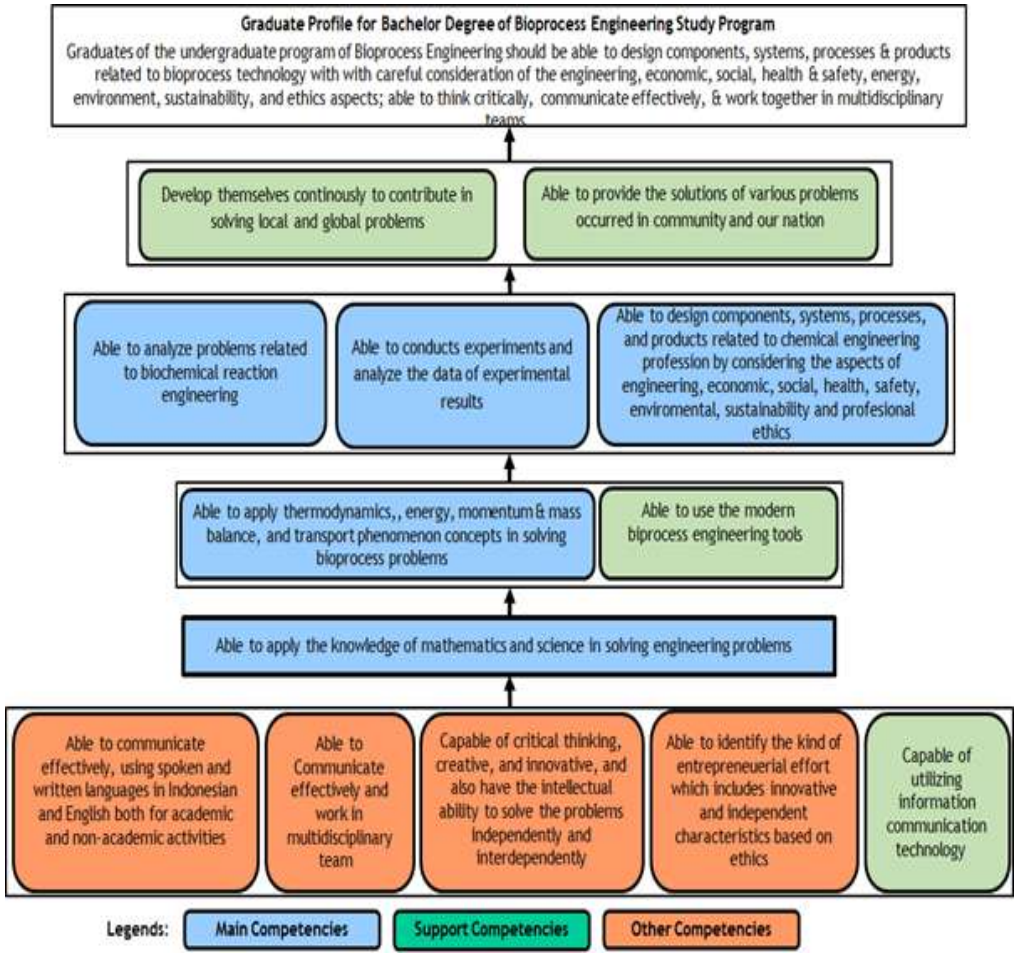
1.	**Awarding Institution**	Universitas Indonesia	
2.	**Host Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program Tittle**	Undergraduate Program in Bioprocess Engineering	
5.	**Vision and Mission**	**Vision** Becoming a superior and competitive Bioprocess Engineering Study Program, through efforts to educate the nation's life to improve people's welfare, thus contributing to the development of Indonesian and world society **Missions** • Providing broad and fair access, as well as quality education and teaching in Bioprocess Engineering; • Organizing quality Tridharma activities that are relevant to national and global challenges; • Creating graduates of Bioprocess Engineering who are of high quality, noble character, and able to compete globally; • Creating an academic climate that can support the realization of the vision of the Department	
6.	**Class**	Regular, International	
7.	**Final Award**	Sarjana Teknik (S.T.)	
8.	**Accreditation / Recognition**	Accredited: BAN-PT (Excellent) and IABEE Assessment: AUN QA	
9.	**Language(s) of Instruction**	Bahasa Indonesia	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	High Shool / Equivalent	
12.	**Study Duration**	8 (eight) Semesters or 4 (Four) years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**Aims of the program is to provide the highest quality education so that graduates have:** 1. Able to apply their knowledge in working in the field of bioprocess technology 2. Able to develop themselves as industrial planners and managers 3. Able to contribute to science and technology		
14.	**Graduate Profile:** Graduates of The Undergraduate Program of PSTB-FTUI should be able to contribute to the field of bioprocess engineering by applying bioprocess engineering principles with careful consideration of the engineering, economic, social, health and safety, energy, environment, sustainability, and ethical aspects; able to think critically, communicate effectively, and work in together in a multidisciplinary team.		

15.	**Expected Learning Outcomes:** 1. Able to communicate effectively, using spoken and written languages in Indonesian and English both for academic and non-academic activities 2. Able to work in a multidisciplinary team. 3. Capable of critical, creative, and innovative thinking, and also have the intellectual ability to solve problems independently and interdependently. 4. Capable of utilizing communication information technology 5. Able to apply knowledge of mathematics and science in solving engineering problems. 6. Able to apply mass and energy balances, thermodynamics, transport phenomena, and chemical reaction engineering concepts in solving chemical engineering problems. 7. Able to analyze problems related to biochemical reaction engineering 8. Able to use modern bioprocess engineering tools. 9. Able to conducts experiments and analyze the data obtained. 10. Able to design components, systems, processes, and products related to the bioprocess engineering profession with careful consideration of the engineering, economic, social, health and safety, energy, environment, sustainability, and ethical aspects. 11. Able to provide solutions to various problems that occurred wherever they live and work. 12. Able to identify the kind of entrepreneurial approach needed based on innovation, self-reliance, and ethics. 13. Continuously develop oneself to contribute in solving local and global problems.
16.	**Course Composition**

No.	**Type of Courses**	**Credits**	**Percentage**
I	University General Subjects	10	6,25%
II	Basic Engineering Subjects	25	17,36%
III	Core Subjects	75	52,08%
IV	Elective Subjects	26	18,06%
V	Special Subject (Internship, Seminar, Undergraduate Thesis or Skripsi)	9	6,25%
	Total	145	100 %
	Total Credits for Graduation		**145**

A graduate of Bioprocess Engineering Study Program at UI can be contributed in the following areas: food, pharmaceuticals, cosmetics and biotechnology industries, engineering contractor companies (engineering, procurement, construction, and trial operation), renewable energy, and environmental treatment industry, government officer, researcher, education, etc.

The Network of Expected Learning Outcome (ELO)



Mapping Table for Achieving ELO in the Bioprocess Engineering Undergraduate Program

Expected Learning Outcome (ELO)	Name of Courses							
	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
Able to communicate effectively, using spoken and written languages in Indonesian and English both for academic and non-academic activities	Communication Skills English Religion	Integrated Character Building	Instrumental Analytic Chemistry Physical Chemistry	Heat Transfer Thermodynamic in Biological System		Bio Product Design	Plant Design	
Able to work in a multidisciplinary team	Communication Skills Religion	Integrated Character Building				Bio Product Design	Plant Design	
Capable of critical, creative, and innovative thinking, and also have the intellectual ability to solve problems independently and interdependently			Instrumental Analytic Chemistry Physical Chemistry	Heat Transfer Thermodynamic in Biological System				
Capable of utilizing communication information technology			Numerical Computation	Bioprocess Engineering Modelling Genetic Engineering	Bioprocess System Simulation			
Able to apply knowledge of mathematics and science in solving engineering problems	Basic Chemistry Physics (Electricity, MWO) Calculus	Linear Algebra Statistics & Probability Physics (Mechanics and Thermal)	Biochemistry Numerical Computation	Cell Culture Genetic Engineering Bioprocess Engineering Modelling	Engineering Economics			

Expected Learning Outcome (ELO)	Name of Courses							
	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
		Organic Chemistry	Instrumental Analytical Chemistry					
		Basic & Organic Chemistry Lab	Physical Chemistry					
			Physic Chemistry & Analytics Lab					
Able to apply mass, energy balances, thermodynamics, transport phenomena, and chemical reaction engineering concepts in solving bioprocess engineering problems	Introduction to bioprocess engineering		Transport Phenomena in Biological Systems	Fluid and Particle Mechanics	Biochemical Reaction Engineering	Bioreactor Engineering		
			Mass and Energy Balance	Heat Transfer Thermodynamic in Biological System	Separation	Process Control		
Able to analyze problems related to biochemical reaction engineering				Cell Culture Genetic Engineering	Biochemical Reaction Engineering	Bioreactor Engineering		
Able to use modern bioprocess engineering tools			Numerical Computation	Genetic Engineering	Bioprocess System Simulation	Bioprocess Equipment Design Bio Product Design	Plant Design	
Able to conducts experiments and analyze the data obtained	Physics (Electricity, MWO) Lab	Basic & Organic Chemistry Lab Physics (Mechanics and Thermal) Lab	Physic Chemistry & Analytics Lab	Biochemistry Laboratory	Bioprocess Unit Operation Lab I	Bioprocess Unit Operation Lab II	Research Methodology & Seminar	Undergraduate Thesis
Able to design components, systems, processes, and products related to the bioprocess engineering profession					Bioprocess System Simulation	Bioprocess Equipment Design	Industrial Project Management	Undergraduate Thesis

Expected Learning Outcome (ELO)	Name of Courses							
	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
with careful consideration of the engineering, economic, social, health and safety, energy, environment, sustainability, and ethical aspects					HSE Protection	Bio Product Design	Plant Design	
					Engineering Economics	Process Control	Research Methodology & Seminar	
Able to provide solutions to various problems that occurred wherever they live and work					HSE Protection	Bio Product Design	Plant Design	Undergraduate Thesis
Able to identify the kind of entrepreneurial approach needed based on innovation, self-reliance, and ethics.						Bio Product Design	Plant Design	Undergraduate Thesis
								Capita Selecta
Continuously develop oneself to contribute in solving local and global problems						Bio Product Design	Plant Design	Undergraduate Thesis
								Capita Selecta
							Internship	

List of Course

Code	Name of Course	Credit
University Courses (9 Credits)		
UIGE600007	MPK Terintegrasi / Integrated Character Building	6
UIGE600003	MPK Bahasa Inggris / English	2
UIGE600004	MPK Agama / Religion	2
Faculty Courses (25 Credits)		
ENGE600003	Kalkulus / Calculus	4
ENGE600004	Aljabar Linear / Linear Algebra	4
ENGE600005	Fisika Mekanik dan Panas / Physics (Mechanics and Thermal)	3
ENGE600006	Praktikum Fisika Mekanik dan Panas / Physics (Mechanics and Thermal) Lab	1
ENGE600007	Fisika Listrik, Magnet, Gelombang dan Optik / Physics [Electricity, Magnetic, Wave, Ophtics (MWO)]	3
ENGE600008	Praktikum Fisika Listrik, Magnet, Gelombang dan Optik / Physics (Electricity, MWO) Lab	1
ENGE600009	Kimia Dasar / Basic Chemistry	2
ENGE600010	Statistik dan Probablitas / Statistic and Probability	2
ENGE600011	Ekonomi Teknik / Engineering Economics	3
ENGE600012	Kesehatan, Keselamatan Kerja & Lindung Lingkungan / HSE Protection	2
Special Courses (9 Credits)		
ENBE600029	Kerja Praktek / On The job Training (Internship)	2
ENBE600030	Metodologi Penelitian dan Seminar / Research Methodology & Seminar	2
ENBE600032	Skripsi / Undergraduate Thesis	5
Biprocess Engineering Courses (75 Credits)		
ENBE600001	Pengantar Teknik bioproses / Introduction to bioprocess engineering	2
ENBE600002	Kecakapan Komunikasi / Communication Skills	3
ENBE600003	Praktikum Kimia Dasar dan Kimia Organik / Basic & Organic Chemistry Lab	1
ENBE600004	Kimia Organik / Organic Chemistry	2
ENBE600005	Komputasi Numerik / Numerical Computation	3
ENBE600006	Kimia Nalaitik Intrumental / Instrumental Analytical Chemistry	3
ENBE600007	Kimia Fisika / Physical Chemistry	3
ENBE600008	Praktikum Kimia Fisika dan Kimia Analitik / Physic Chemistry & Analytics Lab	1
ENBE600009	Neraca Massa dan Energi / Mass and Energy Balance	3
ENBE600010	Biokimia / Biochemistry	3
ENBE600011	Peristiwa Perpindahan dalam Sistem Hayati / Transport Phenomena in Biologycal System	3
ENBE600012	Mekanika Fluida dan Partikel / Fluid and Particle Mechanics	3
ENBE600013	Kultur Sel / Cell Culture	3
ENBE600014	Perpindahan Kalor / Heat Transfer	3
ENBE600015	Praktikum Biokimia / Biochemistry Laboratory	2

ENBE600016	Rekayasa Genetik / Genetic Engineering	3
ENBE600017	Termodinamik Sistem Hayati / Thermodynamic in Biologycal System	3
ENBE600018	Teknik Reaksi Biokimia / Biochemical Reaction Engineering	3
ENBE600019	Separasi / Separation	3
ENBE600020	Praktikum Unit Operasi Bioproses I / Bioprocess Unit Operation Lab I	1
ENBE600021	Simulasi Sistem Bioproses / Bioprocess System Simulation	3
ENBE600022	Praktikum Unit Operasi Bioproses I / Bioprocess Unit Operation Lab II	1
ENBE600023	Rekayasa Bioreaktor / Bioreactor Engineering	3
ENBE600024	Perancangan Alat Bioproses / Bioprocess Equipment Design	3
ENBE600025	Perancangan Produk Hayati / Bio Product Design	4
ENBE600026	Pengendalian Bioproses / Bioprocess Control	3
ENBE600027	manajemen Proyek industry / Industrial Project Management	2
ENBE600028	perancangan Pabrik / Plant Design	4
ENBE600031	kapita Selekta / Capita Selecta	2
Elective Courses (26 Credits)		
	Mata Kuliah Pilihan 1 / Elective 1	3
	Mata Kuliah Pilihan 2 / Elective 2	3
	Mata Kuliah Pilihan 3 / Elective 3	3
	Mata Kuliah Pilihan 4 / Elective 4	3
	Mata Kuliah Pilihan 5 / Elective 5	3
	Mata Kuliah Pilihan 6 / Elective 6	3
	Mata Kuliah Pilihan 7 / Elective 7	3
	Mata Kuliah Pilihan 8 / Elective 8	3
	Mata Kuliah Pilihan 9 / Elective 9	2

Curriculum Structure Undergraduate Bioprocess Engineering (Reguler Class)

Code	Subject	SKS
	1st Semester	
UIGE600003	English	2
UIGE600004	Religion	2
ENGE600003	Calculus	4
ENGE600007	Physics (Electricity, MWO)	3
ENGE600008	Physics (Electricity, MWO) Lab	1
ENGE600009	Basic Chemistry	2
ENBE600001	Introduction to bioprocess engineering	2
ENBE600002	Communication Skills	2
	Sub Total	**18**
Calculus	**2nd Semester**	
UIGE600007	Integrated Character Building	6
ENGE600004	Linear Algebra	4
ENGE600005	Physics (Mechanics and Thermal)	3
ENGE600006	Physics (Mechanics and Thermal) Lab	1
ENGE600010	Statistic and Probability	2
ENBE600003	Basic & Organic Chemistry Lab	1
ENBE600004	Organic Chemistry	3
	Sub Total	**20**
	3rd Semester	
ENBE600005	Numerical Computation	3
ENBE600006	Instrumental Analytical Chemistry	3
ENBE600007	Physical Chemistry	3
ENBE600008	Physic Chemistry & Analytics Lab	1
ENBE600009	Mass and Energy Balance	3
ENBE600010	Biochemistry	3
ENBE600011	Transport Phenomena in Biologycal System	3
	Sub Total	**19**
	4th Semester	
ENBE600012	Fluid and Particle Mechanics	3
ENBE600013	Cell Culture	3
ENBE600014	Heat Transfer	3
ENBE600015	Biochemistry Laboratory	1
ENBE600016	Genetic Engineering	3
ENBE600017	Thermodynamic in Biologycal System	3
	Elective 1	3
	Elective 2	2
	Sub Total	**21**
	5th Semester	
ENGE600011	Engineering Economics	3
ENGE600012	HSE Protection	2
ENBE600018	Biochemical Reaction Engineering	3
ENBE600019	Separation	3
ENBE600020	Bioprocess Unit Operation Lab I	1
ENBE600021	Bioprocess System Simulation	3
	Elective 3	3
	Elective 4	3
	Sub Total	**21**
	6th Semester	
ENBE600022	Bioprocess Unit Operation Lab II	1
ENBE600023	Bioreactor Engineering	3
ENBE600024	Bioprocess Equipment Design	3
ENBE600025	Bio Product Design	4
ENBE600026	Process Control	3
	Elective 5	3
	Elective 6	3
	Sub Total	**20**
	7th Semester	
ENBE600027	Industrial Project Management	2
ENBE600028	Plant Design	4
ENBE600029	On The job Training (Internship)	2
ENBE600030	Research Methodology & Seminar	2
	Elective 7	3

	Elective 8	3
	Elective 9	3
	Sub Total	**19**
	8th Semester	
ENBE600031	Capita Selecta	2
ENBE600032	Undergraduate Thesis	5
	Sub Total	**7**
	Total	**145**

Elective Courses

Code	Odd Semester	SKS
ENCH800014	Oleochemical Industry	3
ENCH800015	Food Technology	3
ENCH800016	Protein Engineering	3
ENCH800017	Herbal Technology	3
ENCH800018	Composite Material	3
ENCH800019	Applied Thermodynamics	3
ENCH800020	Dynamic System	3
ENCH800021	Thermodynamic Properties of Hydrocarbon	3
ENCH800022	Lubricant Technology	3
ENCH800023	Cryogenic Technology	3
ENCH800024	Combustion Technology	3
ENCH800025	Plasma and Ozone Technology	3
ENCH800026	Heterogeneous Catalytic	3
ENCH800027	Sustainable Energy	3
ENCH800028	Risk Management	3
ENCH800029	Electrochemical Technology	3
ENCH800030	Extraction Technology & Isolation for Natural Products	3
ENCH800031	Special Topic 1	3
ENCH800033	Natural Gas Processing	3
	Even Semester	
ENCH800034	Storage and Packing Technology	3
ENCH800035	Bioinformatics	3
ENCH800036	Drugs and Cosmetics Technology	3
ENCH800037	Petroleum Processing	3
ENCH800038	Petrochemical Processing	3
ENCH800039	Photocatalytic Technology	3
ENCH800040	Hydrocarbon Exploration and Production	3
ENCH800041	Waste Management and Prevention	3
ENCH800042	Microalgae Cultivation and Development Tech.	3
ENCH800043	Plant Utility and Maintenance	3
ENCH800044	Transportation and Utilization of Natural Gas	3
ENCH800045	Mixing Technology	3
ENCH800046	Problem Solving Skills	3
ENCH800047	Polymer Technology	3
ENCH800048	Genetically Modified Organism	3
ENCH800049	Controlled Drug Release Technology	3
ENCH800050	Special Topic 2	3
ENCH800051	Biomass Thermochemical Conversion Tech.	3
ENCH800052	Basic Computer Programming	3
ENCH800053	Bioprocess Engineering Model	3
ENCH800054	Bioprocess Engineering Drawing	2

Courses Placement of Fast Track Undergraduate to Master Courses in Chemical Engineering Study Program from Bioprocess Engineering Undergraduate Program

Code	Subject	SKS
	7th Semester	
ENBE600027	Industrial Project Management	2
ENBE600028	Plant Design	4
ENBE600029	On The job Training (Internship)	2
ENBE600030	Research Methodology & Seminar	2
ENCH800001	Advanced Chemical Engineering	3
ENCH800027	Sustainable Energy	3
ENCH800033	Natural Gas Processing	3
	Elective 7	3
	Subtotal	**22**

	8th Semester	
ENBE600031	Capita Selecta	2
ENBE600032	Undergraduate Thesis	5
ENCH800003	Advanced Transport Phenomenon	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800005	Advanced Chemical Engineering Modelling	3
	Elective 8	3
	Elective 9	3
	Subtotal	**22**
	9th Semester	
ENCH800006	Research Methodology	3
ENCH800007	Pre-Thesis	2
	Elective 10	3
	Elective 11	3
	Elective 12	3
	Subtotal	**14**
	10th Semester	
ENCH800008	Thesis	6
ENCH800055	Research Publication	2
	Subtotal	**8**

Courses Placement of Fast Track Undergraduate to Doctor Courses in Chemical Engineering Study Program from Bioprocess Engineering Undergraduate Program

Code	Subject	SKS
	7th Semester	
ENBE600027	Industrial Project Management	2
ENBE600028	Plant Design	4
ENBE600029	On The job Training (Internship)	2
ENBE600030	Research Methodology & Seminar	2
ENCH800001	Advanced Chemical Engineering	3
ENCH800027	Sustainable Energy	3
ENCH800033	Natural Gas Processing	3
	Elective 7	3
	Subtotal	**22**

	8th Semester	
ENBE600031	Capita Selecta	2
ENBE600032	Undergraduate Thesis	5
ENCH800003	Advanced Transport Phenomenon	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800005	Advanced Chemical Engineering Modelling	3
	Elective 8	3
	Elective 9	3
	Subtotal	**22**
	9th Semester	
ENCH800006	Research Methodology	3
ENCH800007	Pre-Thesis	4
	Elective 10	3
	Elective 11	3
ENCH900003	Research Group Periodic Seminar	8
	Subtotal	**21**
	10th Semester	
ENCH800008	Thesis	**4**
ENCH800055	Research Publication	**2**
ENCH900005	Research Proposal	**6**
	Elective 12	**3**
	Subtotal	**15**
	11th Semester	
ENCH900007	Publication 1 – International Conference	**6**
	Subtotal	**6**
	12th Semester	
ENCH900008	Research Defense	**10**
	Subtotal	**10**
	13th Semester	
ENCH900010	Publication 2 – International Journal	**8**
	Subtotal	**8**
	14th Semester	
ENCH900011	Publication 3 – International Journal	**8**
ENCH900012	Doctoral Promotion	**6**
	Subtotal	**14**

Curriculum Structure Undergraduate Bioprocess Engineering (International Class)

Code	Subject	SKS
	1st Semester	
UIGE610004	Religion Studies	2
ENGE610003	Calculus	4
ENGE610007	Physics (Electric, Magnet, Wave & Optic)	3
ENGE610008	Physics (Electric, Magnet, Wave & Optic) Laboratory	1
ENGE610009	Basic Chemistry	2
ENBE610001	Introduction to Bioprocess Engineering	2
ENBE610002	Communication Skills	2
ENGE610010	Statistics and Probability	2
	Sub Total	**18**
	2nd Semester	
UIGE610002	Academic Writing	2
ENGE610004	Linear Algebra	4
ENGE610005	Physics (Mechanics and Thermal)	3
ENGE610006	Physics (Mechanics and Thermal) Laboratory	1
ENBE610004	Organic Chemistry	3
ENBE610003	Basic Chemistry and Organic Chemistry Laboratory	1
ENBE610005	Physical Chemistry	3
ENBE610006	Mass and Energy Balances	3
	Sub Total	**20**
	3rd Semester	
ENBE610007	Numerical Computation	3
ENBE610009	Instrumental Analytical Chemistry	3
ENBE610008	Physical Chemistry and Analytical Chemistry Laboratory	1
ENBE610011	Transport Phenomena in Biological System	3
ENBE610012	Fluid and Particle Mechanics	3
ENBE610013	Thermodynamics in Biological System	3
ENBE610010	Biochemistry	3
	Sub Total	**19**
	4th Semester	
ENGE610012	Health, Safety and Environmental Protection	2
ENBE610017	Cell Culture	3
ENBE610014	Heat Transfer	3
ENBE610019	Separation	3
ENBE610016	Genetics Engineering	3
ENBE610018	Bioprocess System Simulation	3
ENBE610015	Biochemistry Laboratory	1
ENGE610011	Engineering Economics	3
	Sub Total	**21**
	5th Semester	
ENBE610020	Bioprocess Unit Operation Laboratory 1	1
ENBE610021	Biochemical Reaction Engineering	3
ENBE610022	Process Control	3
ENBE610023	Bioreactor Engineering	3
ENBE610024	Bioprocess Equipment Design	3
Elective	Elective 1	3
	Elective 2	3
	Sub Total	**19**
	6th Semester	
UIGE610011	Integrated Character Building	6
ENBE610026	Bioprocess Unit Operation Laboratory 2	1
ENBE610025	Biological Product Design	4
ENBE610027	Research Methodology and Seminar	2
ENBE610028	Capita Selecta	2
Elective	Elective 3	3
	Elective 4	3
	Sub Total	**21**
	7th Semester	
Elective	Elective 6	3
	Elective 7	3
	Elective 8	3
	Elective 9	2
	Sub Total	**11**

	8th Semester	
ENBE610030	Industrial Project Management	2
ENBE610031	Plant Design	4
ENBE610029	On the Job Training	2
ENBE610032	Undergraduate Thesis	5
Elective	Elective 5	3
	Sub Total	**16**

Elective Courses

Code	Elective Courses	SKS
ENCH610025	Applied Termodynamics	3
ENCH610026	Thermodynamic Properties of Hydrocarbon	3
ENCH610027	Special Topics 1	3
ENCH800014	Oleochemical Industry	3
ENCH800015	Food Technology	3
ENCH800016	Protein Engineering	3
ENCH800017	Herbal Technology	3
ENCH800018	Composite Material	3
ENCH800019	Applied Thermodynamics	3
ENCH800020	Dynamic System	3
ENCH800021	Thermodynamic Properties of Hydrocarbon	3
ENCH800022	Lubricant Technology	3
ENCH800023	Cryogenic Technology	3
ENCH800024	Combustion Technology	3
ENCH800025	Plasma and Ozone Technology	3
ENCH800026	Heterogenous Catalytic	3
ENCH800027	Sustainable Energy	3
ENCH800028	Risk Management	3
ENCH800029	Electrochemical Technology	3
ENCH800030	Technology of Extraction and Isolation for Natural Products	3
ENCH800031	Special Topics 1	3
ENCH800032	Natural Gas Processing	3

Code	Elective Courses	SKS
ENCH610028	Polymer Engineering	3
ENCH610029	Technology of Controlled Drug Release	3
ENCH610030	Special Topics 2	3
ENCH800034	Storage and Packing Technology	3
ENCH800035	Bioinformatics	3
ENCH800036	Drugs and Cosmetics Technology	3
ENCH800037	Petroleum Processing	3
ENCH800038	Petrochemical Processing	3
ENCH800039	Photocatalytic Technology	3
ENCH800040	Microalgae Cultivation and Development Technology	3
ENCH800041	Waste Management and Prevention	3
ENCH800042	Hydrocarbon Exploration and Production	3
ENCH800043	Plant Utility and Maintenance	3
ENCH800044	Transportation and Utilization of Natural Gas	3
ENCH800045	Mixing Technology	3
ENCH800046	Problem Solving Skills	3
ENCH800047	Polymer Technology	3
ENCH800048	Genetically Modified Organism	3
ENCH800049	Technology of Controlled Drug Release	3
ENCH800050	Special Topics 2	3
ENCH800051	Technology of Biomass Termochemical Conversion	3
ENCH800052	Basic Computer Programming	3
ENCH800053	Bioprocess Engineering Modeling	3
ENCH800054	Bioprocess Engineering Drawing	2

Transition Guidance from Curriculum 2016 to 2020 for Regular Undergraduate Class

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow these transition rules.
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd Semester while in the previous curriculum in even Semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in the equivalence table have not changed, both in names and credits.
5. When there is a change in the course credits, then the number of graduation credits counted in is the number

Table of Equality Courses in Undergraduate Bioprocess Engineering Study Program in Curriculum 2016 and Curriculum 2020

No	Name of Courses in Curriculum 2016	Semester	Credits 2016	Name of Courses in Curriculum 2020	Semester	Credits 2020
1	MPKT A (Integrated Character Building A)	2	6	MPKT Terintegrasi (Integrated Character Building)	2	6
2	MPKT B (Integrated Character Building B)	1	6			
3	MPK Bahasa Inggris (English)	3	3	MPK Bahasa Inggris (English)	1	2
4	-	-	-	Praktikum Kimia Dasar dan Kimia Organik (Basic and Organic Chemistry Lab)	2	1
5	Pengantar Teknik Bioproses (Introduction to Bioprocess Engineering)	1	3	Pengantar Teknik Bioproses (Introduction to Bioprocess Engineering)	1	2
6	Biologi Molekular (Molecular Biology)	3	3	Biokimia (Biochemistry)	3	3
7	Biologi sel (Cel Biology)	2	3	Teknik Reaksi Biokimia (Biochemistry Reaction Engneering)	5 -	3 -
8	Biokatalisis	5	3			
9	Rekayasa Biokimia	5	3			
10	Bioenergetika (Bioenergetica)	5	2	Termodinamika Sistem Hayati (Thermodynamic in Biological System)	4	3
11	MPK Olah raga/seni (Sport/ Art)	1	1	MPK Olah raga/seni (Sport/ Art)	-	-
12	Skripsi (Undergraduate Thesis)	8	4	Skripsi (Undergraduate Thesis)	8	5
13	Statistik & Probabilistik (Statistic and Probability)	4	2	Statistik & Probabilistik (Statistic and Probability)	2	2

of credits when it was taken. The same or equivalent courses, when are equated with different credits, if retaken, or just taken, will be acknowledged under a new name and credits.

6. When a compulsory subject in the curriculum 2016 is deleted, and there is no equivalence in the curriculum 2020 then:

a. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 145 credits.

b. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 145 credits.

7. In addition to changes in curriculum structure from 2016 to 2020, there are also the addition of several elective courses: Teknologi Elektrokimia), Teknologi Pencampuran (Mixing Technology), Teknologi Pengembangan dan Pemanfaatan Mikroalga (Microalgae Cultivation and Development Technology), Teknologi Ekstraksi dan Isolasi Bahan Alam (Extraction & Isolation Technology for Natural Products), Konversi Termokimia Biomassa (Biomass Termochemical Conversion Technology), Modifikasi Genetik Makhluk Hidup (Genetically Modified Organism), dan Dasar Pemrograman Computer (Basic Computer Programming)

Undergraduate Program in Industrial Engineering

Program specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Host Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program Tittle**	Undergraduate Program in Industrial Engineering	
5.	**Vision and Mission**	The vision of the industrial engineering undergraduate program of the Universitas Indonesia is to be the leading study program in Indonesia in developing the field of industrial engineering to design, improve and install a complex and integrated industrial system through a systematic problem-solving process by using analytical, computational and experimental methods to improve productivity and sustainable quality. The mission of the industrial engineering undergraduate program of the Universitas Indonesia is to implement an industrial engineering higher education program with international awareness, supported by internationally competitive research and provide adaptive, useful, and professional community service to support Indonesia's sustainable development.	
6.	**Class**	Regular, Non Reguler, international, Fast Track	
7.	**Final Award**	Bachelor of Engineering	
8.	**Accreditation / Recognition**	Accreditation Excellent by BAN-PT and international Assessment by AUN-QA	
9.	**Language(s) of Instruction**	Indonesian and English	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	High School graduate/equivalent or D3/Polytechnic graduate and pass the entrance exam	
12.	**Study Duration**	Scheduled for four years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	8	16
	Short (optional)	3	8
13.	**Aims of the study program** 1. Apply industrial engineering knowledge to design, improve, and install integrated industrial systems to enhance the organization's global competitive advantage. 2. Provide professional skills and knowledge to succeed in the preferred profession. 3. Provide the ability to work effectively and ethically as a leader, team member, and as an individual to make better improvement in the organization.		
14.	**Graduate Profile:** An industrial engineer that has roles in designing, improving, and installing a complex and integrated industrial system through a systematic problem-solving process using various analytical, computational, and experimental tools and methods to improve productivity and quality.		

15.	**Expected Learning Outcomes:** Bachelor of Industrial Engineering has expected learning outcomes as follow: 1. The ability to apply mathematics, science, and engineering principles 2. The ability to design and implement research and research projects, as well as analyzing and interpreting data. 3. The ability to design, implement and improve the performance of an integrated system, component, or process to meet realistic constraints such as economics, environment, social, politics, law, ethics, human factors, health and safety, manufacturing feasibility, and sustainability 4. The ability to identify, formulate, and solve engineering problems. 5. The ability to use modern and required techniques, skills, and tools in engineering practice 6. The ability to be active in a multi-disciplinary team. 7. The ability to work professionally and have ethical responsibilities 8. Has a broad understanding of the impact of engineering problem-solving in global, economic, environmental, and social contexts. 9. The ability to study independently and continuously (lifelong learning) 10. The ability to communicate using spoken and written languages in Indonesian and English for both academic and non-academic activities (UI's competence) 11. The ability to use information and communication technology (UI's Competence) 12. The ability to identify a variety of entrepreneurial efforts that are characterized by ethical innovation and self-sustained (UI's competence) 13. The ability to critical, creative, and innovative thinking and has the intellectual curiosity to solve problems at individual and group levels (UI's competence) 14. The ability to provide alternative solutions to various problems that arise in the community, nation, and state of Indonesia (UI's competence).

16. Curriculum composition

No.	Types of teaching eyes	Credits	Percentage
I	Compulsory courses at the university level	19	12,5%
II	Compulsory courses at the faculty level	19	13,2%
III	Compulsory courses at the study program level	85	59,00%
IV	Elective courses	15	10,4%
V	Special courses (internship and undergraduate thesis)	7	4,9%
	Total	145	100%
	Total Credits for Graduation		**145 sks**

Job Prospects

Graduates of industrial engineering Universitas Indonesia are directed to have strong and systematic problem-solving skills with a multi-disciplinary approach in an industrial engineering scientific framework. The science of Industrial Engineering itself is unique engineering filed because it involves a multi-disciplinary approach. Graduates of this study program have been working on manufacturing and public and private services industries in the field of production management, human resources, maintenance systems, logistics and supply chain management, finance and banking, management, and I.T. consulting services.

Expected Learning Outcome Interconnection

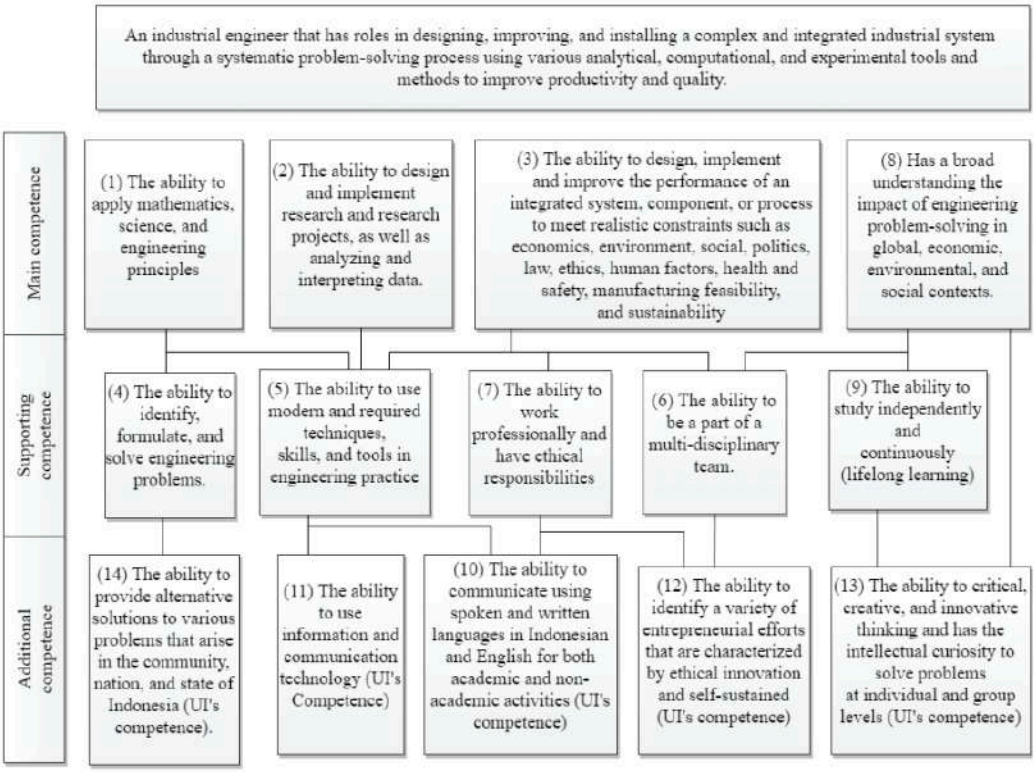
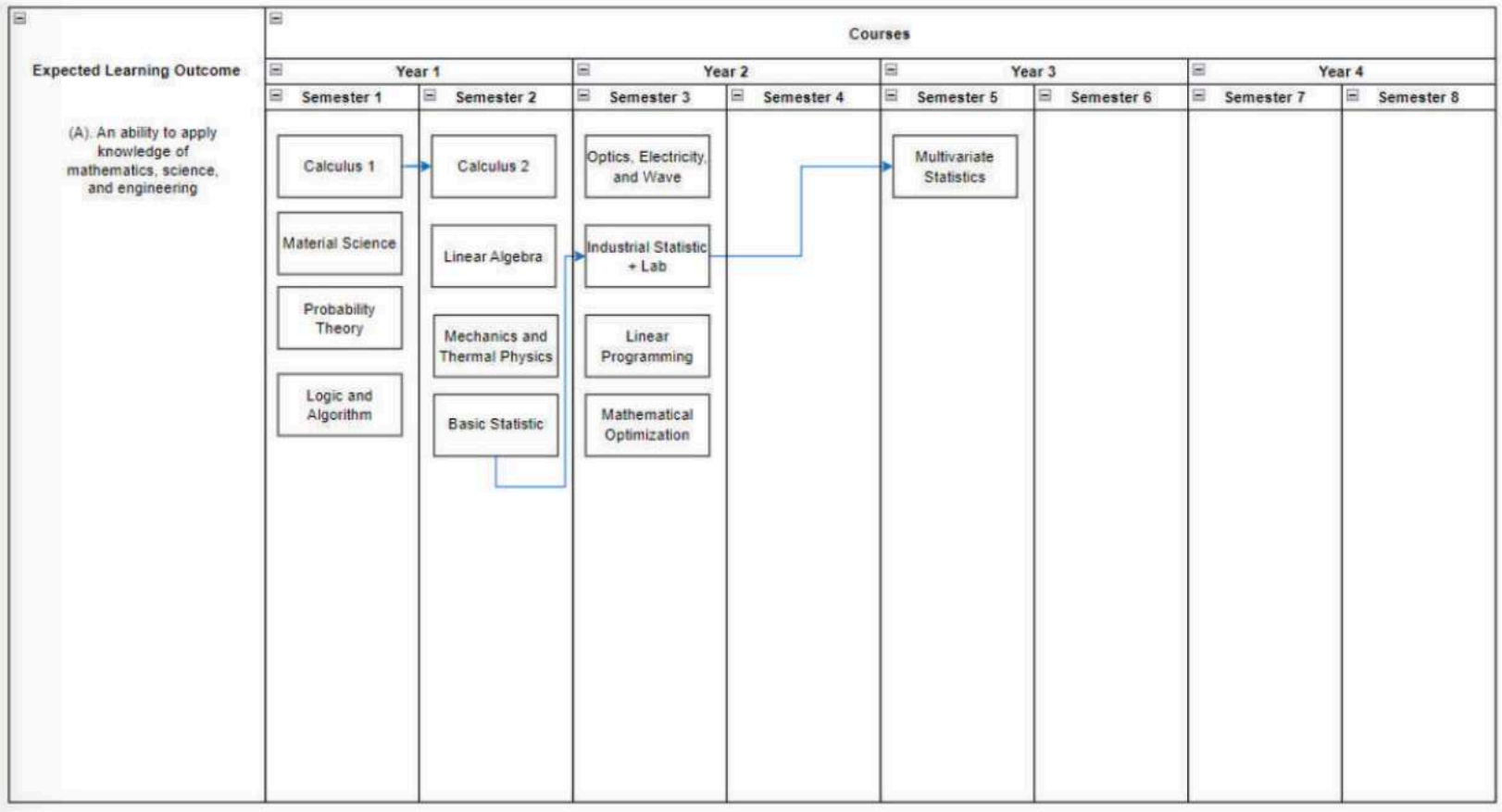
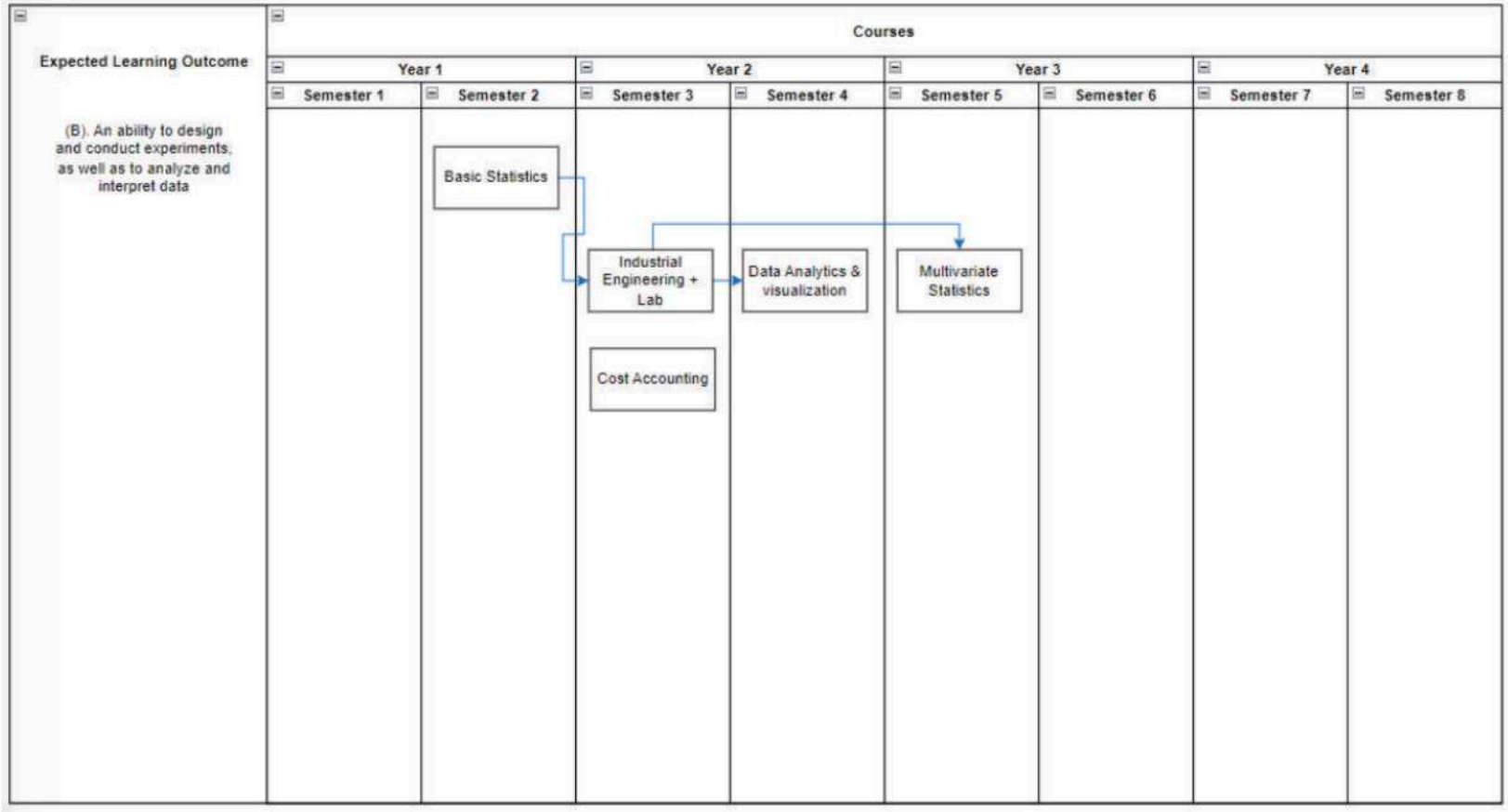
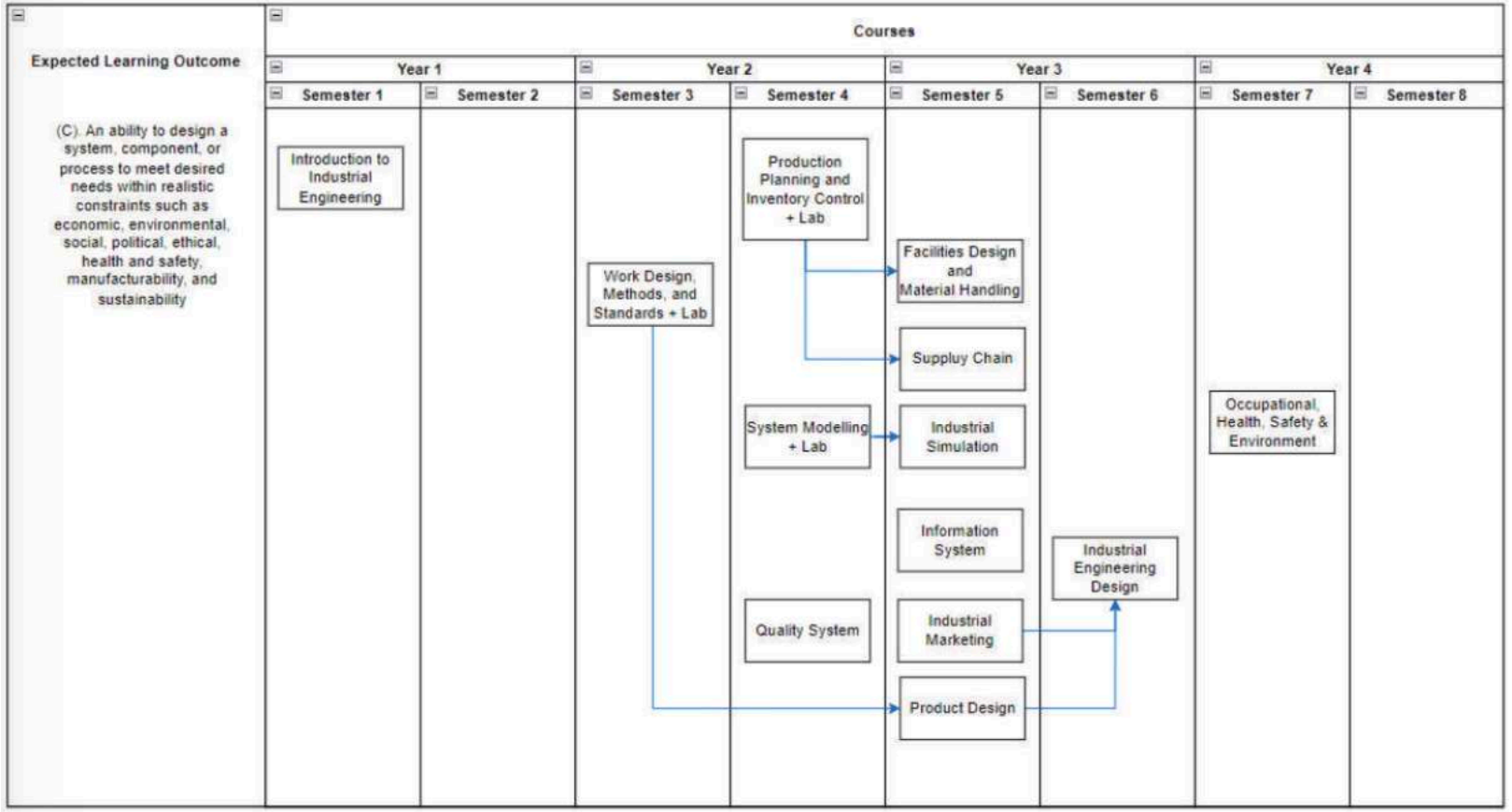


Fig. 1 Competencies Network for Industrial Engineering Study Program

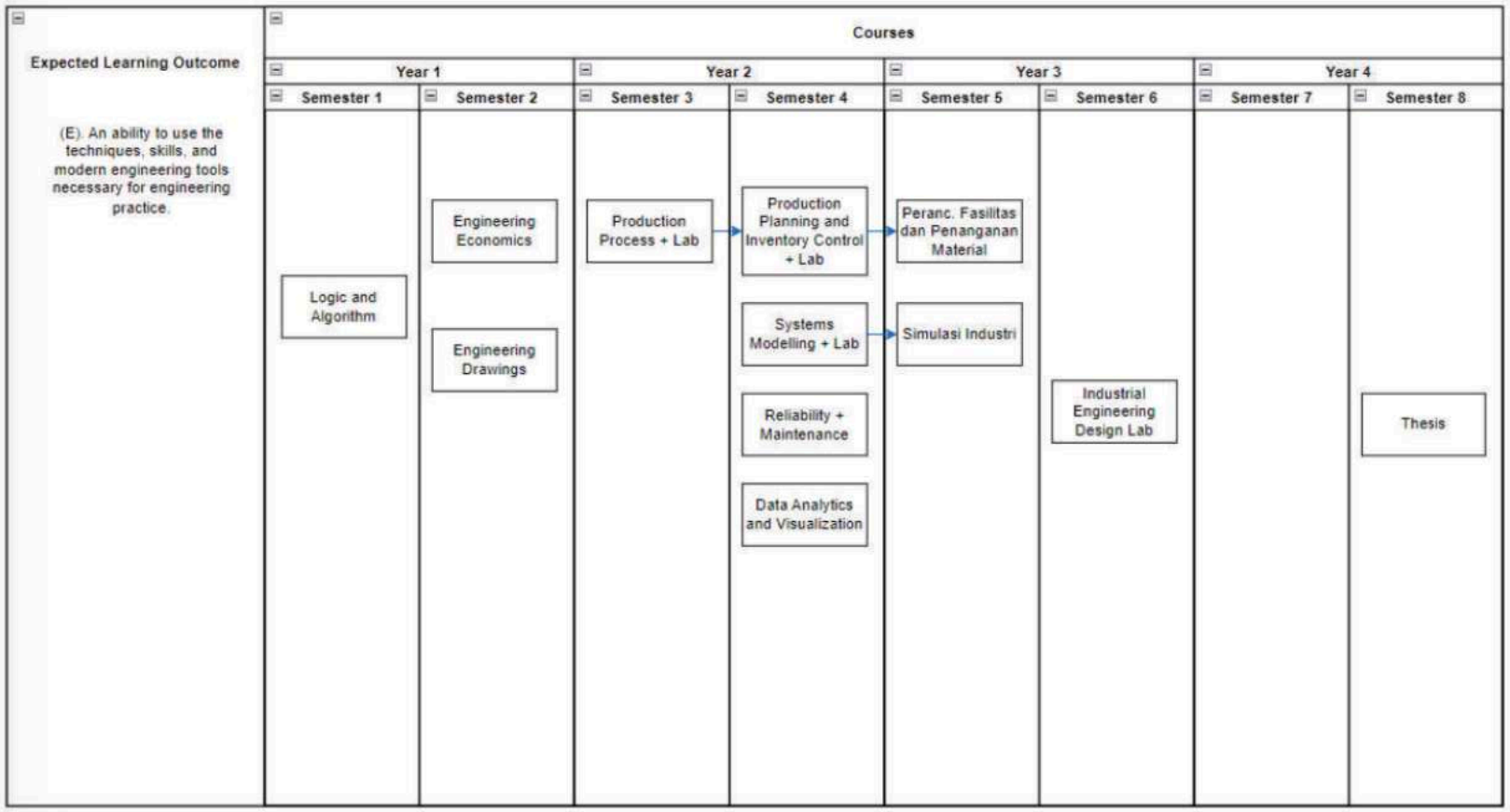
Flowchart of courses to attain the expected learning outcomes
in the Bachelor of Industrial Engineering




Expected Learning Outcome
Courses
Year 1
Year 2
Year 3
Year 4
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
(B). An ability to design and conduct experiments, as well as to analyze and interpret data
Basic Statistics
Industrial Engineering + Lab
Data Analytics & visualization
Multivariate Statistics
Cost Accounting

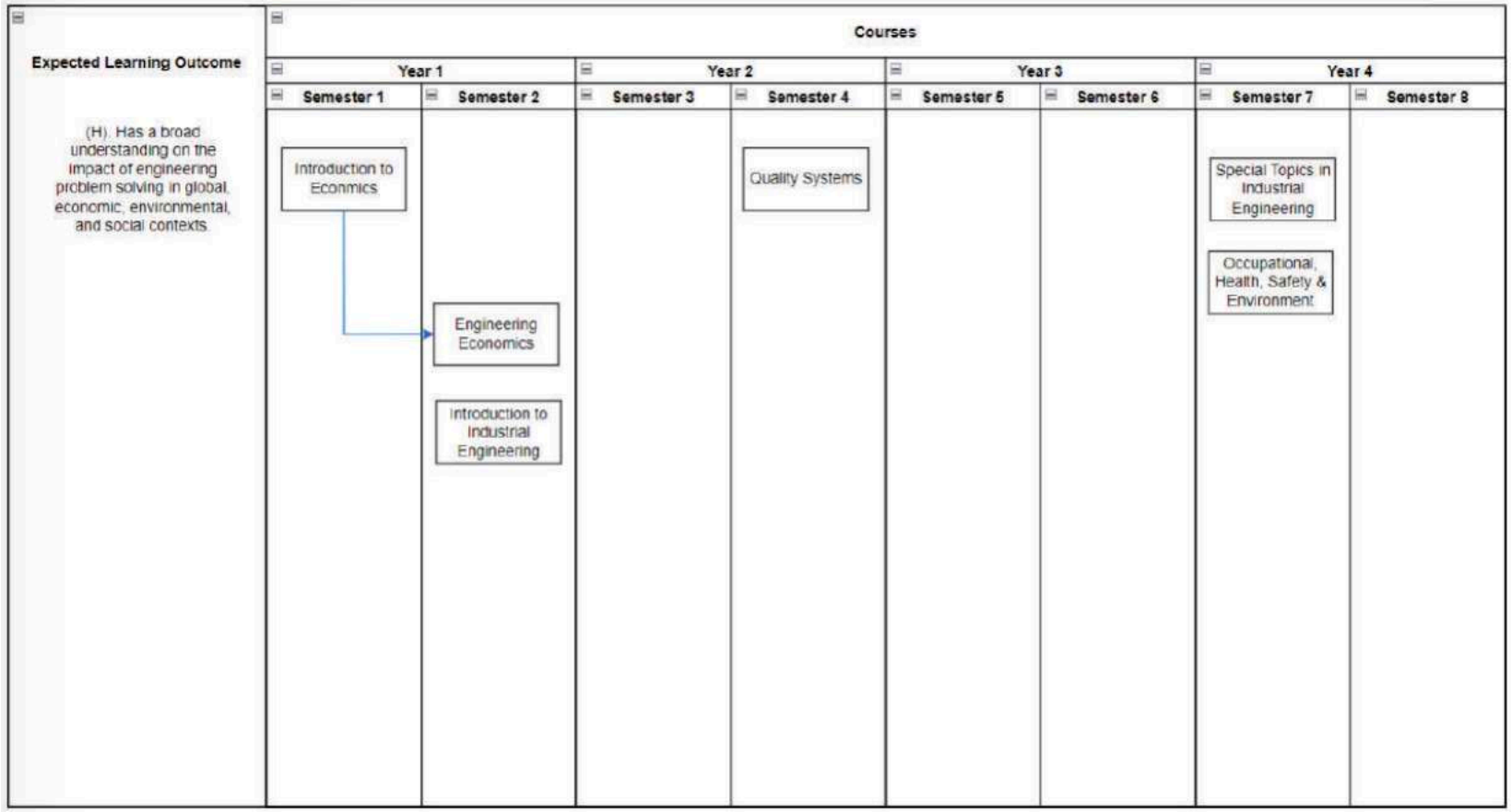

Expected Learning Outcome
(C). An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
Courses
Year 1
Year 2
Year 3
Year 4
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
Introduction to Industrial Engineering
Production Planning and Inventory Control + Lab
Facilities Design and Material Handling
Work Design, Methods, and Standards + Lab
Suppluy Chain
Occupational, Health, Safety & Environment
System Modelling + Lab
Industrial Simulation
Information System
Industrial Engineering Design
Quality System
Industrial Marketing
Product Design

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(D). An ability to identify, formulate, and solve engineering problems.	Material Science		Mechanic Engineering	Human Factor in Engineering & Design + Lab Operation Research Organizational Design and Industrial Psychology Reliability and Maintenance	Industrial Project Design			Thesis


Expected Learning Outcome
(E). An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
Courses
Year 1
Year 2
Year 3
Year 4
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
Logic and Algorithm
Engineering Economics
Engineering Drawings
Production Process + Lab
Production Planning and Inventory Control + Lab
Systems Modelling + Lab
Reliability + Maintenance
Data Analytics and Visualization
Peranc. Fasilitas dan Penanganan Material
Simulasi Industri
Industrial Engineering Design Lab
Thesis

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(F). An ability to function on multi-disciplinary teams.		MPKT S					Occupational, Health, Safety & Environment Internship	

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(G). An understanding of professional and ethical responsibility.	Religion						Internship	


Courses
Expected Learning Outcome
Year 1
Year 2
Year 3
Year 4
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8
(H). Has a broad understanding on the impact of engineering problem solving in global, economic, environmental, and social contexts
Introduction to Econmics
Engineering Economics
Introduction to Industrial Engineering
Quality Systems
Special Topics in Industrial Engineering
Occupational, Health, Safety & Environment

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(I). An ability to study independently and continuously (lifelong learning)							Special Topics in Industrial Engineering	Thesis

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(J). An ability to communicate using spoken and written languages in Indonesian and English for both Academic and non-Academic activities	English Religion						Internship	Thesis

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(K). An ability to use information and communication technology		Integrated MPKT			Information Systems			

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(L). An ability to identify a variety of entrepreneurial efforts, characterized by ethnical innovation and self-sustained						Industrial Engineering Design		

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(M). An ability to perform critical, creative, and innovative thinking and has an intellectual curiosity to solve problems at individual and group levels		Integrated MPKT				Industrial Engineering Design		

Expected Learning Outcome	Courses							
	Year 1		Year 2		Year 3		Year 4	
	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8
(N). An ability to provide alternative solutions to various problems that arise in the communities, nation, and Indonesia		Integrated MPKT				Industrial Engineering Design		

Fig. 2 Course Mapping for Expected Learning Outcome

Course Flowchart

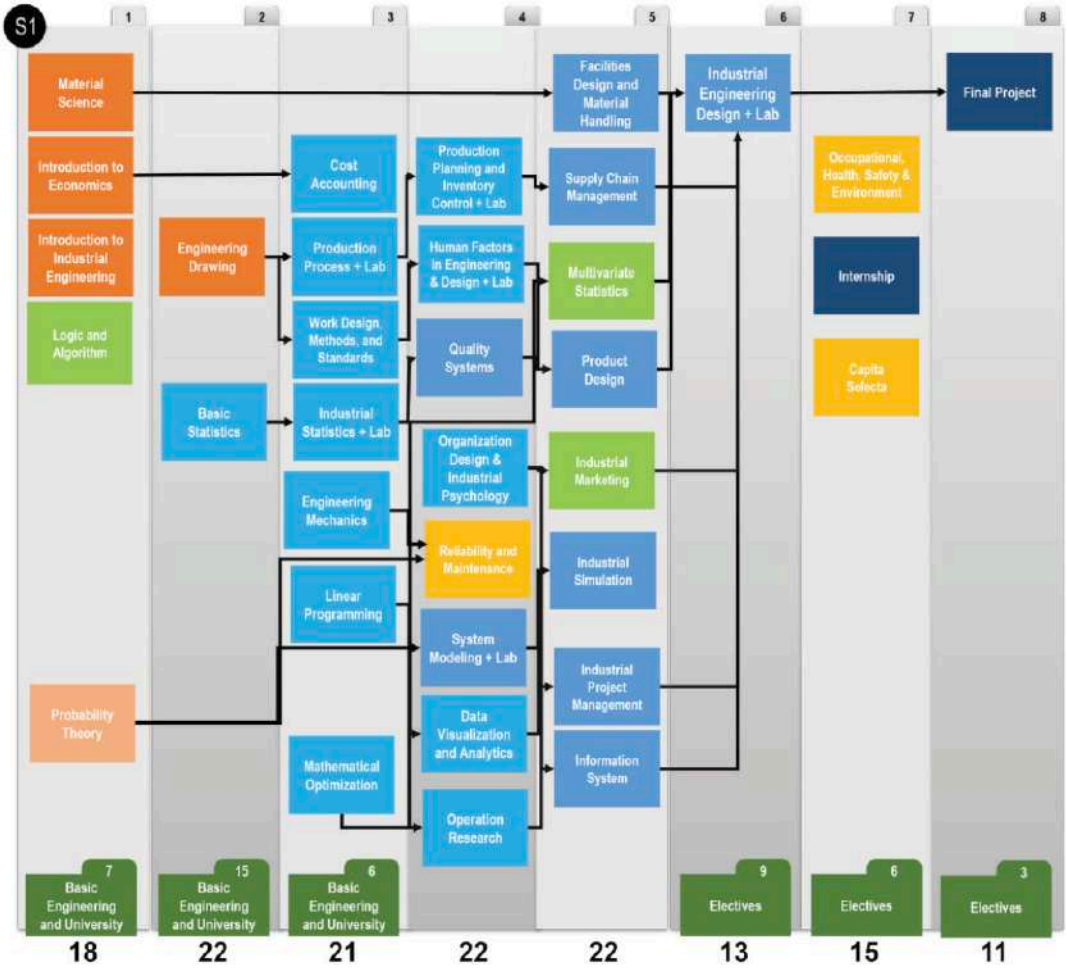


Fig. 3. Course Diagram to attain the competency of Bachelor program in Industrial

Curriculum Structure Reguler/ Non Reguler Class Undergraduate Industrial Engineering

Code	Subject	SKS
	1st Semester	
UIGE600003	English	2
ENGE600001	Calculus 1	3
ENIE601001	Introduction to Industrial Engineering	2
ENIE601002	Introduction to Economics	2
ENIE601003	Material Sciences	2
UIGE600004	Religion	2
ENIE601004	Probability Theory	2
ENIE601005	Algorithm and Computation	3
	Subtotal	**18**
	2nd Semester	
ENGE600004	Linear Algebra	4
ENGE600005	Mechanics and Thermal Physics	3
UIGE600007	MPKT	6
ENIE612006	Engineering Drawing	2
ENIE612007	Basic Statistics	2
ENGE610011	Engineering Economics	3
ENGE610002	Calculus 2	3
	Subtotal	**23**
	3rd Semester	
ENGE600007	Optics, Electricity and Wave Physics	3
ENIE603008	Engineering Mechanics	2
ENIE603009	Work Design, Methods, and Standards + Lab	3
ENIE603010	Production Process + Lab	3
ENIE603011	Industrial Statistics + Lab	3
ENIE603012	Linear Programming	3
ENIE603013	Mathematical Optimization	2
ENIE603014	Cost Accounting	2
	Subtotal	**21**
	4th Semester	
ENIE604015	Production Planning and Inventory Control + Lab	3
ENIE605016	Quality Systems	3
ENIE604017	Human Factor in Engineering & Design + Lab	3
ENIE604018	Operations Research	3
ENIE604019	Organizational Design and Industrial Psychology	3
ENIE604020	Systems Modeling + Lab	
ENIE604021	Reliability and Maintenance	2
ENIE604022	Data Analytics and Visualization	2
	Subtotal	**22**
	5th Semester	
ENIE615023	Facilities Design and Material Handling	3
ENIE615024	Product Design	2
ENIE615025	Industrial Project Design	3
ENIE615026	Supply Chain System	3
ENIE615027	Industrial Simulation	3
ENIE615028	Information Systems	3
ENIE615029	Multivariate Statistics	3
ENIE615030	Industrial Marketing	2
	Subtotal	**22**
	6th Semester	
ENIE616031	Industrial Engineering Design	3
ENIE616032	Industrial Engineering Design Lab	1
	Electives	3
	Electives	3
	Electives	3
	Subtotal	**13**
	7th Semester	
ENIE617033	Internship	2
ENGE610012	Occupational, Health, Safety & Environment	2
ENIE617034	Special Topics in Industrial Engineering	2
	Electives	3
	Electives	3
	Electives	3

	Subtotal	**15**
	8th Semester	
ENIE608035	Final Project in Industrial Engineering	5
	Electives	3
	Electives	3
	Subtotal	**11**
	Total	**145**

Course Structure for International Class of Industrial Engineering

Code	Subject	SKS
	1st Semester	
UIGE610003	English	2
ENGE610001	Calculus 1	3
ENIE611001	Introduction to Industrial Engineering	2
ENIE611002	Introduction to Economics	2
ENIE611003	Material Science	2
UIGE610004	Religion	2
ENIE611004	Probability Theory	2
ENIE611005	Logic and Algorithm	3
	Subtotal	**18**
	2nd Semester	
ENGE610004	Linear Algebra	4
ENGE610005	Mechanics and Thermal Physics	3
UIGE610011	Integrated Character Building	6
ENIE612006	Engineering Drawing	2
ENIE612007	Basic Statistics	2
ENGE610011	Engineering Economics	3
ENGE610002	Calculus 2	3
	Subtotal	**23**
	3rd Semester	
ENGE610007	Optics, Electricity and Wave Physics	3
ENIE613008	Engineering Mechanics	2
ENIE613009	Work Design, Methods, and Standards + Lab	3
ENIE613010	Production Process + Lab	3
ENIE613011	Industrial Statistics + Lab	3
ENIE613012	Linear Programming	3
ENIE613013	Mathematical Optimization	2
ENIE613014	Cost Accounting	2
	Subtotal	**21**
	4th Semester	
ENIE614015	Production Planning and Inventory Control + Lab	3
ENIE615016	Quality Systems	3
ENIE614017	Human Factor in Engineering & Design + Lab	3
ENIE614018	Operations Research	3
ENIE614019	Organizational Design and Industrial Psychology	3
ENIE614020	Systems Modeling + Lab	3
ENIE614021	Reliability and Maintenance	2
ENIE614022	Data Analytics and Visualization	2
	Subtotal	**22**
	5th Semester	
ENIE615023	Facilities Design and Material Handling	3
ENIE615024	Product Design	2
ENIE615025	Industrial Project Design	3
ENIE615026	Supply Chain System	3
ENIE615027	Industrial Simulation	3
ENIE615028	Information Systems	3
ENIE615029	Multivariate Statistics	3
ENIE615030	Industrial Marketing	2
	Subtotal	**22**
	6th Semester	
ENIE616031	Industrial Engineering Design	3
ENIE616032	Industrial Engineering Design Lab	1
	Electives	3
	Electives	3
	Electives	3
	Sub Total	**13**
	7th Semester	
ENIE617033	Internship	2
ENGE610012	Occupational, Health, Safety & Environment	2

ENIE617034	Special Topics in Industrial Engineering	2
	Electives	3
	Electives	3

	Electives	3
	Subtotal	**15**
	8th Semester	
ENIE618035	Final Project in Industrial Engineering	5
	Electives	3
	Electives	3
	Subtotal	**11**
	Total	**145**

Transition Policy from the 2016 to the 2020 Curriculum

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. The enforcement of the transitional period is one year, i.e., in Even Semester Year 2020 / 2021 and Odd Semester Year 2021 / 2022. During this transition period, if a course in curriculum 2020 is in odd semester while in previous curriculum in even semester (vice versa), then this course can be held (if necessary) in each semester of Year 2020 / 2021.
3. For students who have not passed the compulsory courses in curriculum 2016, they are required to take the same or equivalent course in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in equivalence table have not changed, both in names and credits.
4. When there is a change in the number of course credits, then the number of graduation credits that be counted in, is the number of credits when it was taken. If a student took the same or equivalent courses whose credits or names have changed, then it will be acknowledged under a new name or a new credit. (Please course equivalence table).
5. When a compulsory subject in the curriculum 2016 is deleted and there is no equivalence in the curriculum 2020 then:

a. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 145 credits.
b. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 145 credits. This selected course(s) will be counted as elective one(s), even though this course is originally a compulsory subject in the Curriculum 2020.

No	Name of the Course in 2016 Curriculum	Credits in 2016	Name of the Course in 2020 Curriculum	Credits in 2020
1	Plant Layout	3	Facilities Design and Material Handling	3
2	Product Design + Lab	3	Product Design	2
3	Maintenance System	2	Reliability and Maintenance	2
4	Industrial Simulation + Lab	3	Industrial Simulation	3
5	Project Management	2	Industrial Project Design	3
6	Supply Chain Management	3	Supply Chain Systems	3
7	Industrial Engineering Design + Lab	3	Industrial Engineering Design	3
			Industrial Engineering Design Lab	1

Course Structure for Bachelor and Master Fast Track student in Industrial engineering

Code	Subject	SKS
	7th Semester	
ENIE801001	Systems Thinking	3
ENIE801004	Advanced Operation Research	3
ENIE801003	Operation Management	3
ENIE801002	Industrial Systems Engineering	3
	Subtotal	**12**
	8th Semester	
ENIE801005	Research Methodology	2
ENIE801006	Advanced Statistics	3
	Mandatory Course for Track	3
	Mandatory Course for Track	3
	Subtotal	**11**
	9th Semester	
	Mandatory Course for Track	3
	Elective Course for Track	3
	Elective Course for Track	3
ENIE800007	Research Proposal	2
	Subtotal	**11**
	10th Semester	
ENIE800008	Publication	2
ENIE800009	Thesis	4
	Subtotal	**6**

Course Structure for Bachelor, Master and Doctoral Fast Track Student in Industrial engineering

Code	Subject	SKS
	7th Semester	
ENIE607034	Special Topics in Industrial Engineering	2
ENIE801001	Systems Thinking	3
ENIE801002	Industrial Systems Engineering	3
ENIE801003	Operation Management	3
ENIE801004	Advanced Operations Research	3
	Subtotal	**14**
	8th Semester	
	Research Methodology	2
ENIE801005	Advanced Statistics	3
ENIE801006	Mandatory Course for Track	3
	Mandatory Course for Track	3
	Subtotal	**11**
	9th Semester	
	Mandatory Course for Track	3
	Elective Course for Track	3
ENIE801007	Elective Course for Track	3
	Thesis Proposal	2
	Subtotal	**11**
	10th Semester	
ENIE800008	Publication	**2**
ENIE800009	Thesis	**8**
ENIE900004	Research Proposal	**6**
	Subtotal	**16**
	11th Semester	
ENIE900006	Publication – International Conference	**4**
	Subtotal	**4**
	12th Semester	
ENIE900007	Research Result Examination	**10**
	Subtotal	**10**
	13th Semester	
ENIE900008	Publication 2 – International Journal	**8**
	Subtotal	**8**
	14th Semester	
ENIE900010	Doctoral Promotion	**6**
	Publication III – International Journal	**8**
	Subtotal	**14**

CHAPTER 5

PROFESSIONAL PROGRAM

Professional Program

Architect

Program Specification

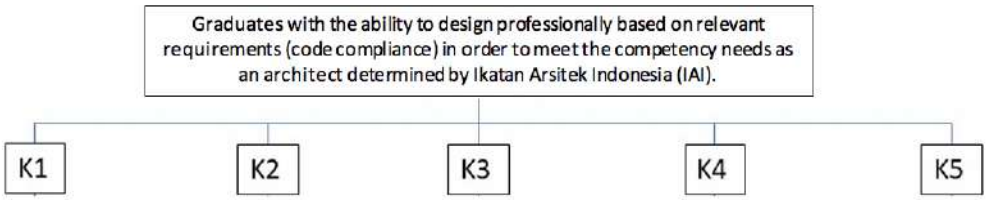
1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program**	Professional Program for Architect	
5.	**Vision and Mission**	Vision: "To be a high-quality architectural Institution that receives national and international recognition, to foster graduates with good design knowledge and skills as professional architects that have professional ethics and sensibility to environment sustainability." Mission: Organizing professional architectural education programs that: 1. generates creativity and design innovation with a sustainable approach 2. responds to the changing social, cultural and technological conditions 3. prepares graduates to become professional architects	
6.	**Class**	Regular	
7.	**Degree Offered**	Arsitek (Ar.)	
8.	**Accreditation / Recognition**	Accredited from BAN-PT	
9.	**Language(s) of Instruction**	Bahasa Indonesia	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	Graduated from Undergraduate Architecture Program	
12.	**Duration of Study**	1 year	
	Semester	Total Semester	Weeks/Semester
	Regular	2	16-17
	Short (optional)	-	-
13.	**Aims of the study programme** 1. Mastering code of ethics and code of conduct for Architect; 2. Mastering Architect professional services to community, such as making preliminary design, permit documents, design development to complete construction documents; 3. Mastering the principles of professional architect service administration; 4. Mastering code of conformity regarding professional services to client, local regulations and other disciplines related to building construction.		
14.	**Profile of Graduates:** Graduates with the ability to design professionally based on relevant requirements (code compliance) in order to meet the competency needs as an architect determined by Ikatan Arsitek Indonesia (IAI).		

15.	**Expected Learning Outcomes (ELO):** 1. Able to create architectural design that complies to codes related to services to clients, compliance to local building codes, and technical aspects building structure and construction, mechanical and electrical. 2. Able to manage architectural consultation service that comprises of preliminary design, building permit, and design development. 3. Able to integrate knowledge of ethical codes and architects' professional codes of conduct into professional practice. 4. Able to integrate knowledge on theory of architecture and sustainability into professional practice. 5. Able to explain the principles of consultation administration and project management.		
16.	**Course Composition**		
No.	**Type of Courses**	**Credits**	**Percentage**
I	University General Subjects	0	0%
II	Basic Engineering Subjects	0	0%
III	Architecture Core Subjects	21	87,5%
IV	Electives	3	12,5%
	Total	24	100%
	Total Credits for Graduation		**24 sks**

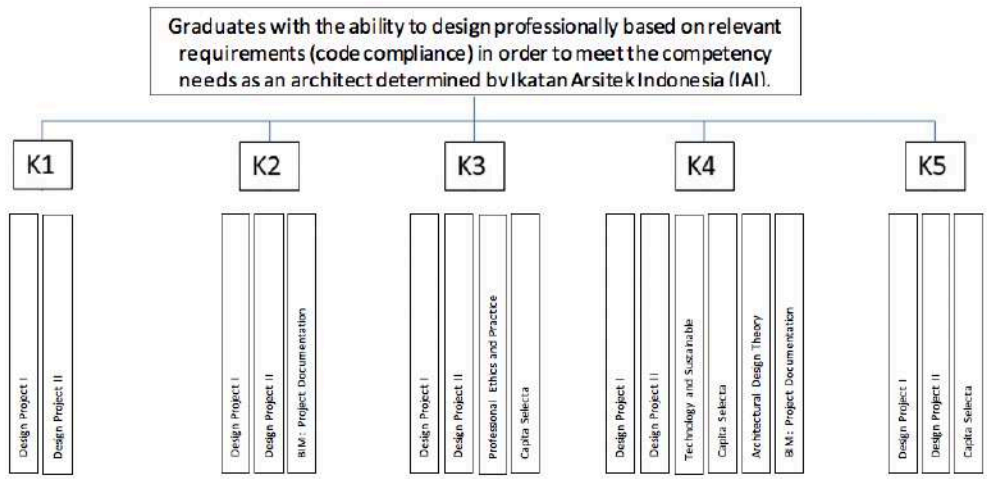
Job Opportunity

Graduates of this program can work in various fields within the construction industry, as architects or supervisors implementing construction. Then they can also work as researchers and lecturers in educational institutions related to architecture. In addition graduates can also work in the fields of urban design, real estate, building maintenance, building feasibility audits, appraisers for project feasibility studies, building managers, housing and settlements and the environment, working in industry of materials and building elements, and working in the government sectors in matters of building management, building construction and relating to the built environment.

NETWORK OF COMPETENCIES



DETAIL NETWORK OF COMPETENCIES



Course Diagram for Achieving ELO in the Professional Program for Architect

ELO	SEMESTER 1	SEMESTER 2
(1) Able to create architectural design that complies to codes related to services to clients, compliance to local building codes, and technical aspects building structure and construction, mechanical and electrical.	DESIGN PROJECT I	DESIGN PROJECT II
(2) Able to manage architectural consultation service that comprises of preliminary design, building permit, and design development.	DESIGN PROJECT I	DESIGN PROJECT II BIM : PROJECT DOCUMENTATION
(3) Able to integrate knowledge of ethical codes and architects' professional codes of conduct into professional practice.	DESIGN PROJECT I → DESIGN PROJECT II PROFESSIONAL ETHICS AND PRACTICE	CAPITA SELECTA
(4) Able to integrate knowledge on theory of architecture and sustainability into professional practice.	DESIGN PROJECT I → DESIGN PROJECT II TECHNOLOGY AND SUSTAINABLE ENVIRONMENT → CAPITA SELECTA	ARCHITECTURAL DESIGN THEORY BIM : PROJECT DOCUMENTATION
(5) Able to explain the principles of consultation administration and project management.	DESIGN PROJECT I → DESIGN PROJECT II	CAPITA SELECTA

Course Structure Professional Program for Architect

Code	Subject	SKS
	1st Semester	
ENAR701001	Design Project 1	6
ENAR701003	Professional Ethics and Practice	3
ENAR701004	Technology & Sustainable Environment	3
	Sub Total	**12**
	2nd Semester	
ENAR702002	Design Project II	6
ENAR702005	Architectural Design Theory	3
	Elective*	3

*Student can also take required and elective courses available in Master of Architecture Program or other programs at the Department which are equal to courses for the Professional Program.

Elective Courses

Code	Subject	Credit
ENAR700006	BIM: Project Documentation	3

Professional Program for Engineers

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program**	Professional Education Program for Engineers	
5.	**Vision and Mission**	**Vision :** To Produce Professional engineers who are dignified, have a high entrepreneurial spirit, and competencies that are following the requirements set both at national and international level. **Mission :** a. Carrying out Professional Education Programs following engineering principles, ethics, and professional standards; b. Encourage competence, technical skills, and professional responsibilities starting from the stage Design up to implementation in various engineering profession activities; c. Equipping managerial skills and a dignified entrepreneurial spirit.	
6.	**Class type**	Regular, RPL	
7.	**Final Award**	Insinyur (Ir)	
8.	**Accreditation Status**	Accredited BAN-PT: B	
9.	**Language of Instruction**	Indonesia	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	Pass the entrance exam (SIMAK-UI), and Graduate (S1) from the field of Engineering and its equivalent RPL: additional requirements in the form of work experience of more than 5 years and have a portfolio of engineering practice	
12.	**Study Duration**	Regular: Scheduled for 1 year RPL: Scheduled for 1 semester	
	Semester Type	Number of semester	Number of weeks/semesters
	Special	2	16
13.	**Aims of the programme:** To produce engineers who can master the code of ethics and the behavior of engineers; mastering engineering technical skills including developing designs and completing various technical and tender documents; and mastering the code of compliance, whether it concerns services to clients, compliance with regulations, and engineering issues such as safety, environment and sustainability		
14.	**Profile of Graduates:** Professional graduates who are able to solve problems in the engineering field based on technology in accordance with professional ethics		

15.	**Expected Learning Outcomes (ELO - KKNI Level 7) :** a. Able to manage engineering resources under its responsibility comprehensively by utilizing science and technology to produce technical steps in the strategic development of the organization in its field of work. b. Able to research to make strategic decisions with full accountability and responsibility for all aspects under the responsibility of their area of expertise. c. Able to solve problems with science and technology. d. Generate added value and benefits for the community in the field of engineering through monodisciplinary and multidisciplinary approaches.
16.	**Classification of Subjects**

No.	Types of Subjects	Credits	Percentage
I	Code of Ethics and Ethics of Engineers	2	8.3%
II	Professionalism	2	8.3%
III	Health, Safety and the Environment	2	8.3%
IV	Engineering Practices	12	50%
V	Case Studies	4	16.6%
VI	Seminar, Workshop and other Dissemination	2	8.3%
	Total	24	100%

Career Prospects and Job Opportunities

Graduates from this study program can work in various industrial sectors and fields, including energy and power generation,
information technology, construction, chemical, electronics, oil & gas, telecommunications, education and other related
industries. Graduates who have worked previously have the opportunity to advance to a higher career path. Participants who
have been declared to have passed the Professional Engineer Study Program obtain an Engineer Degree from a Higher
Education and are entitled to use the professional engineer title which is abbreviated as “Ir” and can then take the Professional
Engineer Competency Test conducted by professional associations. Certificate of Competence as a professional engineer and
Engineer Registration Certificate (STRI).

Process of Equalizing Recognition of Prior Learning (RPL) Portfolio with Regular Program Courses

The process of equalization so that the equivalent of the RPL track with the regular track can be seen in Figure 1 with
activities that can be evaluated based on a portfolio consisting of:

- Engineering Ethics
- K3L
- Engineering Professionalism
- Case study
- Seminar

The engineering practice activities are carried out in their respective workplaces with field supervisors. While the
process of supervising the preparation of the final project report is carried out in campus (can be online or offline).

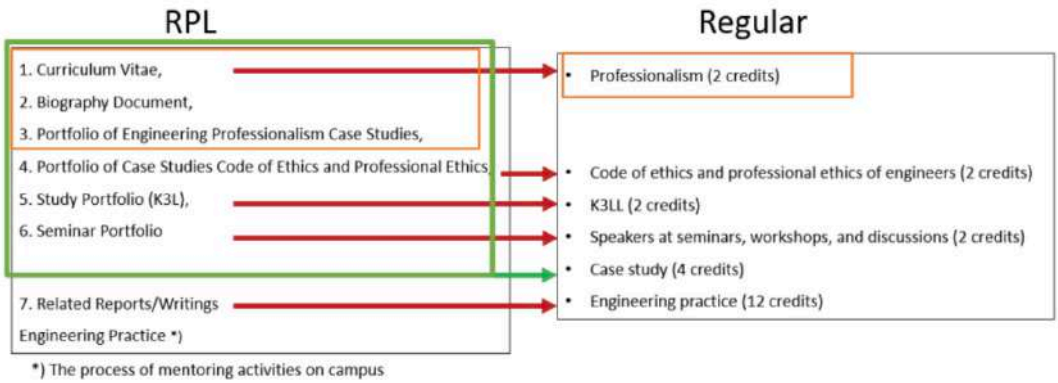
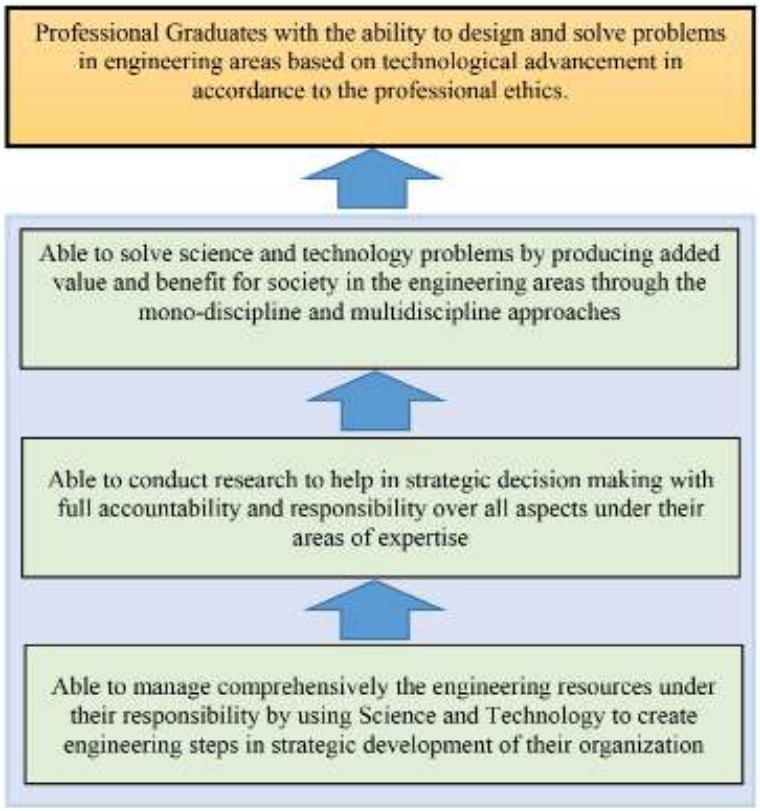


Figure 1. Equalization Scheme of RPL track with Regular track Learning Outcomes (ELO)

Expected Learning Outcomes (ELO)

Competency Framework
Professional Engineer Study Program



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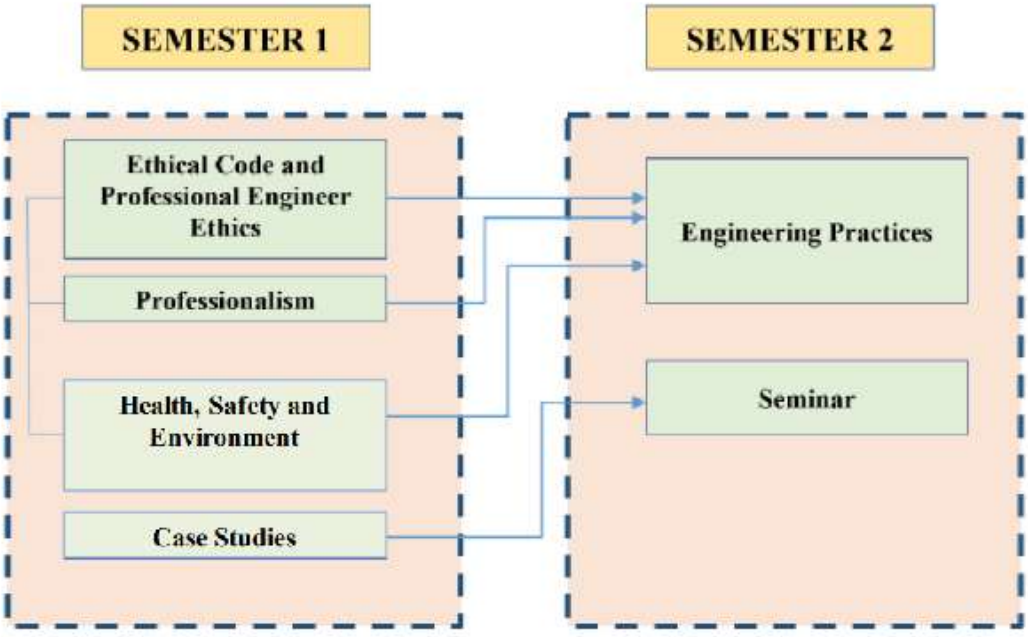
Curriculum Flow Diagram
Professional Program for Engineers



Course Structure Professional Program for Engineers

Code	Subject	SKS
	1st Semester	
ENIR701001	Code of Ethics and Ethics of Engineers	2
ENIR701002	Professionalism	2
ENIR701003	Health, Safety and Environment	2
ENIR701004	Case Study	4
	Sub Total	**10**
	2nd Semester	
ENIR702005	Engineering Practices	12
ENIR702006	Seminar	2
	Sub Total	**14**
	Total	**24**

CHAPTER 6

MASTER PROGRAM

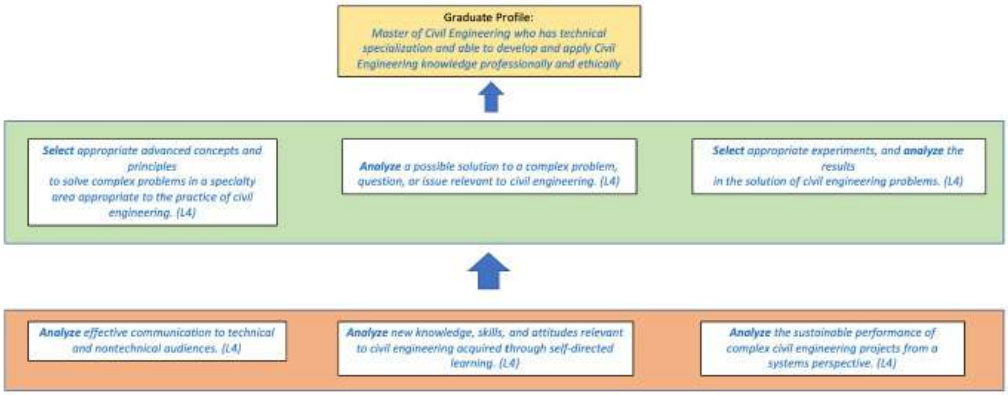
Master in Civil Engineering

Program Specification

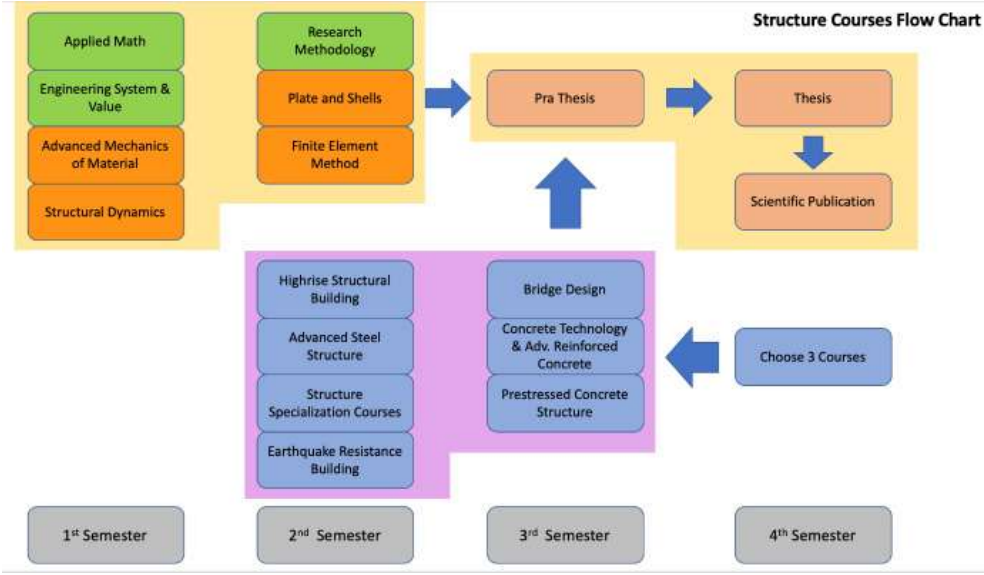
1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Faculty of Engineering University Indonesia	
3.	**Programme Tittle**	Graduate Program in Civil Engineering	
4.	**Class**	Regular, Research	
5.	**Final Award**	Magister Teknik (M.T.)	
6 .	**Accreditation / Recognition**	BAN-PT: A – accredited ; Assessed by AUN-QA	
7.	**Language(s) of Instruction**	Bahasa Indonesia and English	
8.	**Study Scheme (Full Time / Part Time)**	Full Time	
9.	**Entry Requirements**	Bachelor Degree (S1) – Engineering, Mathematics and Science; Pass the Master Degree Entrance Exam	
10.	**Study Duration**	Designed for 2 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	4	16
	Short (optional)	1	8
11.	**Graduate Profiles:** Master of Civil Engineering who has technical specialization and able to develop and apply Civil Engineering knowledge professionally and ethically		
12.	**Expected Learning Outcomes:** 1. Problem Recognition and Solving: Select appropriate advanced concepts and principles to solve complex problems in a specialty area appropriate to the practice of civil engineering. (L4) 2. Experiment: **Select** appropriate experiments, and **analyze** the results in the solution of civil engineering problems. (L4) 3. Technical Specialization: **Select** appropriate advanced concepts and principles to solve complex problems in a specialty area appropriate to the practice of civil engineering. (L4) 4. Sustainability: **Analyze** the sustainable performance of complex civil engineering projects from a systems perspective. (L4) 5. Communication: **Analyze** effective communication to technical and nontechnical audiences. (L4) 6. Lifelong Learning: **Analyze** new knowledge, skills, and attitudes relevant to civil engineering acquired through self-directed learning. (L4)		

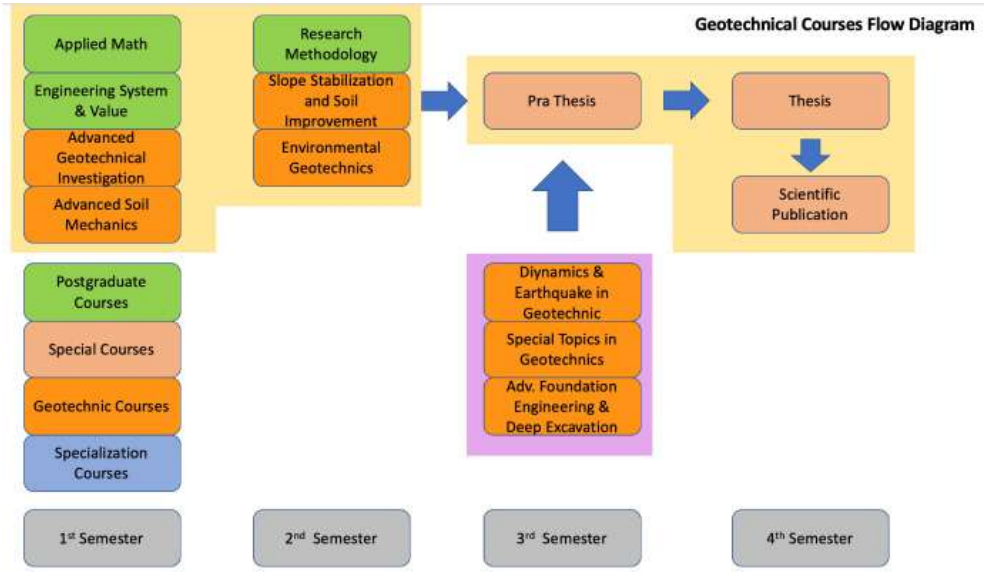
No.	Classification	Credit Hours (SKS)	Percentage
i	**Study Program Subjects**	**9**	**22%**
ii	**Specialization Subjects**	**12-21**	**30-53%**
iii	**Elective Subjects**	**3-9**	**7.5-22.5%**
iv	**Pre-Thesis, Thesis, Scientific Publications**	**10**	**25%**
	Total	**40**	**100 %**
	Total Credit Hours to Graduate		**40 Credits**

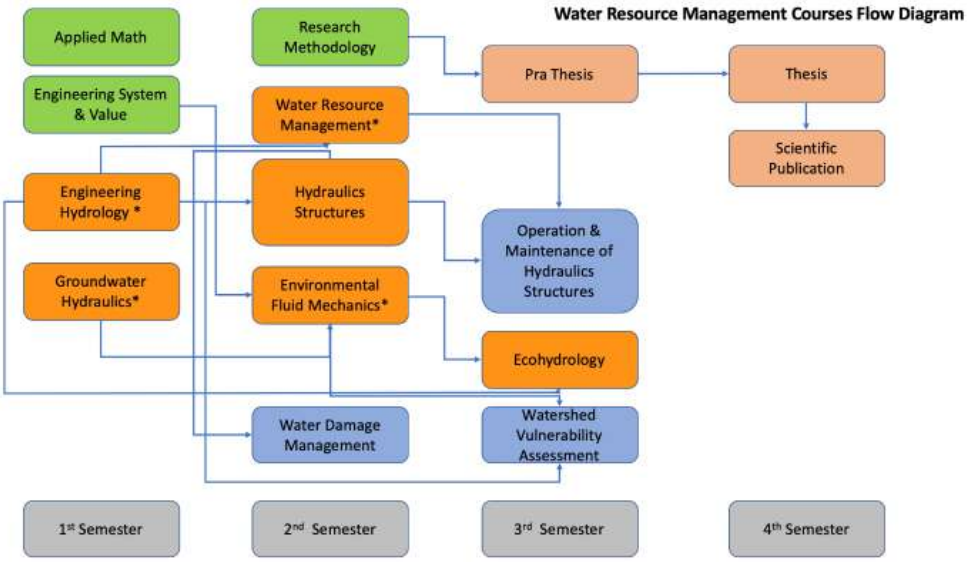
Learning Outcomes

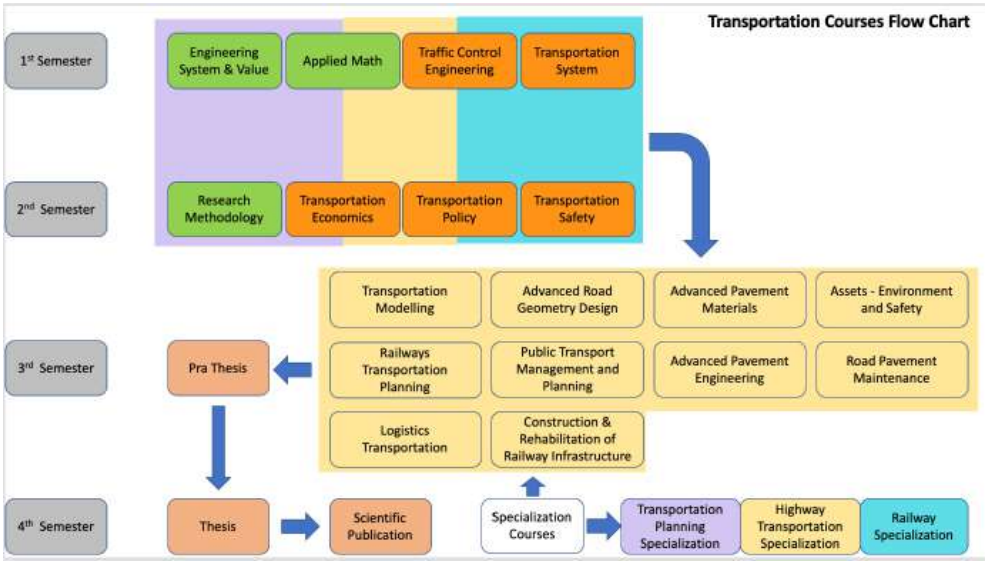


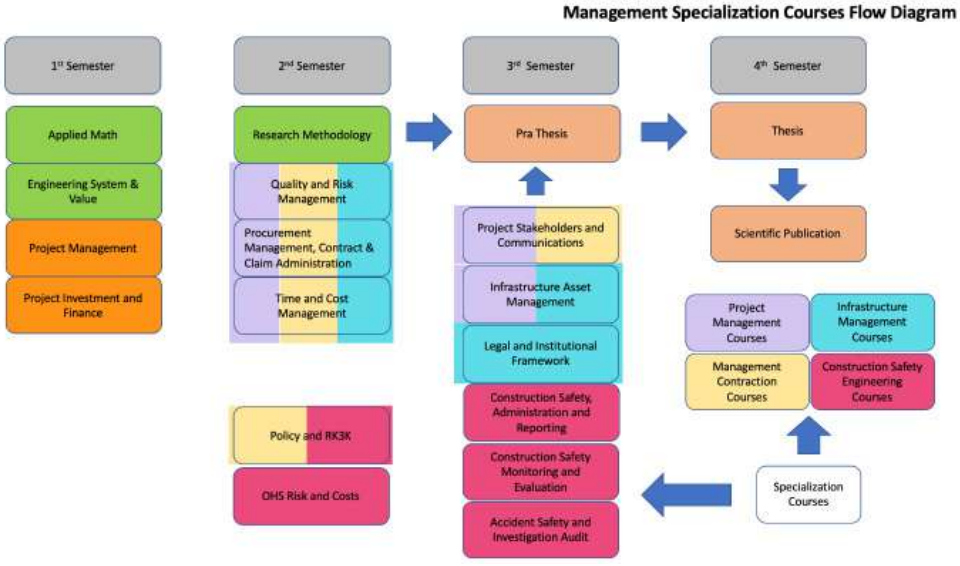
Flow Diagram of Subjects – Graduate Program on Civil Engineering




Geotechnical Courses Flow Diagram
Applied Math
Engineering System & Value
Advanced Geotechnical Investigation
Advanced Soil Mechanics
Research Methodology
Slope Stabilization and Soil Improvement
Environmental Geotechnics
Pra Thesis
Thesis
Scientific Publication
Diynamics & Earthquake in Geotechnic
Special Topics in Geotechnics
Adv. Foundation Engineering & Deep Excavation
Postgraduate Courses
Special Courses
Geotechnic Courses
Specialization Courses
1st Semester
2nd Semester
3rd Semester
4th Semester


Water Resource Management Courses Flow Diagram
Applied Math
Engineering System & Value
Engineering Hydrology *
Groundwater Hydraulics*
Research Methodology
Water Resource Management*
Hydraulics Structures
Environmental Fluid Mechanics*
Water Damage Management
Pra Thesis
Thesis
Scientific Publication
Operation & Maintenance of Hydraulics Structures
Ecohydrology
Watershed Vulnerability Assessment
1st Semester
2nd Semester
3rd Semester
4th Semester


Transportation Courses Flow Chart
1st Semester
Engineering System & Value
Applied Math
Traffic Control Engineering
Transportation System
2nd Semester
Research Methodology
Transportation Economics
Transportation Policy
Transportation Safety
Transportation Modelling
Advanced Road Geometry Design
Advanced Pavement Materials
Assets - Environment and Safety
3rd Semester
Pra Thesis
Railways Transportation Planning
Public Transport Management and Planning
Advanced Pavement Engineering
Road Pavement Maintenance
Logistics Transportation
Construction & Rehabilitation of Railway Infrastructure
4th Semester
Thesis
Scientific Publication
Specialization Courses
Transportation Planning Specialization
Highway Transportation Specialization
Railway Specialization


Management Specialization Courses Flow Diagram
1st Semester
Applied Math
Engineering System & Value
Project Management
Project Investment and Finance
2nd Semester
Research Methodology
Quality and Risk Management
Procurement Management, Contract & Claim Administration
Time and Cost Management
Policy and RK3K
OHS Risk and Costs
3rd Semester
Pra Thesis
Project Stakeholders and Communications
Infrastructure Asset Management
Legal and Institutional Framework
Construction Safety, Administration and Reporting
Construction Safety Monitoring and Evaluation
Accident Safety and Investigation Audit
4th Semester
Thesis
Scientific Publication
Project Management Courses
Infrastructure Management Courses
Management Contraction Courses
Construction Safety Engineering Courses
Specialization Courses

Curriculum Structure of Graduate Program on Civil Engineering

Code	Subject	SKS
	1st Semester	
ENCV 801 101	Applied Mathematics	3
ENCV 801 102	Engineering System and Value	3
Structural Courses		
ENCV 801 201	Advanced Material Mechanics	3
ENCV 801 202	Structural Dynamics	3
Geotechnical Courses		
ENCV 801 301	Advanced Soil Mechanics	3
ENCV 801 302	Advanced Geotechnic Investigation	3
Water Resource Management Courses		
ENCV 801 401	Groundwater Hydraulics	3
ENCV 801 402	Engineering Hydrology	3
Transportation Courses		
ENCV 801 501	Traffic Engineering and Control	3
ENCV 801 502	Transportation Systems	3
Construction Management Courses		
ENCV 801 601	Project Investment and Finance	3
ENCV 801 602	Project Management	3
	Total credits Semester 1 Major - Structure	12
	Total credits Semester 1 Major - Geotechnic	12
	Total credits Semester 1 Major - Water Resource Management	12
	Total credits Semester 1 Major - Transportation	12
	Total credits Semester 1 Major - PM / CM / IM / CSEM	12

	2nd Semester	
ENCV 802 103	Research Metodology	3
Structural Courses		
ENCV 802 201	Plate and Shell	3
ENCV 802 202	Finite Element Method	3
ENCV 802 203	High Rise Building Structure	3
ENCV 802 204	Advanced Steel Structure	3
ENCV 802 205	Special Topics on Structural Engineering	3
ENCV 802 206	Earthquake Resistance Building Structure	3
Geotechnical Courses		
ENCV 802 301	Slope Stabilization and Soil Improvement	3
ENCV 802 302	Environmental Geotechnics	3
ENCV 802 303	Numerical Methods in Geotechnical Engineering	3
Water Resource Management Courses		
ENCV 802 401	Water Resources Management	3
ENCV 802 402	Water Infrastructure Design	3
ENCV 802 403	Water Infrastructure Observation Maintenance Operational System	3
ENCV 802 404	Environmental Fluid Mechanics	3
Transportation Courses		
ENCV 802 501	Transportation Economics	3
ENCV 802 502	Transportation Planning and Policy	3
ENCV 802 503	Transportation Safety	3
Project Management Courses and Infrastructure Management Courses		
ENCV 802 601	Project Time and Cost Management	3
ENCV 802 602	Project Quality and Risk Management	3
ENCV 802 603	Procurement, Contract Administration and Claim	3
Construction Management Courses		
ENCV 802 601	Project Time and Cost Management	3

ENCV 802 602	Project Quality and Risk Management	3
ENCV 8026 03	Procurement, Contract Administration and Claim	3
ENCV 802 604	Policy and Safety plan in Construction	3
Construction Safety Engineering Management Courses		
ENCV 802 605	Risk and Cost of Safety	3
ENCV 802 604	Policy and Safety plan in Construction	3
	Total credits Semester 1 Major - Structure	12
	Total credits Semester 1 Major - Geotechnic	12
	Total credits Semester 1 Major - Water Resource Management	15
	Total credits Semester 1 Major - Transportation	12
	Total credits Semester 2 Major - Project Management	12
	Total credits Semester 2 Major - Construction Management	15
	Total credits Semester 2 Major - Infrastructure Management	12
	Total credits Semester 2 Major - Construction Safety Engineering Management	9
	Total credits Semester 2 Major - Environmental Engineering	12
	3rd Semester	
ENCV 800 104	Pre - Thesis	2
Structural Courses		
ENCV 803 201	Bridge Structure	3
ENCV 803 202	Advance Reinforce Concrete Technology	3
ENCV 803 203	Prestressed Concrete Structure	3
ENCV 803 204	Offshore Structure	3
Geotechnical Courses		
ENCV 803 301	Adv. Foundation Engineering & Deep Excavation	3
ENCV 803 302	Dynamics & Earthquake in Geotechnics	3
ENCV 803 303	Special Topics in Geotechnics	3
Water Resource Management Courses		
ENCV 803 401	Ecohydrology	3
ENCV 803 402	Watershed Vulnerability Assessment	3
ENCV 803 403	Water Damage Management	3
Transportation Courses		
ENCV 803 501	Transportation Model	3
ENCV 803 502	Public Transportation Planning and Control	3
ENCV 803 503	Advanced Road Geometric Design	3
ENCV 803 504	Advanced Road Pavement Engineering	3
ENCV 803 505	Advanced Road Pavement Materials	3
ENCV 803 506	Road Preservation Strategy	3
ENCV 803507	Railway Transportation Planning	3
ENCV 803 508	Logistic Transportation	3
ENCV 803 509	Environmental-Asset and Safety	3
ENCV 803 510	Railway Infrastructure Construction and Rehabilitation	3
Infrastructure Management Courses		
ENCV 803 601	Legal and Institutional Framework	3
ENCV 803 602	Infrastructure Asset Management	3
Construction Management Courses		
ENCV 803 603	Project Stakeholder and Communication	3
Construction Safety Engineering Management Courses		

ENCV 803 604	Construction Safety Plan, Administration and Report	3
ENCV 803 605	Construction Safety Monitoring and Control	3
ENCV 803 606	Safety Audit and Accident Investigation	3
	Total credits Semester 1 Major - Structure	10
	Total credits Semester 1 Major - Geotechnic	10
	Total credits Semester 1 Major - Water Resource Management	10
	Total credits Semester 1 Major - Transportation	10
	Total credits Semester 2 Major - Project Management	10
	Total credits Semester 2 Major - Construction Management	7
	Total credits Semester 2 Major - Infrastructure Management	10
	Total credits Semester 2 Major - Construction Safety Engineering Management	13
	Total credits Semester 2 Major - Environmental Engineering	7
	4th Semester	
ENCV 800 105	Thesis	6
ENCV 800 106	Scientific Publications	2
	Total credits Semester 1 Major - Structure	6
	Total credits Semester 1 Major - Geotechnic	6
	Total credits Semester 1 Major - Water Resource Management	6
	Total credits Semester 1 Major - Transportation	6
	Total credits Semester 1 Major - PM / CM / IM / CSEM	6
	Total	**40**

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800305	Journal Publication	8
	4th Semester	
ENEE800406	Master Thesis	10
	Total	40

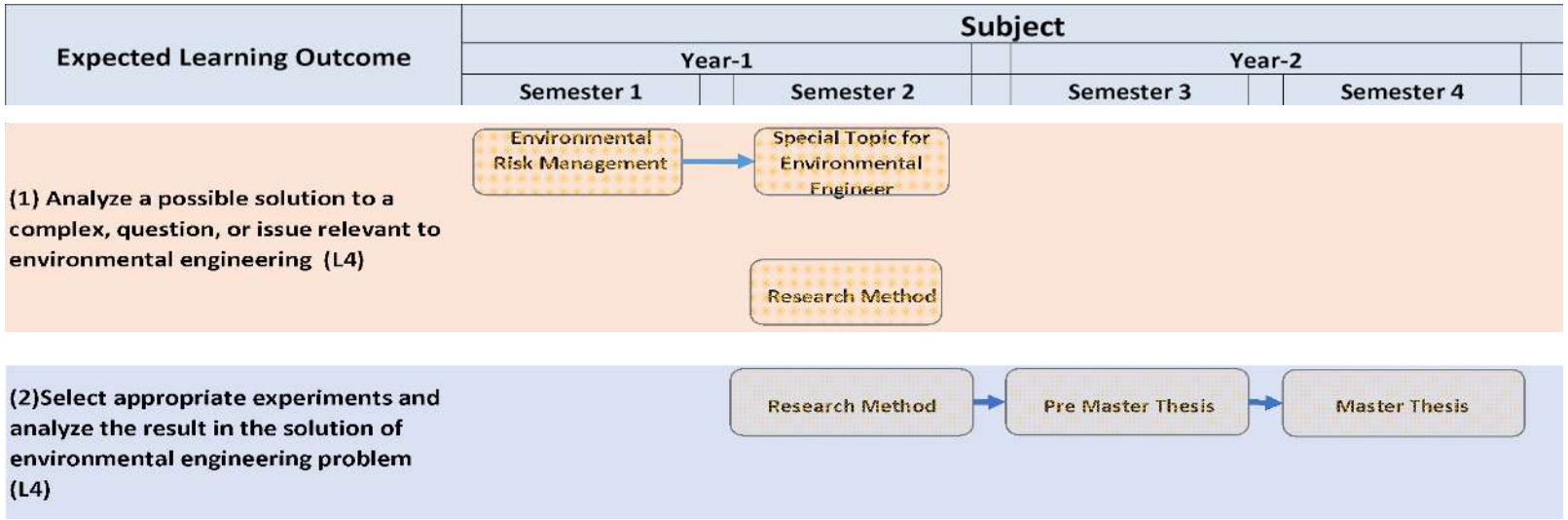
Graduate (Master) Program on Environmental Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Faculty of Engineering University Indonesia	
3.	**Programme Tittle**	Graduate Programme in Environmental Engineering	
4.	**Class**	Regular	
5.	**Final Award**	Graduate (Master) Program in Environmental Engineering (M.T)	
6 .	**Accreditation / Recognition**	Good	
7.	**Language(s) of Instruction**	Bahasa Indonesia	
8.	**Study Scheme (Full Time / Part Time)**	Full Time	
9.	**Entry Requirements**	Undergraduate (S1) or DIV graduates from university or Polytechnique with B accreditation from BAN-PT specified from science and technology major: A. Environmental Engineering B. Civil Engineering C. Chemical Engineering/ Bioprocess Engineering D. Chemistry E. Biology F. Nuclear Engineering G. Metallurgy Engineering H. HSE (Public Health)	
10.	**Study Duration**	Designed for 2 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	4	16
	Short (optional)	1	8
11.	**Aims of the programme is :** to produce environmental engineering master graduate that able analyze in depth, designing complex product, process or system in the field of water engineering, solid waste, air pollution, also contributing in fulfilling the Sustainable Development Goals		
12.	**Profile of Graduates:** 1. Environmental Engineering Master graduate who has a career in planning, design, implementation, evaluation, and environmental engineering system to support Sustainable Development Goals (SDGs) 2. Environmental Engineering Master graduate with ethics, professionalism, and capable develop their abilities in response to the dynamic development environmental engineering field.		

13.	Expected Learning Outcomes (ELO): 1. Analyze a possible solution to a complex, question, or issue relevant to environmental engineering (L4) 2. Select appropriate experiments and analyze the result in the solution of environmental engineering problem (L4) 3. Select appropriate advanced concepts and principles to solve complex problem in a specialty area appropriate to the practice of environmental engineering (L4) 4. Analyze the sustainable performance of complex environmental engineering project from a system perspective (L4) 5. Analyze effective communication to technical and nontechnical audiences (L5) 6. Analyze new knowledge, skills, and attitudes relevant to environmental engineering acquired through self-directed learning (l4)		
14.	**Classification of Subjects**		
No.	**Classification**	**Credit Hours (SKS)**	**Percentage**
i	**University General Subjects**	**-**	**-**
ii	**Basic Engineering Subjects**	**-**	**-**
iii	**Core Subjects**	**12**	**30.0%**
iv	**Mata Kuliah Specialization**	**15**	**37.5%**
v	**Elective**	**3**	**7.5%**
vi	**Scientific Publication, Pre Master Thesis, Master Thesis**	**10**	**25.0%**
	Total	**40**	**100 %**
	Total Credit Hours to Graduate		**40 SKS**

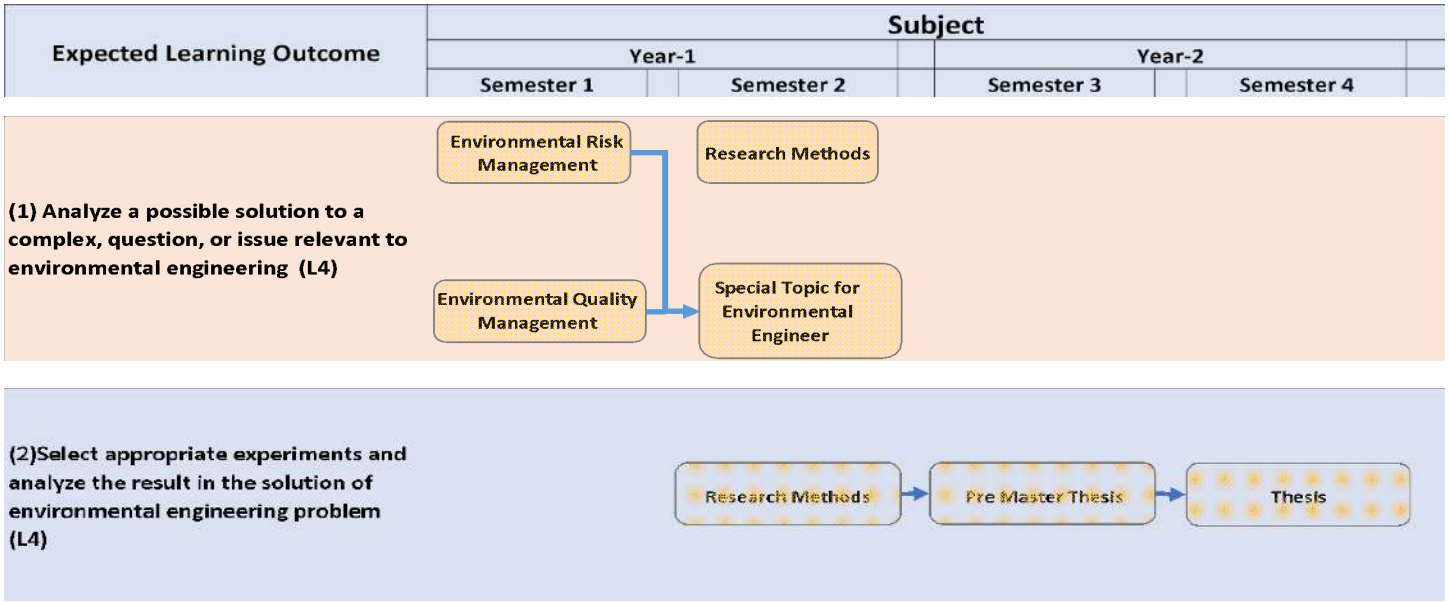
Flow Diagram Of Subject to Reach ELO in Environmental Engineering Master Programme specialization : Water Quality Technology and Engineering

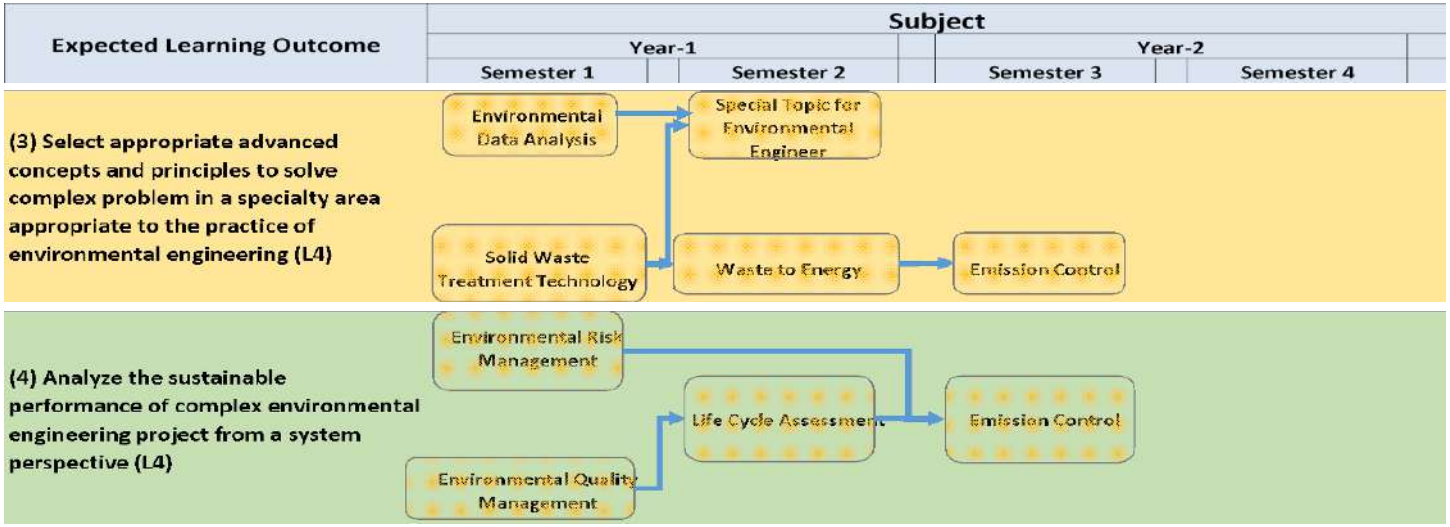


Expected Learning Outcome	Subject			
	Year-1		Year-2	
	Semester 1	Semester 2	Semester 3	Semester 4
(3) Select appropriate advanced concepts and principles to solve complex problem in a specialty area appropriate to the practice of environmental engineering (L4)	Environmental Data Analysis Advanced Water Engineering	Special Topic for Environmental Engineer Sustainable Environmental Infrastructure	Contamination and Environmental Remediation	
(4) Analyze the sustainable performance of complex environmental engineering project from a system perspective (L4)	Environmental Risk Management Instrumentation and Measurement of Environmental Quality	Urban Wastewater Quality Management	Contamination and Environmental Remediation	

Expected Learning Outcome	Subject			
	Year-1		Year-2	
	Semester 1	Semester 2	Semester 3	Semester 4
(5). Analyze effective communication to technical and nontechnical audiences	Environmental Data Analysis		Pre Master Thesis	Scientific Publication
(6) Analyze new knowledge, skills, and attitudes relevant to environmental engineering acquired through self-directed learning (L4).			Pre Master Thesis	Master Thesis

Flow Diagram Of Subject to Reach ELO in Environmental Engineering Master Programme specialization: Environmental Quality Management

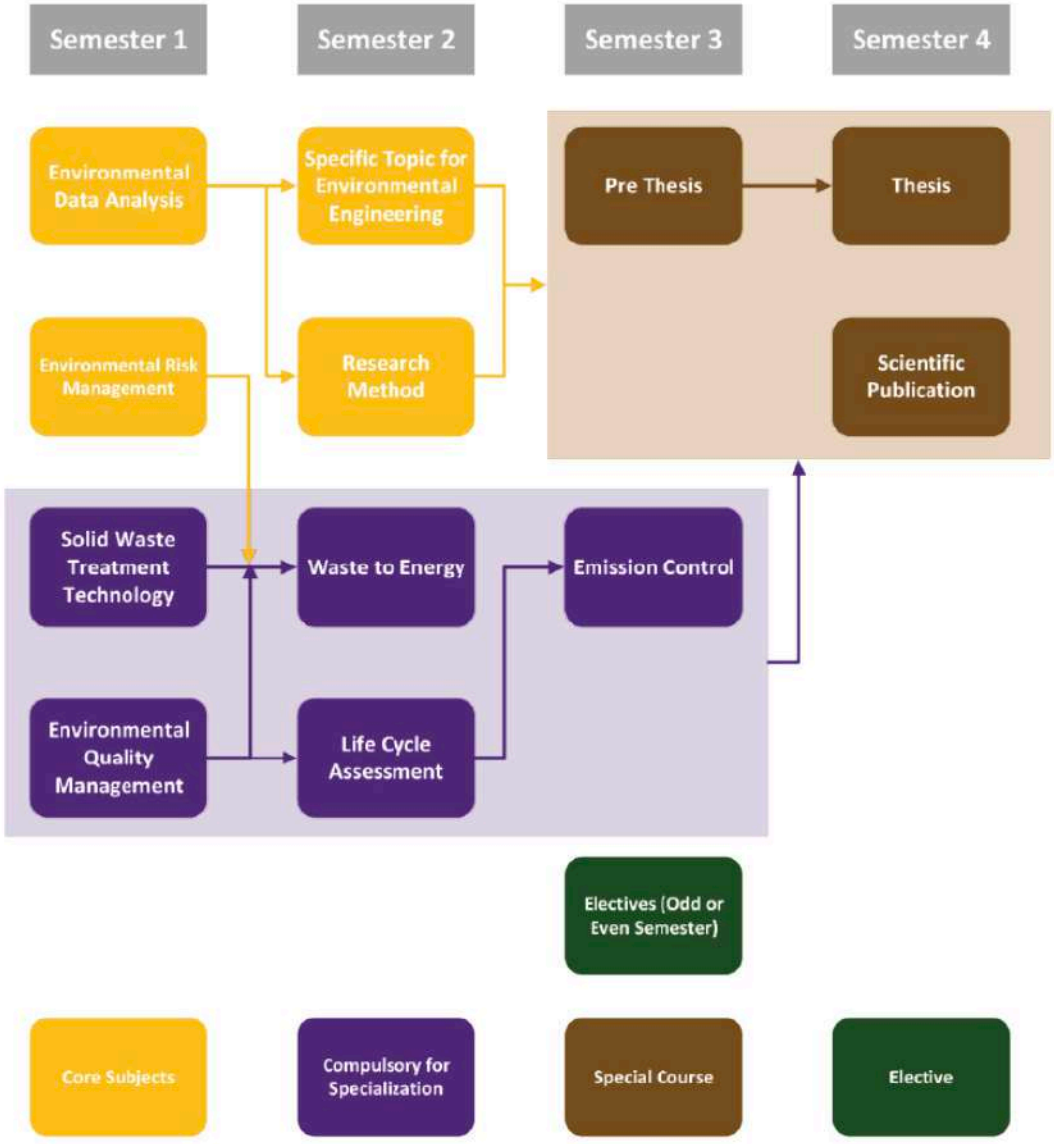



Expected Learning Outcome
Subject
Year-1
Year-2
Semester 1
Semester 2
Semester 3
Semester 4
(3) Select appropriate advanced concepts and principles to solve complex problem in a specialty area appropriate to the practice of environmental engineering (L4)
Environmental Data Analysis
Special Topic for Environmental Engineer
Solid Waste Treatment Technology
Waste to Energy
Emission Control
(4) Analyze the sustainable performance of complex environmental engineering project from a system perspective (L4)
Environmental Risk Management
Life Cycle Assessment
Emission Control
Environmental Quality Management

Expected Learning Outcome	Subject			
	Year-1		Year-2	
	Semester 1	Semester 2	Semester 3	Semester 4
(5). Analyze effective communication to technical and nontechnical audiences	Environmental Data Analysis		Pre Master Thesis	Scientific Publication
(6) Analyze new knowledge, skills, and attitudes relevant to environmental engineering acquired through self-directed learning (L4).			Pre Master Thesis	Master Thesis

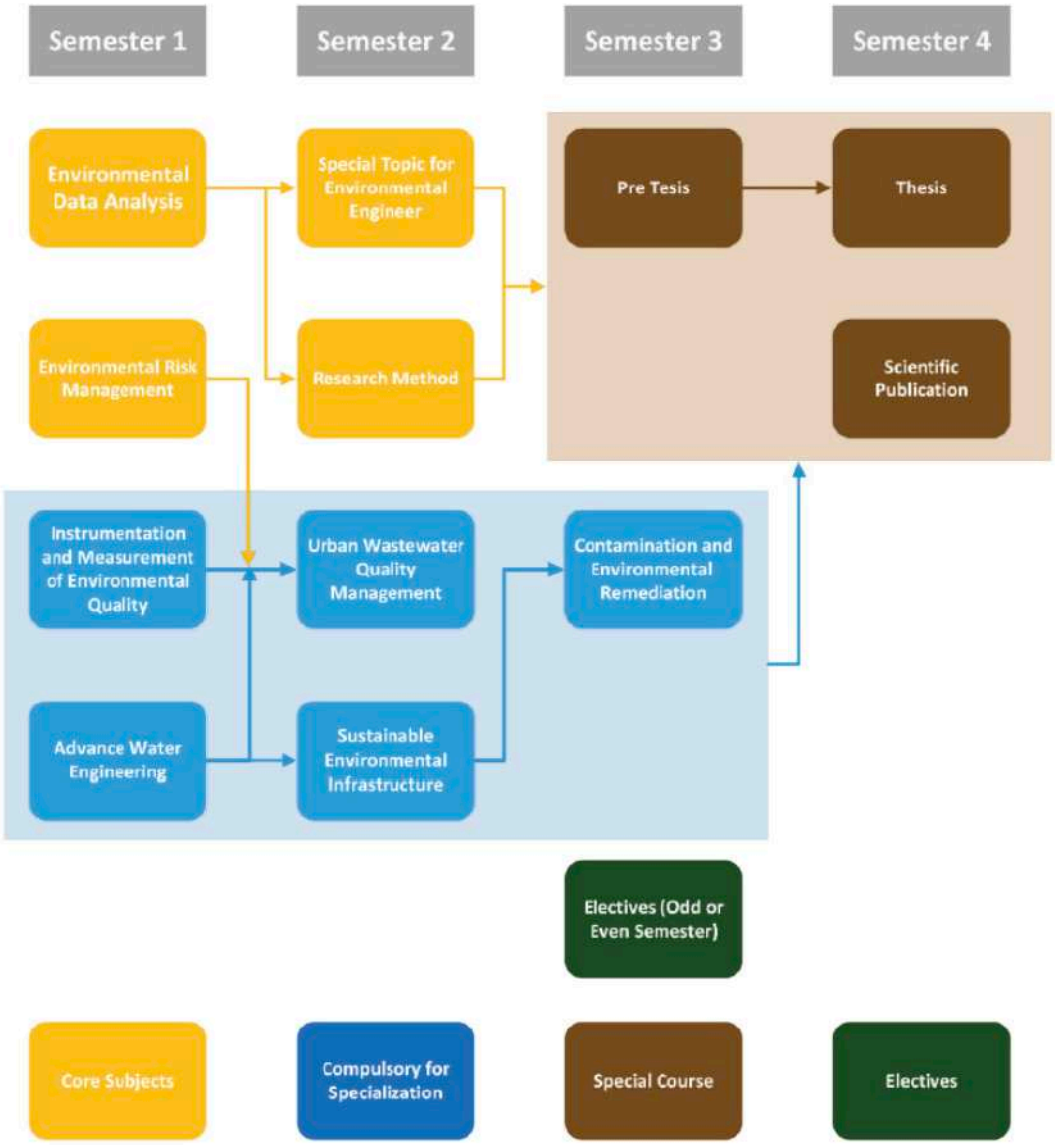
Flow Diagram of Subjects in Environmental Engineering Master Programme

Environmental Quality Management specialization



Flow Diagram of Subjects in Environmental Engineering Master Programme

Water Quality Technology and Engineering specialization



Curriculum Structure in Environmental Engineering Master Programme

Subjects Code	Semester 1	SKS MKL	SKS TRKA
ENEV 801 101	Environmental Data Analysis	3	3
ENEV 801 102	Environmental Risk Management	3	3
ENEV 801 201	Environmental Quality Management	3	P
ENEV 801 202	Solid Waste Treatment Technology	3	P
ENEV 801 301	Advanced Water Engineering	P	3
ENEV 801 302	Instrumentation and Measurement of Environmental Quality	P	3
	Compulsory Course Environmental Quality Management	12	
	Compulsory Course Water Quality Technology and Engineering		12
Subjects Code	**Semester 2**	**SKS MKL**	**SKS TRKA**
ENEV 802 103	Research Method	3	3
ENEV 802 104	Special Topic for Environmental Engineer	3	3
ENEV 802 201	Waste to Energy	3	P
ENEV 802 202	Advanced Water Engineering	3	P
ENEV 802 301	Urban Wastewater Quality Management	P	3
ENEV 802 302	Sustainable Environmental Infrastructure	P	3
	Compulsory Course Environmental Quality Management	12	
	Compulsory Course Water Quality Technology and Engineering		12
Subjects Code	**Semester 3**	**SKS MKL**	**SKS TRKA**
ENEV 800 105	Pre Master Thesis	2	2
ENEV 803 201	Emission Control	3	P
ENEV 803 301	Contamination and Environmental Remediation	P	3
	Compulsory Course Environmental Quality Management	5	
	Compulsory Course Water Quality Technology and Engineering		5
	Elective	3	3
	Total	8	8
Subjects Code	**Semester 4**	**SKS MKL**	**SKS TRKA**
ENEV 800 106	Master Thesis	6	6
ENEV 800 107	Scientific Publication	2	2
	Total	8	8

Information :

MKL : Environmental Quality Management Specialization

TRKA : Water Quality Technology and Engineering

Elective Courses

Subjects Code	Elective Courser Odd Semester	SKS
ENEV 803 106	Environmental System Dynamics	3
Subjects Code	**Elective Courser Even Semester**	**SKS**
ENEV 802 105	Environmental Audit	3

Master By Research

Code	Subject	SKS
	1st Semester	
ENEV800102	Research Proposal Examination	4
ENEV800101	Scientific Seminar	8
	2nd Semester	
ENEV800203	Proceeding Publication	4
ENEV800204	Research Result Examination	6
	3rd Semester	
ENEV800305	Journal Publication	8
	4th Semester	
ENEV800406	Master Thesis	10

Master Program in Mechanical Engineering

Program Specification

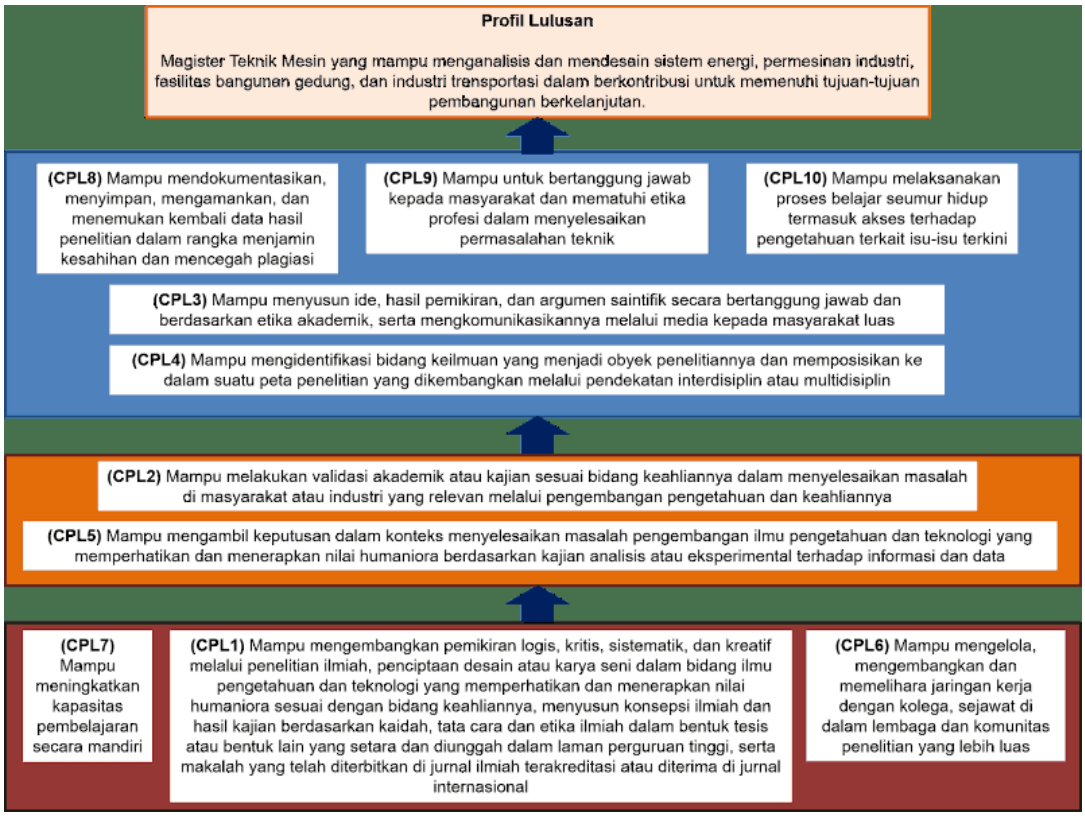
1.	**Awarding Institution**	Universitas Indonesia	
2.	**Organizer Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Study Programme**	Mechanical Engineering Masters Program	
5.	**Visi dan Misi Prodi**	VISI As a center of research and education services that excel in mechanical engineering MISI Carry out research and research-based education for the development of science and technology in the field of mechanical engineering, and conduct research and education that seeks its use to improve the level and quality of people's lives and humanity.	
6.	**Classes**	Reguler, Research	
7.	**Final Award**	Magister Teknik (MT.)	
8.	**Accreditation / Recognition**	Accreditation of BAN-PT, with status A.	
9.	**Languages**	Bahasa Indonesia and English	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entrance Requirements**	Bachelor in Engineering, Mathematics and Physics; and pass the entrance exam	
12.	**Duration of Study**	Designed for 2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	17
	Short (opsional)	**1**	**8**
13.	**Aims of the programme:** 1. Producing Mechanical Engineering Masters Program graduates who meet the specified learning outcomes 2. Contribute to the development of scientific and mechanical technology 3. Contribute to improving the quality of society and industry		
14.	**Profile of Graduates:** Masters of Mechanical Engineering who is able to analyze and design energy systems, industrial machinery, building facilities, and the transportation industry in contributing to meeting the goals of sustainable development.		

15.	**Expected Learning Outcomes (ELO) :** 4. Able to develop logical, critical, systematic and creative thinking through scientific research, the creation of designs or works of art in the fields of science and technology that pay attention to and apply humanities in accordance with their fields of expertise, compile scientific conceptions and study results based on rules, procedures and scientific ethics in the form of a thesis or other equivalent form and uploaded on the university website, as well as papers that have been published in accredited scientific journals or accepted in international journals 5. Able to carry out academic validation or study according to their area of expertise in solving problems in the relevant society or industry through developing their knowledge and expertise 6. Able to arrange ideas, results of thought, and scientific arguments responsibly and based on academic ethics, and communicate them through the media to the wider community 7. Able to identify scientific fields that are the object of research and position them into a research map that is developed through an interdisciplinary or multidisciplinary approach 8. Able to take decisions in the context of solving problems in developing science and technology that pay attention to and apply humanities values based on analytical or experimental studies of information and data 9. Able to manage, develop and maintain a network of colleagues, colleagues within the wider research institute and community 10. Able to increase the learning capacity independently 11. Able to document, store, secure, and rediscover research data in order to ensure validity and prevent plagiarism 12. Able to be responsible to the community and to comply with professional ethics in solving technical problems 13. Able to carry out a lifelong learning process including access to knowledge related to current issues

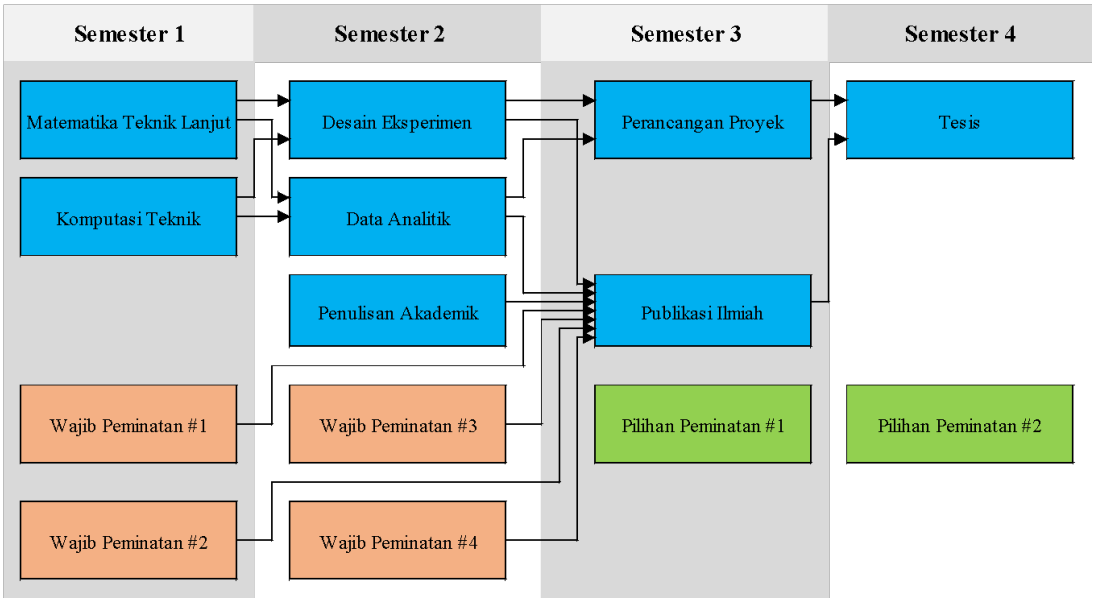
	As a University of Indonesia student, every graduate of the Mechanical Engineering Masters program also has the following competencies: 1. Able to use information communication technology; 2. Able to think critically, creatively, and innovatively and have an intellectual curiosity to solve problems at the individual and group level; 3. Able to use spoken and written languages in Indonesian and English well for academic and non-academic activities; 4. Having integrity and being able to respect others; 5. Able to identify various entrepreneurial efforts characterized by innovation and independence based on ethics In the Mechanical Engineering Masters Program 2020 Curriculum, there are 6 (six) Specialization programs that can be selected by students according to their academic abilities and interests, namely in the Specialization field: 1. Energy Conversion and Conservation 2. Fire and Building Safety Technology 3. Design and Manufacturing 4. Manufacturing and Automation Systems 5. Advanced Vehicle Engineering 6. Maritime Technology and Resources 7. More specifically, in addition to the 10 items of competency as mentioned above, the graduates of the Master of Engineering Program will have competencies in accordance with their fields of specialization as follows: 1. Competence in the field of Energy Conversion and Conservation: Able to analyze, implement and design mechanical systems that utilize laws and current phenomena and technologies related to the field of Energy Conversion and conservation. 2. Competence in the field of Fire and Building Safety Technology: able to analyze, implement and design efficient building utility systems, and performance-based fire safety for buildings and industrial buildings. 3. Competence in the field of Design and Manufacturing: able to analyze, implement and design products and manufacturing processes and their assembly by integrating the latest design and manufacturing technology. 4. Competence in the field of Manufacturing and Automation Systems: able to analyze, implement and design manufacturing and automation systems used for the process of developing and manufacturing manufactured products by utilizing the latest manufacturing and automation technology. 5. Competence in the field of Advanced Vehicle Engineering: able to analyze, and design vehicle systems and heavy equipment for transportation, the construction industry, minerals and energy. 6. Competence in the field of Technology and Maritime Resources: able to analyze, and design systems and apply maritime technology that is appropriate for sustainable utilization of maritime resources.
16.	**Composition of Subjects**

No.	Classification	Credit Hours (SKS)	Percentage
i	**Study Program Mandatory Subjects**	10	25,00
ii	**Specialization Mandatory Subjects**	16	40,00
iii	**Elective Specialization Subjects**	8	20,00
iv	**Publication, Final Projects**	6	15,00
	Total	40	100 %

Learning Outcomes, Mechanical Engineering Masters Program



Course Flowchart to Achieve Graduate Learning Outcomes



Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
1. Mampu mengembangkan pemikiran logis, kritis, sistematik, dan kreatif melalui penelitian ilmiah, penciptaan desain atau karya seni dalam bidang ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora sesuai dengan bidang keahliannya, menyusun konsepsi ilmiah dan hasil kajian berdasarkan kaidah, tata cara dan etika ilmiah dalam bentuk tesis atau bentuk lain yang setara dan diunggah dalam laman perguruan tinggi, serta makalah yang telah diterbitkan di jurnal ilmiah terakreditasi atau diterima di jurnal internasional	Matematika Teknik Lanjut	Desain Eksperimen	Perancangan Proyek	Tesis

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
2. Mampu melakukan validasi akademik atau kajian sesuai bidang keahliannya dalam menyelesaikan masalah di masyarakat atau industri yang relevan melalui pengembangan pengetahuan dan keahliannya	Matematika Teknik Lanjut Komputasi Teknik	Data Analitik		

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
3. Mampu menyusun ide, hasil pemikiran, dan argumen saintifik secara bertanggung jawab dan berdasarkan etika akademik, serta mengkomunikasikannya melalui media kepada masyarakat luas	Wajib Peminatan #1 Wajib Peminatan #2	Penulisan Akademik Wajib Peminatan #3 Wajib Peminatan #4	Publikasi Ilmiah	

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
4. Mampu mengidentifikasi bidang keilmuan yang menjadi obyek penelitiannya dan memposisikan ke dalam suatu peta penelitian yang dikembangkan melalui pendekatan interdisiplin atau multidisiplin	Wajib Peminatan #1 Wajib Peminatan #2	Wajib Peminatan #3 Wajib Peminatan #4		

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
5. Mampu mengambil keputusan dalam konteks menyelesaikan masalah pengembangan ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora berdasarkan kajian analisis atau eksperimental terhadap informasi dan data	Komputasi Teknik	Data Analitik		Tesis

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
6. Mampu mengelola, mengembangkan dan memelihara jaringan kerja dengan kolega, sejawat di dalam lembaga dan komunitas penelitian yang lebih luas		Penulisan Akademik		

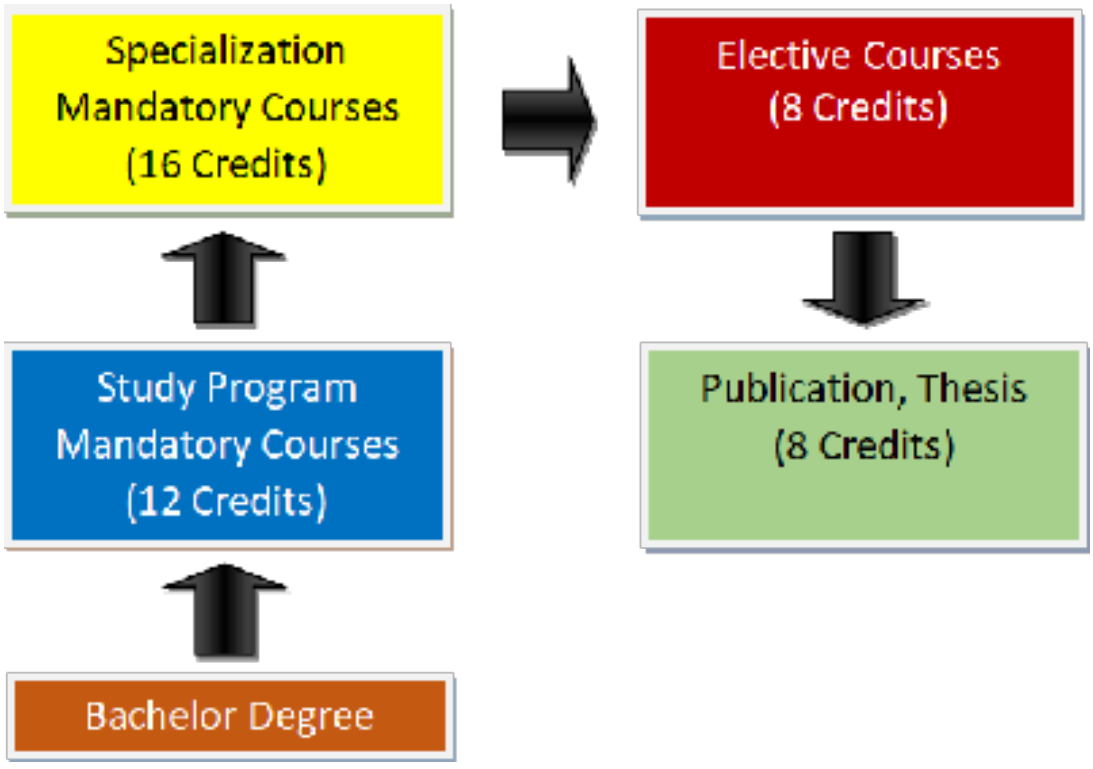
Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
7. Mampu meningkatkan kapasitas pembelajaran secara mandiri			Pilihan Peminatan #1	Pilihan Peminatan #2

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
8. Mampu mendokumentasikan, menyimpan, mengamankan, dan menemukan kembali data hasil penelitian dalam rangka menjamin kesahihan dan mencegah plagiasi		Penulisan Akademik →	Publikasi Ilmiah →	Tesis

Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
9. Mampu untuk bertanggung jawab kepada masyarakat dan mematuhi etika profesi dalam menyelesaikan permasalahan teknik			Perancangan Proyek	

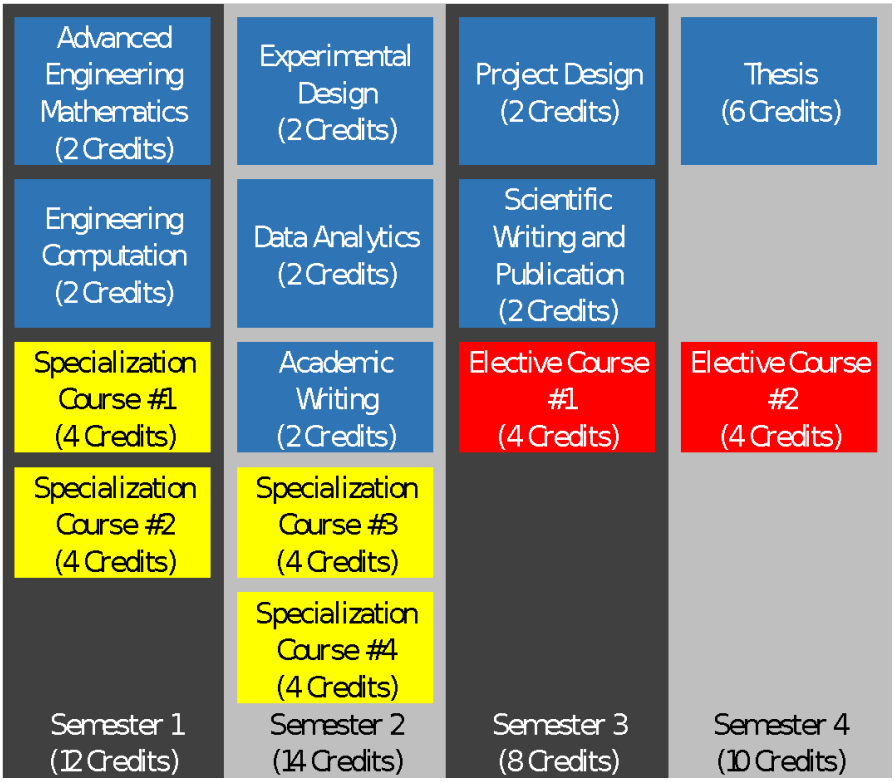
Capaian Pembelajaran	Tahun ke-1		Tahun ke-2	
	Semester 1	Semester 2	Semester 3	Semester 4
10. Mampu melaksanakan proses belajar seumur hidup termasuk akses terhadap pengetahuan terkait isu-isu terkini			Pilihan Peminatan #1	Tesis Pilihan Peminatan #2

Curriculum Structure



Subjects Flowchart

During the study period, students of the Mechanical Engineering Masters program can choose and arrange their courses flexibly according to the amount of credits in each course. The following are general scenarios for the subject flow diagram for the Mechanical Engineering Masters program:



Curriculum Structure of Mechanical Engineering Masters Program

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	4
ENME802004	Engineering Computation	8
	Specialization Course #1	4
	Specialization Course #2	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
	Specialization Course #3	4
	Specialization Course #4	4
	Subtotal	**14**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	**8**
	4th Semester	
ENME800007	Thesis	6
	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Specialization in Energy Conversion and Conservation

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	2
ENME802004	Engineering Computation	2
ENME801101	Advanced Thermodynamics	4
ENME801102	Advanced Fluid Dynamics and Heat Transfer	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
ENME802103	Energy Optimization System	4
ENME803104	Thermal Power Generation	4
	Subtotal	**10**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	**8**
	4th Semester	
ENME800007	Thesis	6
	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Elective Courses of Specialization in Energy Conversion and

Code	Subject	SKS
	3rd Semester	
ENME803105	Internal Combustion Engine	4
ENME803106	Applied Flow Measurement and Visualization	4
ENME803107	CFD Application	4
ENME803124	Energy Audit	4
ENME803196	Jet and Rocket Propulsion	4
	4th Semester	
ENME804109	Heat and Mass Transfer Engineering	4
ENME804110	Combustion Engineering	4
ENME804111	Aerodynamics Engineering	4
ENME803108	Refrigeration Engineering	4
ENME804112	Turbomachinery	4

Conservation

Specialization in Fire and Building

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	2
ENME802004	Engineering Computation	2
ENME802133	Fire and Building science	4
ENME801113	Ventilation and Air Conditioning System	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
ENME802131	Fire Protection System	4
ENME802132	Building Mechanical and Electrical System	4
	Subtotal	**14**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	8
	4th Semester	
ENME800007	Thesis	6
	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Elective Courses of Specialization in Fire and Building Safety Technology

Code	Subject	SKS
	3rd Semester	
ENME803134	Fire Dynamics and Modelling	4
ENME803115	Clean Room	4
ENME803116	Plumbing and Waste Water Treatment System	4
ENME803117	Building Environment Assessment	4
ENME803135	Fire Fighting Engineering and Strategy	4
ENME803136	Fire Safety Management in Building	4
ENME802103	Energy System Optimization	4
ENME804118	Mechanical system for Building	4
ENME804119	Accoustics	4
ENME804137	Fire Investigation Engineering	4
ENME804138	Fire Safety Analysis	4
ENME804133	Forest and Land Fires	4
ENME804139	Fire Protection in Process Industry	4

Specialization in Design and Manufacturing

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	2
ENME802004	Engineering Computation	2
ENME801140	Materials and Manufacturing Processes	4
ENME801141	Product Design and Development Methodology	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
ENME802142	Design and Manufacturing Technology Integration	4
ENME803143	Mechanical Failure	4
	Subtotal	**14**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	**8**

	4th Semester	
ENME800007	Thesis	6
ENME800008	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Elective Courses of Specialization in Design and Manufacturing

Code	Subject	SKS
	3rd Semester	
ENME803144	Dynamics of Mechanical System	4
ENME803145	Composite Product Development	4
ENME803146	Finite Element and Multi-physics	4
ENME803147	Toy Production Design	4
ENME803161	Micromachining Process	4
ENME803154	Quality and Production Management System	4
ENME803174	**Risk Management**	**4**
	4th Semester	
ENME804148	Design for Manufacturing and Assembly	4
ENME804149	Noise and Vibration Control	4
ENME804162	Laser Assisted Process	4
ENME804155	**CAD/CAM**	**4**
ENME804156	**Manufacturing Perfor-mance Assessment**	**4**

Specialization in Manufacturing and Automation Systems

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	2
ENME802004	Engineering Computation	2
ENME801150	Management of Manufac-turing Information System	4
ENME801151	Manufacturing System and Processes	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
ENME802152	Automation and Robotics	4
ENME803153	Machine Vision System	4
	Subtotal	**14**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	**8**
	4th Semester	
ENME800007	Thesis	6
	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Elective Courses of Specialization in Manufacturing and Automation Systems

Code	Subject	SKS
	3rd Semester	
ENME803154	Quality and Production Management System	4
ENME803174	Risk Management	4
ENME803144	Dynamics of Mechanical System	4
ENME803145	Composite Product Development	4
ENME803146	Finite Element and Multiph-ysics	4
ENME803161	Micromachining Process	4
	4th Semester	
ENME804155	CAD/CAM	4
ENME804156	Manufacturing Perfor-mance Assessment	4
ENME804148	Design for Manufacturing and Assembly	4
ENME804162	Laser Assisted Process	4

Specialization in Advanced Vehicle Engineering

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	2
ENME802004	Engineering Computation	2
ENME801163	Vehicle Engineering and Heavy Duty Equipment	4
ENME801164	Prime Mover and Power-train System	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
ENME802165	Vehicle Frame and Body Engineering	4
ENME803166	Vehicle Control System	4
	Subtotal	**14**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	**8**
	4th Semester	
ENME800007	Thesis	6
	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Elective Courses of Specialization in Advanced Vehicle Engineering

Code	Subject	SKS
	3rd Semester	
ENME803167	Modern Vehicle Technology	4
ENME803195	Oil and Gas Drilling Equipment	4
ENME804168	Railway Vehicle Engineering	4
ENME804197	Handling and Construction Equipment	4
ENME804198	Aircraft Design and Performance	4

Elective Courses of Specialization in Advanced Vehicle Engineering

Code	Subject	SKS
	1st Semester	
ENME801002	Advanced Engineering Mathematics	2
ENME802004	Engineering Computation	2
ENME801102	Advanced Fluid Dynamics and Heat Transfer (Maritime)	4
ENME801140	Materials and Manufacturing Processes (Maritime)	4
	Subtotal	**12**
	2nd Semester	
ENME802002	Experimental Design	2
ENME802006	Data Analytics	2
ENME802003	Academic Writing	2
ENME802181	Maritime Engineering and Management	4
ENME803182	Ocean Energy	4
	Subtotal	**14**
	3rd Semester	
ENME802007	Project Design	2
ENME800005	Scientific Publication	2
	Elective Course #1	4
	Subtotal	**8**
	4th Semester	
ENME800007	Thesis	6
	Elective Course #2	4
	Subtotal	**10**
	Total	**44**

Elective Courses of Specialization in Technology and Maritime Resources

Code	Subject	SKS
	3rd Semester	
ENME803183	Marine and Offshore Structure	4
ENME803184	Sea Transport and Port Management	4
ENME803185	Maritime Law and Regulation	4
ENME804192	**Supply Chain Technology**	**4**
ENME804193	**Cold Storage Technology**	**4**
	4th Semester	
ENME804186	Special Ship	4
ENME804187	Ship Production Management	4
ENME804189	Maritime Safety	4
ENME804190	Advanced Welding Engineering	4
ENME804191	Port Operation and Planning	4

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10
	Total	40

Master Program in Electrical Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Programme Title**	Master Program in Electrical Engineering	
5.	**Study Programme Vision and Mission**	**Vision** To become an institution which can give solutions to both national and global problems and challenges as well as being independent and excellent in South-East Asia **Mission** a. Organizing education based on good university governance concept in order to produce graduates who are knowledgeable, international minded, and have entrepreneurship skills b. Increasing facility, research funding, and participation in applied research and new findings which can give solutions to national and global problems c. Applying science and appropriate technology to support community services based on people and industrial needs	
6.	**Class**	Reguler, Special, Research	
7.	**Final Award**	Magister Teknik (MT.)	
8.	**Accreditation / Recognition**	BAN-PT: A- accredited	
9.	**Language (s) of Instruction**	Bahasa Indonesia dan English (for International class)	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	Pass the entrance exam, and pass S1/d IV from electrical engineering study program, mechanical engineering, computer science, informatic engineering, mathematic, physics, and equivalent program	
12.	**Study Duration**	Designed for 2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	16
	Short (opsional)	**1**	**8**
13.	**Aims of the programme:** "Producing master in electrical engineering graduates who can analyse problems, give solutions logically, systematically and practically supported by the use of appropriate method. The graduates also are wished to design and develop both software and hardware, and always being up-to-date to the development of technology"		
14.	**Profile of Graduates:** Magister of engineering who is able to analyze and design in-depth on products, process and technology system in complex electrical engineering based on professional ethics in contributing to sustainable development goals		

15. Expected Learning Outcomes (ELO) :

General Outcomes :

1. Able to generate scientific work effectively, both oral and written
2. Able to provide recommendations as solution to society based on professional ethics in electrical engineering
3. Able to develop themselves for continuous learning, following the development of science, technology and relevant contemporary issues in the field of electrical engineering.
4. Able to evaluate data by applying data analysis and processing methods.
5. Able to formulate problem solving in the field of electrical engineering using appropriate research methods.
6. Able to develop innovative technology of electrical engineering industry in the industrial era 4.0

Majoring in Power and Smart System

1. Able to specify technical and non-technical aspects in the formulation and utilization of the intelligent network-based electricity industry.
2. Able to recommend strategies to improve efficiency, quality, and power quality in electricity systems based on intelligent networks.
3. Able to integrate new and renewable energy power plants with smart electricity grid systems.
4. Able to assess strategies and risk mitigation in the development of power systems that are reliable, safe, and environmentally friendly.

Majoring in Telecommunication and Smart Wireless System

5. Able to evaluate the latest technology in the field of telecommunications technology and smart wireless systems
6. Able to design systems and /or devices for smart wireless telecommunications systems

Majoring in Electronic and Intelligent Embedded System

1. Able to design electronic / photonic devices and / or complex electronic systems
2. Able to implement complex smart embedded systems in order to contribute to solving problems in the engineering field

Majoring in Cyber Security and Future Internet

1. Able to design a comprehensive information and network security system that meets the security standards.
2. Able to evaluate the security incidents handling and forensic methods of digital data that are appropriate.
3. Able to evaluate the development of computer and future Internet technologies.

Majoring in Automation and Data Analytic Engineering

1. Able to design industrial device control systems
2. Able to develop smart automation systems based on data engineering
3. Able to design integrated automation system

Majoring in Data Engineering and Business Intelligence

1. Able to design processing engineering, analysis, and data visualization which is efficient and scalable
2. Able to develop aspects of leadership in the digital economic ecosystem (digital leadership)

Majoring in Telecommunication Management

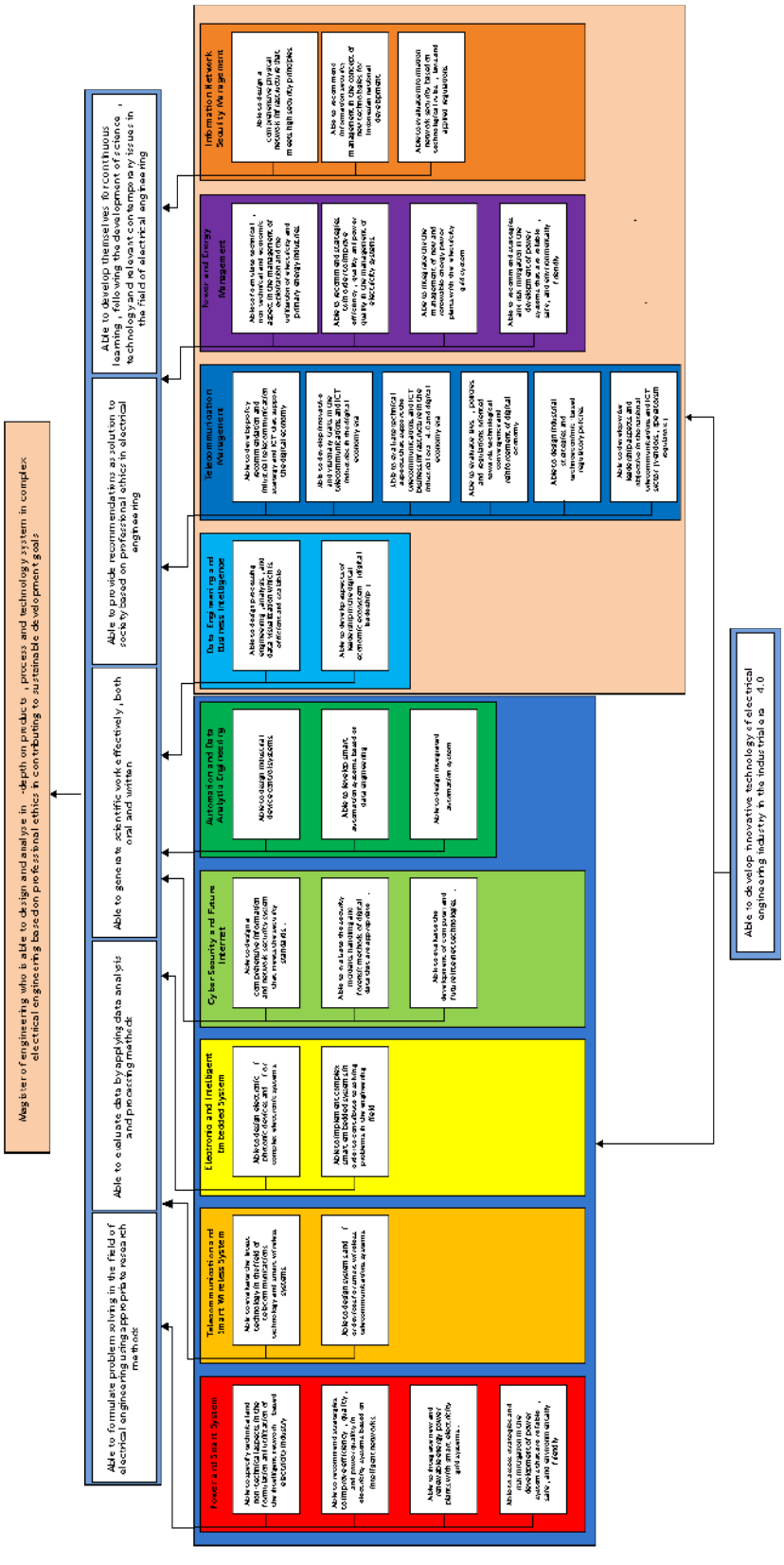
1. Able to develop policy recommendation and industrial telecommunication strategy and ICT that support the digital economy
2. Able to develop innovative and visionary traits in the telecommunications and ICT industries in the digital economy era
3. Able to evaluate technical aspects that support the telecommunications and ICT business infrastructure in the industrial era 4.0 and digital economy era

	4. Able to evaluate information network security based on technological rules, laws and applied regulations 5. Able to design industrial strategies and technoeconimic-based regulatory policies 6. Able to develop wise leadership aspects and objective in the national telecommunications and ICT sector (vendors, operatorsm regulators) Majoring in Power and Energy Management 1. Able to formulate technical, non-technical and economic aspect in the management of exploitation and the utilization of electricity and primary energy industries 2. Able to recommend strategies to in order to improve efficiency, quality and power quality in the management of electricity systems 3. Able to integrate the the management of new and renewable energy power plants with the electricity grid system 4. Able to recommend strategies and risk mitigation in the development of power systems that are reliable, safe, and environmentally friendly. Majoring in Information Network Security Management 1. Able to design a comprehensive physical network infrastructure that meets high security principles 2. Able to recommend information security management in the concept of new technologies for Indonesian national development

16.	**Composition of Subjects**		
No.	**Classification**	**Credit Hours (SKS)**	**Percentage**
i	**Core Subjects**	**21**	**47,7%**
ii	**Majoring Course**	**19**	**43,2%**
iii	**Optional Course**	**4**	**9,1%**
	Total	**44**	**100 %**
	Total Credit Hours to Graduate		**44 SKS**

Career Prospects

The graduates of this program have been employed in various industrial companies such as power engineering, IT, electronic, oil & gas, telecommunication and other related inductries. Some of graduates who have been employed before have opportunity to get promotion of career path to a higher level. Some occupation or job titles that are suitable for this program are electrical engineer, software engineer telecommunication engineer, process engineer, control engineer, instrumentation engineer, program manager, project manager, technical manager, regulator, professional lecturers and researchers.


Learning Outcomes Flow Diagram
Magister of engineering who is able to design and analyze in - depth on products , process and technology system in complex electrical engineering based on professional ethics in contributing to sustainable development goals
Able to formulate problem solving in the field of electrical engineering using appropriate research methods
Able to evaluate data by applying data analysis and processing methods
Able to generate scientific work effectively , both oral and written
Able to provide recommendations as solution to society based on professional ethics in electrical engineering
Able to develop themselves for continuous learning , following the development of science , technology and relevant contemporary issues in the field of electrical engineering
Able to develop innovative technology of electrical engineering industry in the industrial era 4.0
Power and Smart System
Able to specify technical and non-technical aspects in the formulation and formulation of the problem of power system based on electricity industry
Able to recommend strategies, to improve efficiency , quality , electricity systems based on intelligent networks
Able to analyze new and renewable energy power plants with smart electricity grid systems
Able to assess strategies and risk mitigation in the development of power electrical systems that are reliable , safe , and environmentally friendly
Telecommunications and Smart Wireless System
Able to solve basic technology in the field of telecommunications , information technology and wireless networks systems
Able to design system and / or telecommunications subsystems
Electronic and Intelligent Embedded System
Able to design electronic / electronic devices and / or computer-based systems
Able to implement complex smart embedded system in solving problems in the engineering field
Cyber Security and Future Internet
Able to design a comprehensive information and network security system that meets the applicable standards .
Able to analyze the security models including anti-forensic methods of digital data use appropriately .
Able to keep up the development of new and future technologies .
Automation and Industrial Digitalization
Able to design integrated device control systems
Able to develop smart automation models as data engineering
Able to design integrated automation system
Data Engineering and Business Intelligence
Able to design a process using data analysis and data visualization to efficient and scalable
Able to develop the potential of new implementation digital economic ecosystem digital leadership !
Telecommunication Management
Able to develop capacity , accommodation and natural telecommunication systems in the digital economy
Able to develop implementation and maintenance of ICT networks in the digital economy era
Able to analyze technical aspects and telecommunications policies in the digital economy era 4.0 and digital society era
Able to evaluate the , policies , and regulations related to science and technological advancements in the digital economy
Able to design industrial or digital technoeconomic based regulatory policies
Able to develop the basic principles and telecommunications and IT regulations in the digital society era (4.0)
Power and Energy Management
Able to formulate scientific , non-technical economic aspects in the management of electricity and primary energy industries
Able to recommend strategies to improve the quality in the management of electricity systems
Able to integrate electricity systems with renewable energy power plants with the electricity grid system
Able to recommend strategies and risk mitigation in the development of power electrical systems that are reliable , safe , and environmentally friendly
Information Network Security Management
Able to design a comprehensive physical network infrastructure that meets high security principles
Able to recommend improvements in the management of new technologies for business development
Able to evaluate information network security based on technological risks , laws and applied regulations

FLOW DIAGRAM OF SUBJECTS

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Entrepreneurship and Technology Innovation	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community based on the professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to specify technical and non-technical aspects in the utilization of the intelligent network-based electricity industry	Electric Generation Operation and Control Electric Power and Environment	Dynamic Systems and Modeling Advanced Power Electronics Economics Energy and management		
8	Able to recommend strategies to improve efficiency, quality, and power quality in electricity systems based on intelligent networks	Electrical power system quality			
9	Able to integrate new and renewable energy power plants with smart electricity grid systems		Renewable energy and energy storage	Smart Energy System	
10	Able to assess strategies and risk mitigation on the development of power systems that are reliable, safe, and eco-friendly			Power System Planning	

MAJORING IN TELECOMMUNICATION AND SMART WIRELESS SYSTEM

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community in accordance with professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to evaluate the latest technology in the field of telecommunications technology and smart wireless systems	Signal Processing and Applications Modern Telecommunications System Modern Radar System	Terahertz and optic Systems	Technological quality of services and experience Computational Intelligence for communication engineering	
8	Able to design systems and / or devices for smart wireless telecommunications systems		Sensor Communication System smart RF design Modern Antenna Techniques		

MAJORING IN ELECTRONIC AND INTELLIGENT EMBEDDED SYSTEM

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community in accordance with professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
6	Able to design electronic / photonic devices and / or complex electronic systems	Digital Microelectronic circuit design photonic device Green electronic devices	Nanoelectronic Sensor dan Actuator Advanced analog electronic circuits Opto-electronics instrumentation		
7	Able to implement complex smart embedded systems to contribute to solving problems in the engineering field			IoT and smart Electronic system System on Chip	

MAJORING IN CYBER SECURITY AND FUTURE INTERNET

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community in accordance with professional ethics in the field of electrical engineering				Thesis Scientific Publications
6	Able to develop own-self through lifelong learning, keep updated with the latest advancement in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to design a comprehensive information and network security system that meets the applicable security standard rules.	Network security and reliability Network security and data protection	Applied Cryptography and Blockchain Technology		
8	Able to evaluate the security incidents handling and forensic methods of digital data that are appropriate.		Security operation and Incident Handling Network and Digital Forensics	Security Risk Assesment and Analysis	
9	Able to evaluate the development of computer and future Internet technologies.	Advanced network computer systems	Convergence Information Network NG	Cyber Threat Intelligence and Incident Analysis	

MAJORING IN AUTOMATION AND DATA ANALYTIC ENGINEERING

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community based on the professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to recommend industrial device control systems	Industrial Electric Drive System Mechatronicsystem modeling and control			
8	Able to develop smart automation systems based on data engineering		Advanced smart data computation smart system monitoring and data engineering	Advanced Machine Learning for the Autonomous System	
9	Able to design an integrated automation system	System optimization and optimal control	Coordinated and networked control system special topics on automation data engineering	Industrial Cyber Automation and Security	

MAJORING IN DATA ENGINEERING AND BUSINESS INTELLIGENCE

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community based on the professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to design efficient, scalable data processing, analysis and visualization techniques	Business analytic and visualization Imaging Technology and Computer Vision	Big Data Technology and Architechture Advanced Artificial Intelligence Applied Data Engineering	Enterprise Cyber Threat Analysis	
8	Able to develop aspects of leadership in the digital economic ecosystem (digital leadership)	Digital Enterprise Software Architechture	Ethics and Professionalism	Advanced IT Project Management	

MAJORING IN TELECOMMUNICATION MANAGEMENT

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community in accordance with professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to evaluate the latest technology in the field of telecommunications technology and smart wireless systems	Signal Processing and Applications Modern Telecommunications System Modern Radar System	Terahertz and optic Systems	Technological quality of services and experience Computational Intelligence for communication engineering	
8	Able to design systems and / or devices for smart wireless telecommunications systems		Sensor Communication System smart RF design Modern Antenna Techniques		

MAJORING IN POWER AND ENERGY MANAGEMENT

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community in accordance with professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to formulate technical, non-technical, management and economic aspects in the business, utilization and electricity industry including energy issues	Economic of Electric Utility Power Generation Control and Operation of Power Generation Plant	Dynamic system and modeling Strategic management Economics Energy and Management	Energy and Environment	
7	Able to recommend strategies to improve efficiency, quality and power quality in the electricity system			Electric power system planning	
8	Able to integrate new and Renewable Energy power plants with the electricity grid system			Electric Power System Planning	
9	Able to recommend strategies and risk mitigation in the development of power systems and energy that is reliable, safe and eco-friendly		Strategic management		

MAJORING IN INFORMATION NETWORK SECURITY MANAGEMENT

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to evaluate data by applying data analysis and processing methods	Processing and data analysis			
2	Able to formulate problem solving in the field of electrical engineering with appropriate research methods	Research methodology			
3	Able to develop innovative capabilities in the electrical engineering industry in the industrial era 4.0			Technological Innovation and Entrepreneurship	
4	Able to produce scientific works effectively, both oral and written				Thesis Scientific Publications
5	Able to provide solutions to the community in accordance with professional ethics in the electrical engineering field				Thesis Scientific Publications
6	Able to improve self-development skill to study continuously, keep update with the latest developments in science, technology and relevant contemporary issues in the field of electrical engineering				Scientific Publications
7	Able to design a comprehensive physical network infrastructure that meets high security principles	Information Network Infrastructure Computer Based Network Simulation Information Network Security			
7	Able to recommend information security management on the concept of new technologies for national development in Indonesia		Cyber Forensics Network and Application Security		
8	Able to evaluate information network security based on technological rules, laws and applicable regulations		Operations Security and Incident Management Security Assessment and Analysis	Security Risk Management and Regulation Cyber Threat Intelligence Analysis	

Core Subjects

Code	Subject	SKS
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE803003	Technology Innovation and Entrepreneurship	3

Majoring Course

Code	Subject	SKS
Majoring in Power and Smart System		
ENEE801101	Electric Generation Operation and Control	2
ENEE801102	Electric Power System Quality	2
ENEE801103	Electric Power and Environment	2
ENEE802104	Dynamic System and Modeling	2
ENEE802105	Economics Energy and Management	3
ENEE802106	Advanced Power Electronics	2
ENEE802107	Renewable Energy and Energy Storages	2
ENEE803108	Power System Planning	2
ENEE803109	Smart Energy System	2
Majoring in Telecommunication and Smart Wireless System		
ENEE801201	Signal Processing and applications	3
ENEE801202	Modern Telecommunication System	2
ENEE801203	Modern Radar System	2
ENEE802204	Modern Antenna Engineering	2
ENEE802205	Smart RF Design	2
ENEE802206	Terahertz and Optics System	2
ENEE802207	Sensor Communications System	2
ENEE803208	Technological Quality of Service and Experience	2
ENEE803209	Computational Intelligence for Communication Engineering	2
Majoring in Electronic and Intelligent Embedded System		
ENEE801301	Photonic Device	2
ENEE801302	Green Electronic Devices	2
ENEE801303	Digital Microelectronic Circuit Design	2
ENEE802304	Sensor and Actuators	2
ENEE802305	Nanoelectronic	2
ENEE802306	Advanced Analog Electronic Circuits	2
ENEE802307	Opto-Electronics Instrumentation	2
ENEE803308	System on Chip	2
ENEE803309	IoT and Smart Electronic System	3
Majoring in Cyber Security and Future Internet		
ENEE801401	Network Security and Reliability	2
ENEE801402	Advanced Network Computer Systems	2
ENEE801403	Network Security and Data Protection	2
ENEE802404	Applied Cryptography & Blockchain Technology	3
ENEE802405	Security Operation and Incident Handling	2
ENEE802406	Network & Digital Forensics	2
ENEE802407	Convergence Information Network NG	2
ENEE803408	Cyber Threat Intelligence and Incident Analysis	2
ENEE803409	Security Risk Assessment and Analysis	2
Majoring in Automation and Data Analytic Engineering		
ENEE801501	Mechatronic System Modeling and Control	2
ENEE801502	Industrial Electric Drive System	2
ENEE801503	System Optimization and Optimal Control	2
ENEE802504	Advanced Smart Data Computation	2
ENEE802505	Smart System Monitoring and Data Engineering	2

ENEE802506	Coordinated and Networked Control System	2
ENEE802507	Special Topics on Automation and Data Engineering	2
ENEE803508	Industrial Automation System and Security	3
ENEE803509	Advanced Machine Learning for Autonomous System	2
Majoring in Data Engineering and Business Intelligence		
ENEE801601	Digital Enterprise Software Architecture	2
ENEE801602	Business Analytic and Visualization	2
ENEE801603	Imaging Technology and Computer Vision	2
ENEE802604	Big Data Technology and Architecture	3
ENEE802605	Advanced Artificial Intelligence	2
ENEE802606	Applied Data Engineering	2
ENEE802607	Ethics and Professionalism	2
ENEE803608	Enterprise Cyber Threat Analysis	2
ENEE803609	Advanced IT Project Management	2
Majoring in Telecommunication Management		
ENEE801701	Management of Telecommunications System and Digital Business	3
ENEE801702	Trend of Digital Technology	3
ENEE802703	Law, Regulation and Telecommunications Policy	3
ENEE802704	Strategic Management and Technoeconomic	3
ENEE802705	Telecommunications Convergence Service and Infrastructure	2
ENEE802706	Ecosystem and Digital Economic	2
ENEE802707	Special Topic of Technology and Innovation	2
ENEE803708	Internet of Things (IoT) and Future Network Technology	3
ENEE803709	Capita Selecta	2

Majoring in Power and Energy Management		
ENEE801801	Control and Operation of Power Generation Plant	3
ENEE801802	Economic of Electric Utility Power Generation	3
ENEE802803	Dynamic Systems and Modeling	3
ENEE802804	Economics Energy and Management	3
ENEE802805	Strategic Managemen	3
ENEE803806	Electrical Power System Quality	2
ENEE803807	Electric Power System Planning	3
ENEE803808	Energy and Environment	3
Majoring in Information Network Security Management		
ENEE802901	Information Network Security	2
ENEE802902	Information Network Infrastructure	2
ENEE802903	Computer Based Network Simulation	2
ENEE803904	Network and Application Security	3
ENEE803905	Security Operations and Incident Management Security Operations and Incident Management	3
ENEE802906	Cyber Forensic	3
ENEE802907	Security Assessment and Analysis	3
ENEE803908	Cyber Threat Intelligence Analysis	2

Special Subjects

Code	Subject	SKS
ENEE804004	Publication	2
ENEE804005	Thesis	8

Course Structure Master Program in Electrical Engineering

Majoring in Power and Smart System

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801101	Electric Generation Operation and Control	2
ENEE801102	Electric Power System Quality	2
ENEE801103	Electric Power and Environment	2
	Sub Total	**14**
	2nd Semester	
ENEE802104	Dynamic System and Modeling	2
ENEE802105	Economics Energy and Management	3
ENEE802106	Advanced Power Electronics	2
ENEE802107	Renewable Energy and Energy Storages	2
	Elective Course	2
	Sub Total	**11**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803108	Power System Planning	2
ENEE803109	Smart Energy System	2
	Elective Course	2
	Sub Total	**9**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Subtotal	**10**
	Total	**44**

Majoring in Telecommunication and Smart Wireless System

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801201	Signal Processing and applications	3
ENEE801202	Modern Telecommunication System	2
ENEE801203	Modern Radar System	2
	Sub Total	**15**
	2nd Semester	
ENEE802204	Modern Antenna Engineering	2
ENEE802205	Smart RF Design	2
ENEE802206	Terahertz and Optics System	2
ENEE802207	Sensor Communications System	2
	Elective Course	**2**
	Sub Total	**10**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803208	Technological Quality of Service and Experience	2
ENEE803209	Computational Intelligence for Communication Engineering	2
	Elective Course	**2**
	Sub Total	**9**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**10**
	Total	**44**

Majoring in Electronic and Intelligent Embedded System

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801301	Photonic Device	2
ENEE801302	Green Electronic Devices	2
ENEE801303	Digital Microelectronic Circuit Design	2
	Sub Total	**14**
	2nd Semester	
ENEE802304	Sensor and Actuators	2
ENEE802305	Nanoelectronic	2
ENEE802306	Advanced Analog Electronic Circuits	2
ENEE802307	Opto-Electronics Instru-mentation	2
	Elective Course	2
	Sub Total	**10**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803308	System on Chip	2
ENEE803309	IoT and Smart Electronic System	3
	Elective Course	2
	Sub Total	**10**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**10**
	Total	**44**

Majoring in Cyber Security and Future Internet

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801401	Network Security and Reliability	2
ENEE801402	Advanced Network Computer Systems	2
ENEE801403	Network Security and Data Protection	2
	Sub Total	**14**
	2nd Semester	
ENEE802404	Applied Cryptography & Blockchain Technology	3
ENEE802405	Security Operation and Incident Handling	2
ENEE802406	Network & Digital Forensics	2
ENEE802407	Convergence Information Network NG	2
	Elective Course	2
	Sub Total	**11**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803408	Cyber Threat Intelligence and Incident Analysis	2
ENEE803409	Security Risk Assessment and Analysis	2
	Elective Course	2
	Sub Total	**9**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**10**
	Total	**44**

Majoring in Automation and Data Analytic Engineering

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801501	Mechatronic System Modeling and Control	2
ENEE801502	Industrial Electric Drive System	2

ENEE801503	System Optimization and Optimal Control	2
	Sub Total	**14**
	2nd Semester	
ENEE802504	Advanced Smart Data Computation	2
ENEE802505	Smart System Monitoring and Data Engineering	2
ENEE802506	Coordinated and Networked Control System	2
ENEE802507	Special Topics on Automation and Data Engineering	2
	Elective Course	2
	Sub Total	**10**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803508	Industrial Automation System and Security	3
ENEE803509	Advanced Machine Learning for Autonomous System	2
	Elective Course	2
	Sub Total	**10**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Subtotal	**10**
	Total	**44**

Curriculum of Electrical Engineering Department Special Class in Salemba

Code	Subject	SKS
	1st Semester	
ENEE801002	Data Processing and Analytic	4
ENEE801003	Research Methodology	4
ENEE801601	Digital Enterprise Software Architecture	2
ENEE801602	Business Analytic and Visualization	2
ENEE801603	Imaging Technology and Computer Vision	2
	Sub Total	**14**
	2nd Semester	
ENEE802604	Big Data Technology and Architecture	3
ENEE802605	Advanced Artificial Intelligence	2
ENEE802606	Applied Data Engineering	2
ENEE802607	Ethics and Professionalism	2
	Elective Course	2
	Sub Total	**11**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803608	Enterprise Cyber Threat Analysis	2
ENEE803609	Advanced IT Project Managemen	2
	Elective Course	2
	Sub Total	**9**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**10**
	Total	**44**

Majoring in Telecommunication Management

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801701	Management of Telecommunications System and Digital Busines	3
ENEE801702	Trend of Digital Technology	3
	Sub Total	**14**
	2nd Semester	
ENEE802703	Law, Regulation and Telecommunications Policy	3
ENEE802704	Strategic Management and Technoeconomic	3
ENEE802705	Telecommunications Convergence Service and Infrastructure	2

ENEE802706	Ecosystem and Digital Economic	2
ENEE802707	Special Topic of Technology and Innovation	2
	Sub Total	**12**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803708	Internet of Things (IoT) and Future Network Technology	3
ENEE803709	Capita Selecta	2
	Sub Total	**8**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**10**
	Total	**44**

Majoring in Power and Energy Management

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801801	Control and Operation of Power Generation Plant	3
ENEE801802	Economic of Electric Utility Power Generation	3
	Sub Total	**14**
	2nd Semester	
ENEE802803	Dynamic System and Modeling	3
ENEE802804	Economics Energy and Management	3
ENEE802805	Strategic Management	3
	Sub Total	**9**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803806	Electrical Power System Quality	2
ENEE803807	Power System Planning	3
ENEE803808	Energy and Environment	3
	Sub Total	**11**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**6**
	Total	**40**

Majoring in Information Network Security Management

Code	Subject	SKS
	1st Semester	
ENEE801001	Data Processing and Analytic	4
ENEE801002	Research Methodology	4
ENEE801901	Information Network Security	2
ENEE801902	Information Network Infrastructure	2
ENEE801903	Computer Based Network Simulation	2
	Sub Total	**14**
	2nd Semester	
ENEE802904	Network and Application Security	3
ENEE802905	Security Operations and Incident Management	3
ENEE802906	Cyber Forensic	3
ENEE802907	Security Assessment and Analysis	3
	Sub Total	**12**
	3rd Semester	
ENEE803003	Technology Innovation and Entrepreneurship	3
ENEE803508	Cyber Threat Intelligence Analysis	2
ENEE803509	Security Risk Management & Regulation	3
	Sub Total	**12**
	4th Semester	
ENEE804004	Thesis	8
ENEE804005	Scientific Publication	2
	Sub Total	**10**
	Total	**44**

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10
	Total	40

Transition Rules

1. The curriculum 2020 is implemented starting in the odd semester 2020/2021. In principle, after curriculum 2020 is implemented, only subjects in the curriculum 2020 will be opened.
2. The curriculum 2020 will be implemented from class of 2020 onwards. Class of 2019 and earlier will folloe curriculum 2020 with transitional rules.
3. An applied transitional period of 1 year, is in the academic year 2020/2021 for subjects that change the academic semester (from even to odd, or vice versa), if necessary, will be opened in both semester during the transition period (academic year 2020/201)
4. Students who have not passed the compulsory subjects in the curriculum 2016 are required to take the similar or quivalent subjects in the curriculum 2020. (Se the equality table of curriculum 2020 and 2016. ; courses in the curriculum 2016 which are not listed in the equality table mean that there is no changes, both in name and in the credits).
5. If there is a change in the credits course, the number of credits taken into graduation is that the the number of credits at the time the course was taken. Similar or equivalent courses will be counted in different credits, If repeated or newly taken will be listed with the new name and calculated with new credits.
6. If the compulsory subjects in the curriculum 2016 are removed and there is no equivalency in curriculum 2020, for the students who passed these courses, then they are still counted as compulsory credit courses for graduation. For students who have not passed the course, they can take take the new compulsory subjects.

The equality table Master Program in Electrical Engineering

Curriculum 2016			Curriculum 2020			Information
Courses	Credit	SMT	Courses	Credit	SMT	
Applied Mathematics	3	1	Processing and data analysis	4	1	Equivalent
Research Method	3	2	Metodologi Penelitian	4	1	Equivalent
Engineering Project Management and Economics	3	3	Technological Innovation and Entrepreneurship	3	3	Equivalent

Master Program in Biomedical Technology

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Programme Title**	Master Program in Biomedical Technology	
5.	**Program Vision and Mission**	To become a higher level study program in education, research and community service in the field of Biomedical Technology and be able to contribute to the development of Indonesian and Global society.	
6.	**Class**	Reguler	
7.	**Final Award**	Magister Teknik (M.T.)	
8.	**Accreditation / Recognition**	BAN-PT: Accreditation B	
9.	**Language (s) of Instruction**	Bahasa / English	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	Pass the entrance exam, graduate from Bachelor/Diploma 4 in Biomedical Engineering, Medical, Engineering, Science, Computer, Pharmacy, and other subjects of equal.	
12.	**Study Duration**	Designed for 2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	16
	Short (opsional)	**1**	**8**
13.	**Aims of the programme:** Producing Masters who are able to design systems, components, or processes in the field of Biomedical Technology through the design, analysis, development and application of the latest technological concepts in dealing with problems in the field of biomedical technology.		
14.	**Profile of Graduates:** Master in Engineering that has ability to formulate and solve a complex problem in biomedical engineering field through research based on innovative technology with inter or multi discipline approach in accordance to professional ethics.		

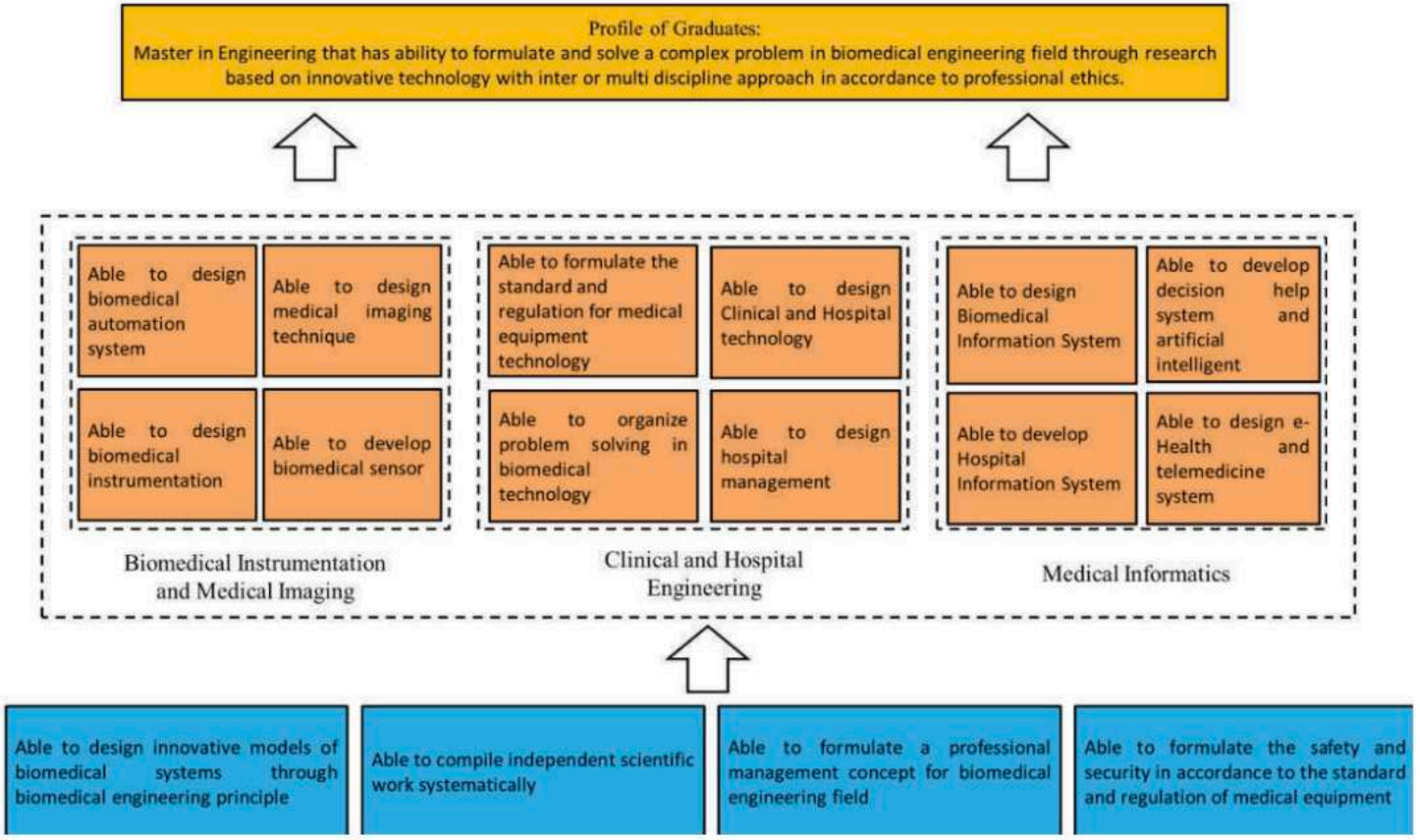
15.	**Expected Learning Outcomes /Expected Learning Outcomes (ELO) :** Master in Biomedical Technology graduates are expected to have the following competence: 1. Able to design innovative models of biomedical systems through biomedical engineering principle (C6) 2. Able to compile independent scientific work systematically (C6) 3. Able to formulate a professional management concept for biomedical engineering field (C6) 4. Able to formulate the safety and security in accordance to the standard and regulation of medical equipment (C6) Beside the above competence, a Master in Biomedical Engineering should also have the following specialized competence: Specialization in Biomedical Instrumentation and Medical Imaging: 1. Able to design biomedical instrumentation (C6) 2. Able to develop biomedical sensor (C6) 3. Able to design biomedical automation system (C6) 4. Able to design medical imaging technique (C6) Specialization in Medical Informatics: 1. Able to develop Hospital Information System (C6) 2. Able to design e-Health and telemedicine system (C6) 3. Able to design Biomedical Information System (C6) 4. Able to develop decision help system and artificial intelligent (C6) Specialization in Clinical and Hospital Engineering: 1. Able to organize problem solving in biomedical technology (C6) 2. Able to design hospital management (C6) 3. Able to formulate the standard and regulation for medical equipment technology (C6) 4. Able to design Clinical and Hospital technology (C6)
16.	**Composition of Subjects**

No.	Classification	Credit Hours (SKS)	Percentage
I	Core Subjects	16	36,36%
II	Majoring Subject	12	27,27%
III	Special Subject	10	22,73%
IV	Elective Subject	6	13,64%
	Total	44	100 %

Career Prospects

Graduates from Biomedical Engineering Study Program can work in various types of companies and health industries, information technology, education, government or regulator, and other industries related to health facilities, such as hospitals and health clinics.

Learning Outcomes



Course Flowchart for Master Program in Program Study of Biomedical Technology

Biomedical Instrumentation and Medical Imaging Specialization

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to design innovative models of biomedical systems through biomedical engineering principle	Anatomy and Modelling in Physiology Design and Prototyping Biomedical System			Scientific Publication Final Project
2	Able to compile independent scientific work systematically	Research Methodology 1	Research Methodology 2		Scientific Publication FInal Project
3	Able to formulate a professional management concept for biomedical engineering field	Project Management for Biomedical Engineering			
4	Able to formulate the safety and security in accordance to the standard and regulation of medical equipment	Patient Safety Standards and Regulations			
5	Able to design biomedical instrumentation		Biomedical Instrumentation		
6	Able to develop biomedical sensor		Biomedical Sensor		
7	Able to design biomedical automation system		Biomedical System Automation		
8	Able to design medical imaging technique		Medical Imaging and Image Processing		

Medical Informatics Specialization

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to design innovative models of biomedical systems through biomedical engineering principle	Anatomy and Modelling in Physiology Design and Prototyping Biomedical System			Scientific Publication Final Project
2	Able to compile independent scientific work systematically	Research Methodology 1	Research Methodology 2		Scientific Publication Final Project
3	Able to formulate a professional management concept for biomedical engineering field	Project Management for Biomedical Engineering			
4	Able to formulate the safety and security in accordance to the standard and regulation of medical equipment	Patient Safety Standards and Regulations			
5	Able to develop Hospital Information System		Hospital Information System		
6	Able to design e-Health and telemedicine system		*e-Health* and Telemedicine		
7	Able to design Biomedical Information System		Computational Biology and Bioinformatics		
8	Able to develop decision help system and artificial intelligent		Decision Making System and Artificial		

Clinical and Hospital Engineering Specialization

No.	Learning Outcomes	Semester 1	Semester 2	Semester 3	Semester 4
1	Able to design innovative models of biomedical systems through biomedical engineering principle	Anatomy and Modelling in Physiology Design and Prototyping Biomedical System			Scientific Publication Final Project
2	Able to compile independent scientific work systematically	Research Methodology 1	Research Methodology 2		Scientific Publication Final Project
3	Able to formulate a professional management concept for biomedical engineering field	Project Management for Biomedical Engineering			
4	Able to formulate the safety and security in accordance to the standard and regulation of medical equipment	Patient Safety Standards and Regulations			
5	Able to organize problem solving in biomedical technology		Hospital Medical Equipment		
6	Able to design hospital management		Clinical Asset and Equipment Management System		
7	Able to formulate the standard and regulation for medical equipment technology		Hospital Engineering		
8	Able to design Clinical and Hospital technology		Design of Hospital and Healthcare Facilities		

Curriculum Structure

Majoring in Biomedical Instrumentation and Medical

Code	Subject	SKS
	1st Semester	
ENBE801001	Anatomy and Modelling in Physiology	3
ENBE801002	Research Methodology 1	2
ENBE801003	Patient Safety Standards and Regulations	3
ENBE801104	Design and Prototyping Biomedical System	3
ENBE801005	Project Management for Biomedical Engineering	**3**
	Subtotal	**14**
	2nd Semester	
ENBE802006	Research Methodology 2	2
ENBE802101	Biomedical Instrumentation	3
ENBE802102	Biomedical Sensors	3
ENBE802103	Medical Imaging and Image Processing	3
ENBE802104	Biomedical System Automation	**3**
	Subtotal	**14**
	3rd Semester	
	Elective Course	3
	Elective Course	3
	Subtotal	**6**
	4th Semester	
ENBE804007	Scientific Publication	2
ENBE804008	Final Project	8
	Sub Total	**10**
	Total	**44**

Majoring in Medical Informatics

Code	Subject	SKS
	1st Semester	
ENBE801001	Anatomy and Modelling in Physiology	3
ENBE801002	Research Methodology 1	2
ENBE801003	Patient Safety Standards and Regulations	3
ENBE801104	Design and Prototyping Biomedical System	3
ENBE801005	Project Management for Biomedical Engineering	**3**
	Subtotal	**14**
	2nd Semester	
ENBE802006	Research Methodology 2	2
ENBE802201	Hospital Information System	3
ENBE802202	Decision Making System and Artificial Intelligent	3
ENBE802203	e-Health and Telemedicine	3
ENBE802204	Computational Biology and Bioinformatics	**3**
	Subtotal	**14**
	3rd Semester	
	Elective Course	3
	Elective Course	3
	Subtotal	**6**
	4th Semester	
ENBE804007	Scientific Publication	2
ENBE804008	Final Project	8
	Sub Total	**10**
	Total	**44**

Majoring in Clinical and Hospital Engineering

Code	Subject	SKS
	1st Semester	
ENBE801001	Anatomy and Modelling in Physiology	3
ENBE801002	Research Methodology 1	2
ENBE801003	Patient Safety Standards and Regulations	3
ENBE801004	Design and Prototyping Biomedical System	3
ENBE801005	Project Management for Biomedical Engineering	**3**
	Subtotal	**14**

	2nd Semester	
ENBE802006	Research Methodology 2	2
ENBE802301	Hospital Medical Equipment	3
ENBE802302	Hospital Engineering	3
ENBE802303	Design of Hospital and Healthcare Facilities	3
ENBE802304	Clinical Asset and Equipment Management System	**3**
	Subtotal	**14**
	3rd Semester	
	Elective Course	3
	Elective Course	3
	Subtotal	**6**
	4th Semester	
ENBE804007	Scientific Publication	2
ENBE804008	Final Project	8
	Sub Total	**10**
	Total	**44**

Transition Rules

1. Curriculum of 2020 is implemented starting in the Odd Semester 2020/2021. After Curriculum of 2020 is implemented, only subjects in Curriculum of 2020 will be opened.
2. Class of 2019 and previous class followed the Curriculum of 2020 with transitional rules.
3. A transitional period of 1 year, in the academic year 2020/2021, is implemented for subjects where the semester changes (from Even to Odd, or vice versa), if necessary, the class will be opened in both semesters during the transition period (Academic Year 2020 / 2021).
4. For students who have not passed the compulsory subjects in Curriculum of 2018 are required to take the same or equivalent subjects in the 2020 Curriculum.
5. If there is a change in the credit (SKS) for the course, the number of credit (SKS) taken in graduation is the number of the SKS at the time the course was taken. If students are repeated or newly taken same or equal subjects with different credit (SKS), will be listed with a new name and calculated with new credit (SKS).
6. If the compulsory subjects in Curriculum of 2018 are removed and there is no equivalence in Curriculum of 2020, students who have passed these courses, it will still be counted as compulsory subjects in the graduation calculation of 44 credits. For students who have not passed the course, they can take new compulsory subjects or elective courses in Curriculum of 2020 to complete 44 credits.

Equivalence Course in Masters in Biomedical Technology

No	Name of courses in the curriculum 2018	SKS 2018	Name of courses in the curriculum 2020	SKS 2020
1	Human Body Physiological System Modelling	3	Anatomy and Modelling in Physiology	3
2	Research Methodology	2	Research Methodology 1	2
3			Research Methodology 2	2
Required Specialization Courses				
4	Biomedical Instrumentation 1	3	Biomedical Instrumentation	3
5	Medical Imaging	3	Medical Imaging and Image Processing	3
6	Biomedical Instrumentation 2	3	-	
7	Special Topic on Biomedical Instrumentation	3	-	
8	Hospital Medical Equipment I	3	Hospital Medical Equipment	3
9	Hospital Medical Equipment II	3	Hospital Engineering	
10	Regulation and Policy of Clinical Technology	3	-	
11	Planning and Design of Health Service Building	3	Design of Hospital and Healthcare Facilities	3
12	Clinical Engineering Management System	3	Clinical Asset and Equipment Management System	3
13	Planning and Design of Health Service Utility	3	Healthcare Technology Management System	3
14	Hospital Information System and Medical Record	3	Hospital Information System	3
15	Medical Automation	3	-	
16	Telemedicine	3	e-Health and Telemedicine	3

17	Information System-Based Management Skill	3	Hospital Information Management	3
18	Medical Informatics Consultancy	3		
19			Computational Biology and Bioinformatics	3

Master Program in Metallurgy and Materials Engineering

Program Specification

1.	**Awarding Institution**	Universtas Indonesia Double Degree: Universitas Indonesia & partner universities	
2.	**Teaching Institution**	Universtas Indonesia Double Degree: Universitas Indonesia & partner universities	
3.	**Faculty**	Engineering	
4.	**Name of Study Program**	Graduate Program (Master) in Metallurgical and Materials Engineering	
5.	**Study Programme Vision and Mission**	Vision: To be a research-based center of excellence, as well as referral center for master level education and research in the field of metallurgical and materials engineering in national and global levels Mission: - Providing a master's education in metallurgy and material engineering. - Producing high quality master graduates with a strong academic background in process technology and material engineering. - Producing master graduates who are able to play an active and dynamic role in their community.	
6.	**Type of Class**	Reguler, Special, Research	
7.	**Awarding Degree**	Magister Teknik (M.T.) Double Degree: Magister Teknik (M.T.) dan Master of Engineering (M.Eng.)	
8.	**Accreditation Status**	BAN-PT : A	
9.	**Language Course**	Bahasa (Indonesia) and English	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	Bachelor (S1) from the same degree, mechanical, chemical, or electrical engineerings, physics, chemistry or equivalent degree via matriculation	
12.	**Term of Study**	2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	16
	Short (opsional)	**1**	**8**
13.	**Aims of the programme:** 1. Producing high quality master graduates characterized by having an in-depth analytical skills 2. Producing master graduates who are able to design complex products, processes and systems in the fields of metallurgical and material engineering 3. Producing master graduates who are able to play an active role and contribute to meet the goals of sustainable development		
14.	**Profile of Graduates:** Master of Engineering who has the ability to analyze in depth, designs products, processes, and complex systems in the field of Metallurgical and Material Engineering and contribute to meeting the goals of sustainable development		

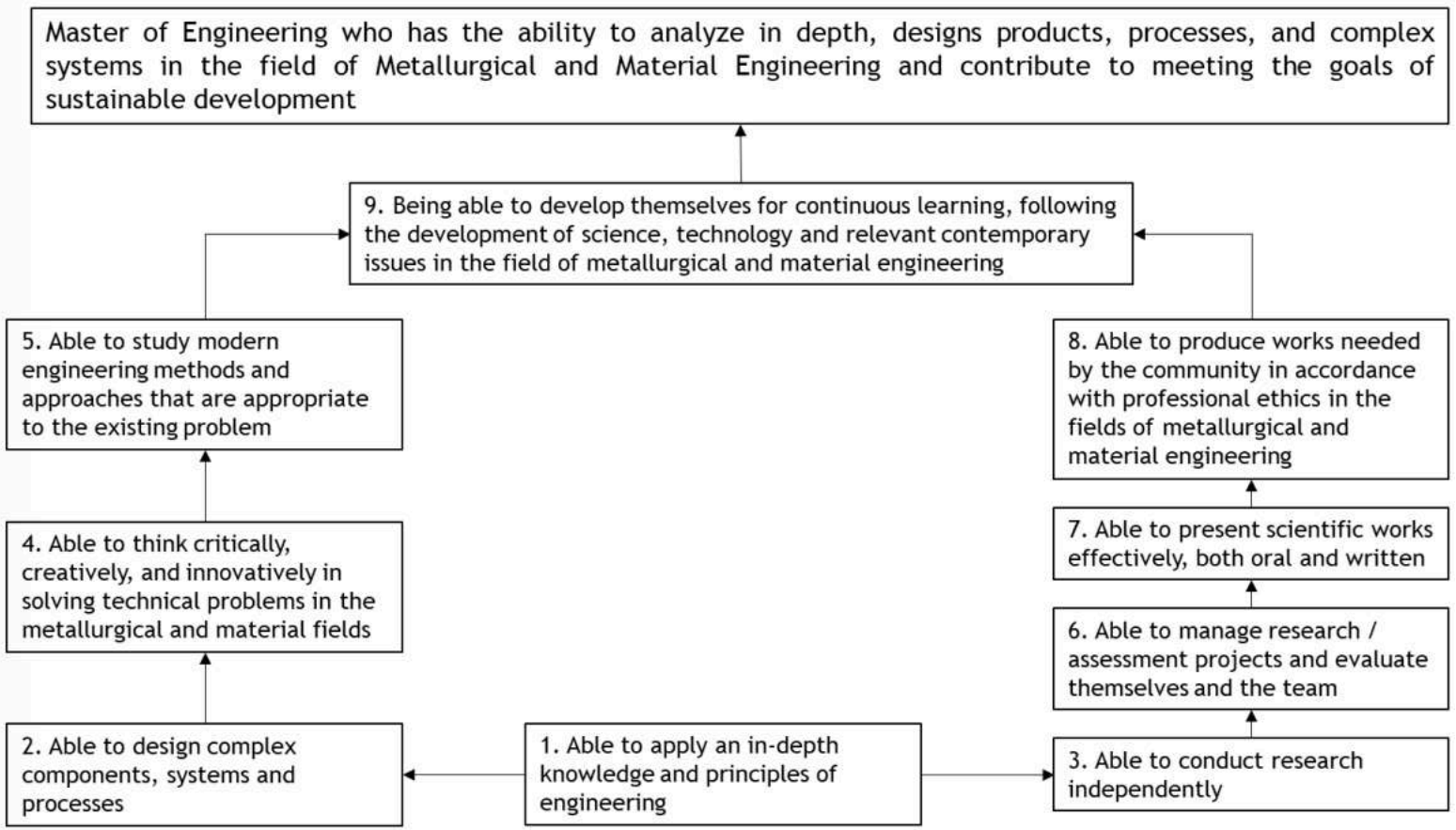
15	**Expected Learning Outcomes (ELO):** The Master of Metallurgy and Materials Engineering has the following learning outcomes: 1. Able to apply an in-depth knowledge and principles of engineering 2. Able to design complex components, systems and processes 3. Able to conduct research independently 4. Able to think critically, creatively, and innovatively in solving technical problems in the metallurgical and material fields 5. Able to study modern engineering methods and approaches that are appropriate to the existing problem 6. Able to manage research / assessment projects and evaluate themselves and the team 7. Able to present scientific works effectively, both oral and written 8. Able to produce works needed by the community in accordance with professional ethics in the fields of metallurgical and material engineering 9. Being able to develop themselves for continuous learning, following the development of science, technology and relevant contemporary issues in the field of metallurgical and material engineering
16.	**Composition of Subjects**

No.	Type of Courses	Credit Hours (SKS)	Percentage
I	**Compulsory / Expertise Courses**	20	45,45%
II	**Specialization Courses**	12	27,27%
III	**Elective Courses**	3	6,82%
IV	**Seminar, Scientific Publication & Thesis**	9	20,46%
	Total	44	100 %

Job Prospects

Graduates of this study program can work in various sectors both private, state-owned and government such as in the automotive industry, manufacturing, heavy equipment, mining, oil and gas, research and development fields such as Pertamina, LIPI, BATAN, BPPT, LAPAN, Ministry of Industry, and Ministry of Energy and Mineral Resources.

Expected Learning Outcome Matrix

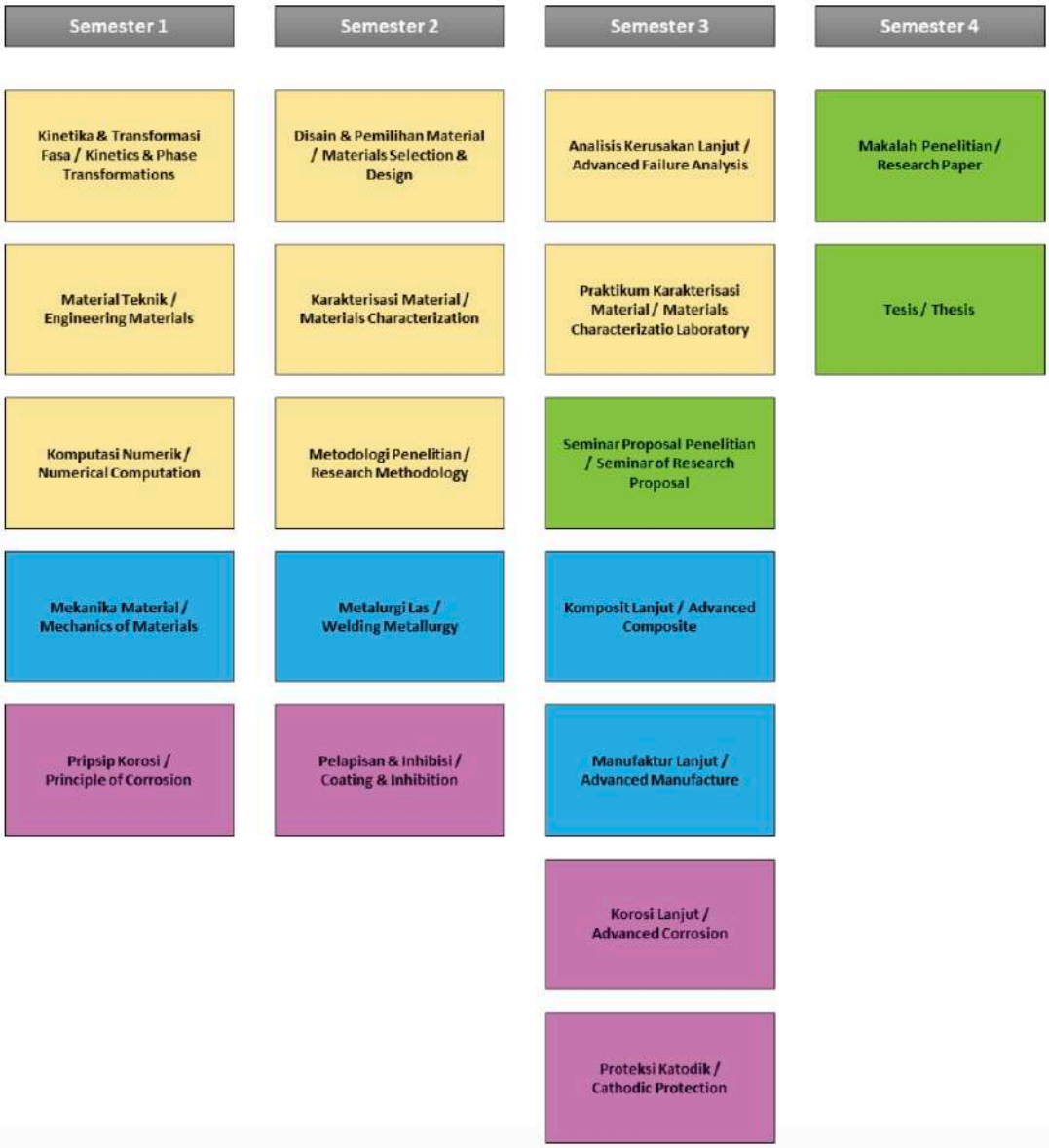


Flowchart for Learning Outcome Achievement
Master Program in Metallurgical & Materials Engineering

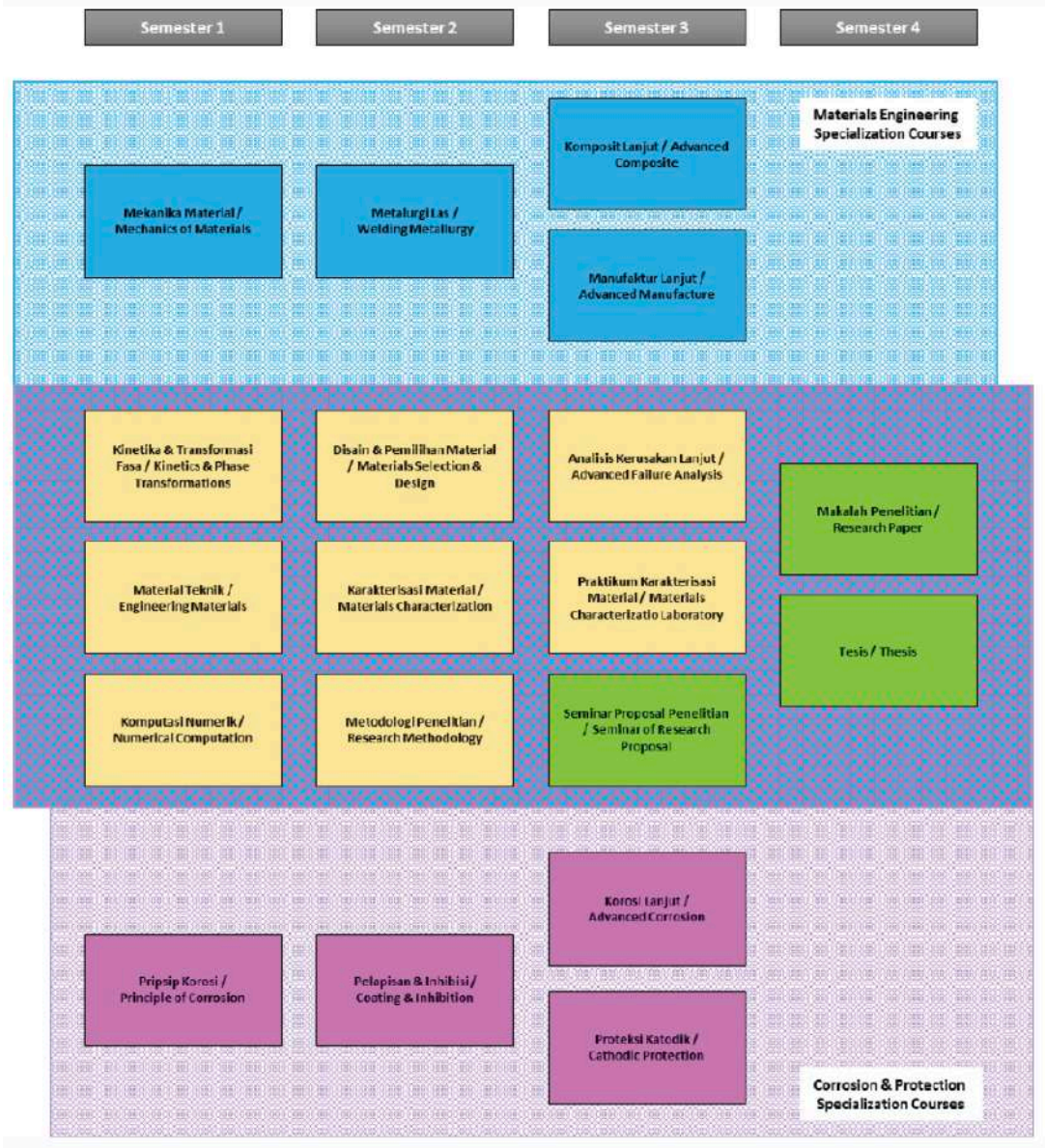
Learning Outcome	Year 1		Year 2	
	Semester 1	Semester 2	Semester 3	Semester 4
1. Able to apply an in-depth knowledge and principles of engineering	Kinetics & Phase Transformations			
	Engineering Materials			
	Numerical Computation			
	Mechanics of Materials			
	Principle of Corrosion			
		Welding Metallurgy		
		Coating & Inhibition		
			Advanced Composites	
			Advanced Manufacture	
			Advanced Corrosion	
			Cathodic Protection	
2. Able to design complex components, systems and processes		Materials Selection & Design		
		Material Characterizations		
3. Able to conduct research independently		Research Methodology		

4. Able to think critically, creatively, and innovatively in solving technical problems in the metallurgical and material fields			Advanced Failure Analysis	
5. Able to study modern engineering methods and approaches that are appropriate to the existing problem		Research Methodology		
6. Able to manage research / assessment projects and evaluate themselves and the team				Scientific Publication
			Seminar of Research Proposal	Thesis
7. Able to present scientific works effectively, both oral and written				Scientific Publication
			Seminar of Research Proposal	Thesis
8. Able to produce works needed by the community in accordance with professional ethics in the fields of metallurgical and material engineering				Scientific publication
			Seminar of Research Proposal	Thesis
9. Being able to develop themselves for continuous learning, following the development of science, technology and relevant contemporary issues in the field of metallurgical and material engineering				Scientific publication
			Seminar of Research Proposal	Thesis

Subject Distribution in Curriculum 2020



Subject Correlation in Curriculum 2020



Course Structure for Master Program Metallurgical & Materials Engineering

Compulsory / Expertise Courses

Code	Subject	SKS
	1st Semester	
ENMT801001	Kinetics & Phase Transformation	3
ENMT801002	Engineering Materials	2
ENMT801003	Numerical Computation	3
	Sub Total	**8**
	2nd Semester	
ENMT802006	Materials Selection & Design	3
ENMT802007	Material Characterization	3
ENMT802008	Research Methodology	3
	Sub Total	**9**
	3rd Semester	
ENMT803011	Advanced Failure Analysis	3
ENMT800013	Seminar of Research Proposal	1
	Sub Total	5
	4th Semester	
ENMT800018	Scientific publication	2
ENMT800019	Thesis	6

Materials Engineering Specialization Courses

Code	Subject	
	1st Semester	
ENMT801104	Mechanics of Materials	3
	Sub Total	**3**
	2nd Semester	
ENMT802109	Welding Metallurgy	3
	Sub Total	**3**
	3rd Semester	
ENMT803114	Advanced Composites	3
ENMT803115	Advanced Manufacture	3
	Sub Total	**6**
	4th Semester	
	Elective	3
	Sub Total	**3**
	Total	**15**

Corrosion & Protection Specialization Courses

Code	Subject	SKS
	1st Semester	
ENMT801205	Principle of Corrosion	3
	Sub Total	**3**
	2nd Semester	
ENMT802210	Coating & Inhibition	3
	Sub Total	**3**
	3rd Semester	
ENMT803216	Advanced Corrosion	3
ENMT803217	Cathodic Protection	3
	Sub Total	**6**
	4th Semester	
	Elective	3
	Sub Total	**3**
	Total	**15**

Electives Courses

Code	Electives	SKS
	1st Semester	
ENMT803920	Nano Technology	3
ENMT803921	Electronic Materials	3
ENMT803922	Polymer Products Manufacturing	3
ENMT803923	RBI & Integrity	3
	2nd Semester	
ENMT804924	Polymer Materials and Derivatives	3
ENMT804925	Advanced Extractive Metallurgy	3

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10
	Total	40

Transition Policy from Curriculum 2016 to Curriculum 2020

1. The Curriculum 2020 takes effect from the Second Term 2020/2021. After this curriculum is implemented, only the subjects in the Curriculum 2020 will be counted for the graduation: any subject in the Curriculum 2016 follows the transition rules.
2. Transition rules will be valid for 1 (one) year, starting from the Second Term of 2020/2021 until the First Term 2021/2022 for any subject changing in its place (from the first term to second term or vice versa). If it is necessary, the subject will be opened in both semesters.
3. Students who have not passed the compulsory subjects in the Curriculum 2016 are required to take the same or equivalent subjects in the Curriculum 2020.
4. If there is a change in the credit hours, the credits at the first time the subject taken will be considerred. The same or equivalent subjects with different credit hours, if repeated or newly taken, will be counted with the new name and credit hours.
5. The equivalence subjects for Curriculum 2016 and Curriculum 2020 can be seen in the Equivalency Table. Any unlisted subject in the Curriculum 2016 has been removed and is no longer offered.
6. If the compulsory subjects in the Curriculum 2016 are removed and there are no equivalencies in the Curriculum 2020:

a. For students who have passed the subjects, the subjects will be counted as compulsory credits with the same name and credit hours.

b. For students who have not passed the subjects, students can take new compulsory subjects or elective subjects with the new name and credit hours.

7. If the credit hour of a subject has been reduced while the student has already taken the subject required for the graduation, then the student is still allowed to graduate even though the total number of credits is less than the required one.

Equivalency of Curriculum 2016 and 2020

No	Curriculum 2019			Curriculum 2020		
	Code	Subject	Credit	Code	Subject	Credit
1	ENMT800016	Research Paper	2	ENMT800018	Scientific Publication	2
2	ENMT800019	Thesis	8	ENMT800019	Thesis	6
3	ENMT801001	Kinetics and Phase Transformation	3	ENMT801001	Kinetics and Phase Transformation	3
4	ENMT801002	Engineering Materials	2	ENMT801002	Engineering Materials	2
5	ENMT801003	Research Methodology and Computation	3	ENMT802008	Research Methodology	3
6	ENMT801104	Mechanics of Material	3	ENMT801104	Mechanics of Material	3
7	ENMT801205	Principle of Corrosion	3	ENMT801205	Principle of Corrosion	3
8	ENMT802006	Design and Material Selection	3	ENMT802006	Design and Material Selection	3
9	ENMT802007	Material Characterization	3	ENMT802007	Material Characterization	3
10	ENMT802109	Advanced Manufacture	3	ENMT803115	Advanced Manufacture	3
11	ENMT802210	Advanced Corrosion	3	ENMT803216	Advanced Corrosion	3
12	ENMT802211	Coating and Inhibition of Materials	3	ENMT802210	Coating and Inhibition of Materials	3
13	ENMT803012	Advanced Failure Analysis	3	ENMT803011	Advanced Failure Analysis	3
14	ENMT803113	Advanced Composite	3	ENMT803114	Advanced Composite	3
15	ENMT803114	Welding Metallurgy	3	ENMT802109	Welding Metallurgy	3
16	ENMT803115	Cathodic Protection	3	ENMT803217	Cathodic Protection	3
17	ENMT803919	Project Management	3	ENMT804927	Project Management	3
18	ENMT803920	Electronic Materials	3	ENMT803921	Electronic Materials	3
19	ENMT803921	Polymer Derivatives	3	ENMT804924	Polymer Materials and Derivatives	3
20	ENMT803922	Risk Based Inspection and Integrity	3	ENMT803923	Risk Based Inspection and Integrity	3
21	ENMT804923	Advanced Polymer Manufacturing	3	ENMT803922	Polymer Products Manufacturing	3
22	ENMT804924	Advanced Extractive Metallurgy	3	ENMT804925	Advanced Extractive Metallurgy	3
23	ENMT804925	Advanced Surface Engineering	3	ENMT804926	Advanced Surface Engineering	3
24	ENMT804927	Nanotechnology	3	ENMT803920	Nanotechnology	3

Note:
Other subjects that are not listed in this table do not change except for the subject code and curriculum code (full list is given in the SIAK-NG website)

Master Program in Materials Integrity Management

Program Specification

1.	**Awarding Institution**	Universtas Indonesia Double Degree: Universitas Indonesia & partner universities	
2.	**Teaching Institution**	Universtas Indonesia Double Degree: Universitas Indonesia & partner universities	
3.	**Faculty**	Engineering	
4.	**Name of Study Program**	Graduate Program (Master) in Metallurgical and Materials Engineering	
5.	**Study Programme Vision and Mission**	Vision: As a center of excellence for research-based education as well as a center for reference and problem solutions in the field of material integrity management on a national and regional level in Southeast Asia Mission: • Providing access to education and research in the field of material integrity management for the public and industry. • Producing high-quality graduates with strong engineering skills with comprehensive capabilities in the field of material integrity management techniques and able to play an active and dynamic role in the national, regional, and international community. • Organizing quality tridharma activities that are relevant to national and global challenges. • Creating an academic climate that is able to support the realization of the vision of the study program.	
6.	**Type of Class**	Special, Research	
7.	**Awarding Degree**	Magister Teknik (M.T.) Double Degree: Magister Teknik (M.T.) dan Master of Engineering (M.Eng.)	
8.	**Accreditation Status**	BAN-PT : Good	
9.	**Language Course**	Bahasa (Indonesia) and English	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	• Meet University Requirements (bachelor's degree graduate, register online and pass the screening exam) • Undergraduate Diplomas from foreign tertiary institutions must obtain equivalence from the Higher Education, Ministry of National Education • Able to read and write in English • Color blindness is free to entry.	
12.	**Term of Study**	2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	16
	Short (opsional)	**1**	**8**

13.	**Aims of the programme:** 1. Produce graduates who can develop the science of material integrity management through research, professional practice to produce innovative and tested designs. 2. Produce graduates who are able to design, implement, evaluate and maintain a material integrity management system in a professional manner. 3. Produce graduates who are able to apply knowledge in the engineering field in the material integrity management system. 4. Produce graduates who are able to provide alternative solutions to various problems that arise in industrial societies, the nation and the state.
14.	**Profile of Graduates:** Master of Engineering Management who has the ability to design, implement, evaluate and maintain an international quality material integrity management system and uphold professional values.
15	**Expected Learning Outcomes (ELO):** 1. Able to develop the science of material integrity management through research, professional practice to produce innovative and tested designs. 2. Able to design, implement, evaluate and maintain a material integrity management system in a professional manner. 3. Able to apply engineering knowledge in material integrity management. 4. Able to identify, formulate and solve contemporary problems in the field of material integrity management. 5. Able to solve problems in the field of material integrity management through an interdisciplinary approach with other engineering fields. 6. Able to manage research in the field of material integrity management which has received national and international recognition. 7. Able to provide alternative solutions to various problems that arise in the industrial society, nation and state.
16.	**Composition of Subjects**

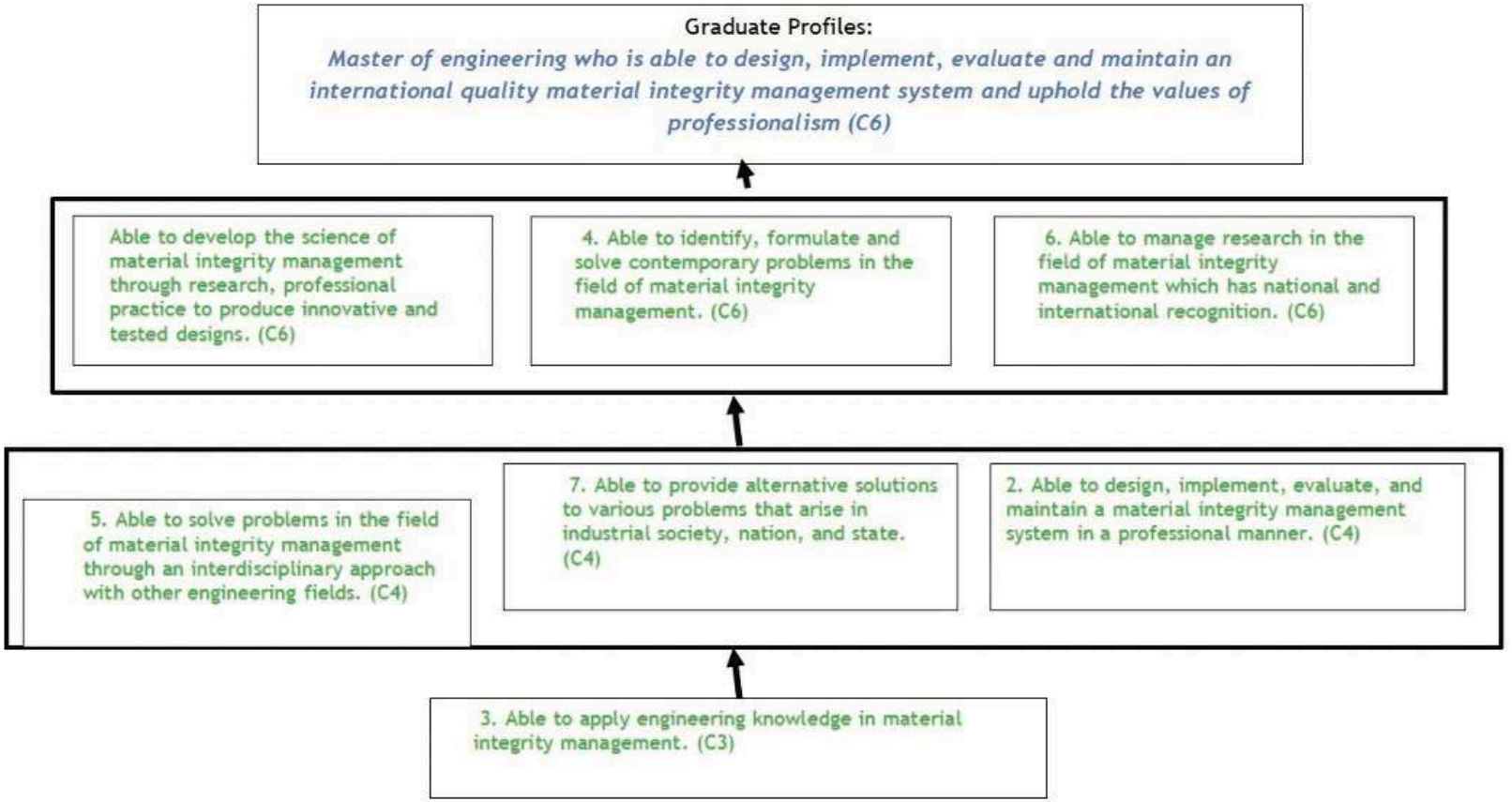
No.	Type of Courses	Credit Hours (SKS)	Percentage
I	Compulsory / Expertise Courses	31	70,45%
II	Specialization Courses	0	0%
III	Elective Courses	4	9,09%
IV	Seminar, Scientific Publication & Thesis	9	20,46%
	Total	44	100 %
	Total Credit Hours to Graduate		44 Credits

Job Prospects

Graduates of the Masters in Material Integrity Management can have careers as consultants / experts in RBI (Risk Based Inspection) and AIMS (Asset Integrity Management Systems), consultants in government agencies, consultants for the oil and gas industry, energy, petrochemical, manufacturing and related industries, Inspection managers, Control managers Quality, Safety manager and other related fields.

Expected Learning Outcome Matrix

Expected Learning Outcome Matrix



Flowchart for Learning Outcome Achievement
Master Program in Materials Integrity Management

Learning outcomes	1st Year		2nd Year	
	1st Semester	2nd Semester	3rd Semester	4th Semester
1. Able to develop the science of material integrity management through research, professional practice to produce innovative and tested designs. (C6)		Asset Integrity Elements	Risk Based Inspection	
		Inspection Methods and Materials Testings		
2. Able to design, implement, evaluate, and maintain a material integrity management system in a professional manner. (C4)	Integrity System Engineering		Reliability Engineering	
3. Able to apply engineering knowledge in material integrity management. (C3)	Risk Management		Failure Analyses	
4. Able to identify, formulate and solve contemporary problems in the field of material integrity management. (C6)	Integrated Materials Engineering	Corrosion and Protections		
5. Able to solve problems in the field of material integrity management through an interdisciplinary approach with other engineering fields. (C4)			Piping and Mechanical Engineering	Theses
			Case Study I	Case Study II
			Precision Maintenance	Advanced HSE
				Stochastic Models for Risk Management
				Advanced of Life Cycles Assets

Learning outcomes	1st Year		2nd Year	
	1st Semester	2nd Semester	Semester 3	1st Semester
6. Able to manage research in the field of material integrity management which has national and international recognition. (C6)	Computing Methodology	Research Meteorology		
7. Able to provide alternative solutions to various problems that arise in industrial society, nation, and state. (C4)				Theses
			Seminar	Scientific Publication

Course Structure for Master Program Materials Integrity Management

Compulsory / Expertise Courses

Code	Subject	SKS
	1st Semester	
ENMI801001	Integrated Materials Engineering	3
ENMI801002	Integrity System Engineering	2
ENMI801003	Risk Management	3
ENMI801004	Computational Methods	3
	Sub Total	**12**
	2nd Semester	
ENMI802005	Corrosion and Protections	3
ENMI802006	Asset Integrity Elements	4
ENMI802007	Inspection Methods and Materials Testing	3
ENMI802008	Research Methodology	3
	Sub Total	**13**
	3rd Semester	
ENMI803009	Failure Analysis	3
ENMI803010	Risk Based Inspection	3
ENMI803011	Seminar Proposal	1
ENMI803012 - ENMI803015	Electives I	2
	Sub Total	9
	4th Semester	
ENMI800020	Scientific publication	2
ENMI800021	Thesis	6
ENMI804916 - ENMI804919	Electives II	2
	Sub Total	8
	Total	**44**

Electives Courses

Code	Electives	SKS
	1st Semester	
ENMI803912	Study Case I	2
ENMI803913	Reliability Engineering	2
ENMI803914	Precision Maintenance	2
ENMI803915	Mechanical and Piping Engineering	2
	2nd Semester	
ENMI804916	Study Case II	2
ENMI804917	Advanced Health, Safety and Environment	2
ENMI804918	Stochastic Model for Risk Management	2
ENMI804919	Advanced Life Cycle Asset Analysis	2

Master By Research

Code	Subject	SKS
	1st Semester	
ENMI800102	Research Proposal Examination	4
ENMI800101	Scientific Seminar	8
	2nd Semester	
ENMI800203	Proceeding Publication	4
ENMI800204	Research Result Examination	6
	3rd Semester	
ENMI800105	Journal Publication	8
	4th Semester	
ENMI800206	Master Thesis	10
	Total	40

Master Program in Architecture

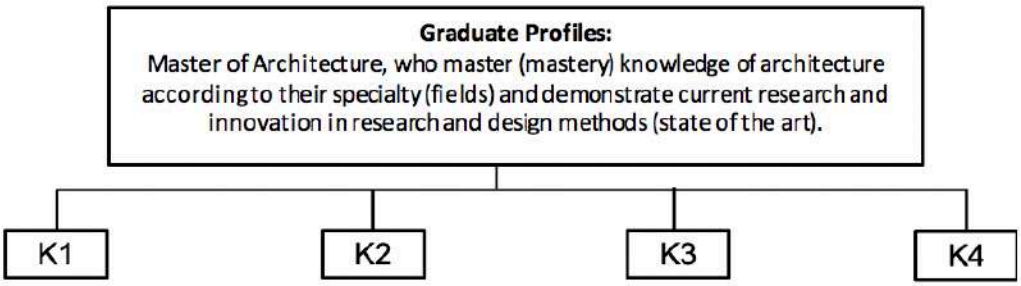
Program Specification

1.	**Degree Awarding University**	Universitas Indonesia	
2.	**University/Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Major Name**	Master of Architecture	
5.	**Vision and Mission**	Vision: "Establishing a high-quality Architecture Education Institution that receives national and international recognition, in order to foster future leaders who are critical, knowledgeable, and creative thinkers, with sensibility to local wisdom and environment sustainability." Mission: "Establishing the Architecture Education institutional system with excellent quality, adaptive, and inclusive towards the implementation of teaching, research and community engagement in higher education."	
6.	**Type of Class**	Reguler, Research	
7.	**Awarding Degree**	Magister Arsitektur (M. Ars.) / Master of Architecture	
8.	**Educational Accreditation**	BAN-PT: Akredited A	
9.	**Language**	Bahasa Indonesia	
10.	**Learning Scheme (Full Time / Part-Time)**	Full Time	
11.	**Requirements**	Bachelor degree	
12.	**Study Period**	2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	17
	Short (opsional)		
13.	**Aims of the programme:** 1. Education: Producing Master of Architecture graduates who master certain competencies in accordance with the level of education excellence and quality. 2. Research: Encouraging excellent research works, which are able to compete at regional and international levels. 3. Community Service: Encouraging the application of architectural knowledge to the community		
14.	**Profile of Graduates:** Master of Architecture graduates who master knowledge of architecture according to their fields and able to demonstrate the state of the art and contribution both in their research and design methods.		
15.	**Graduate Outcomes:** Master of Architecture graduates has following competencies: 1. Ability to independently conduct and manage an architectural research in relation to their fields. 2. Ability to synthesize knowledge and exploration methods of architectural phenomena and ability to solve architectural design problems. 3. Ability to position themselves as individual in relation to others and as part of the society, through behaving and thinking in support to the success of community life, teamwork, and act responsively to the surrounding environment.		

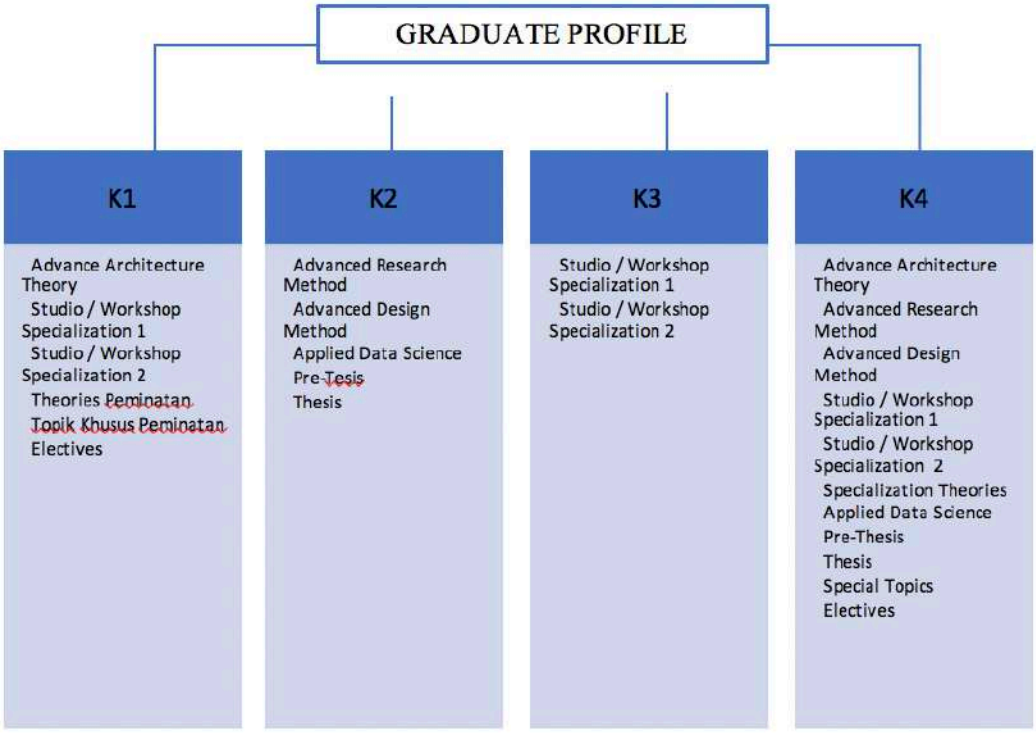
Job Prospects

Graduates can work in the business of architecture practitioners, academics, researchers, policy makers in government, entrepreneurs and activists in sectors related to human environment.

Network of Competencies



Detail Network of Competencies Graduates



Course Diagram in Achieving Competencies for Master Program in Architecture

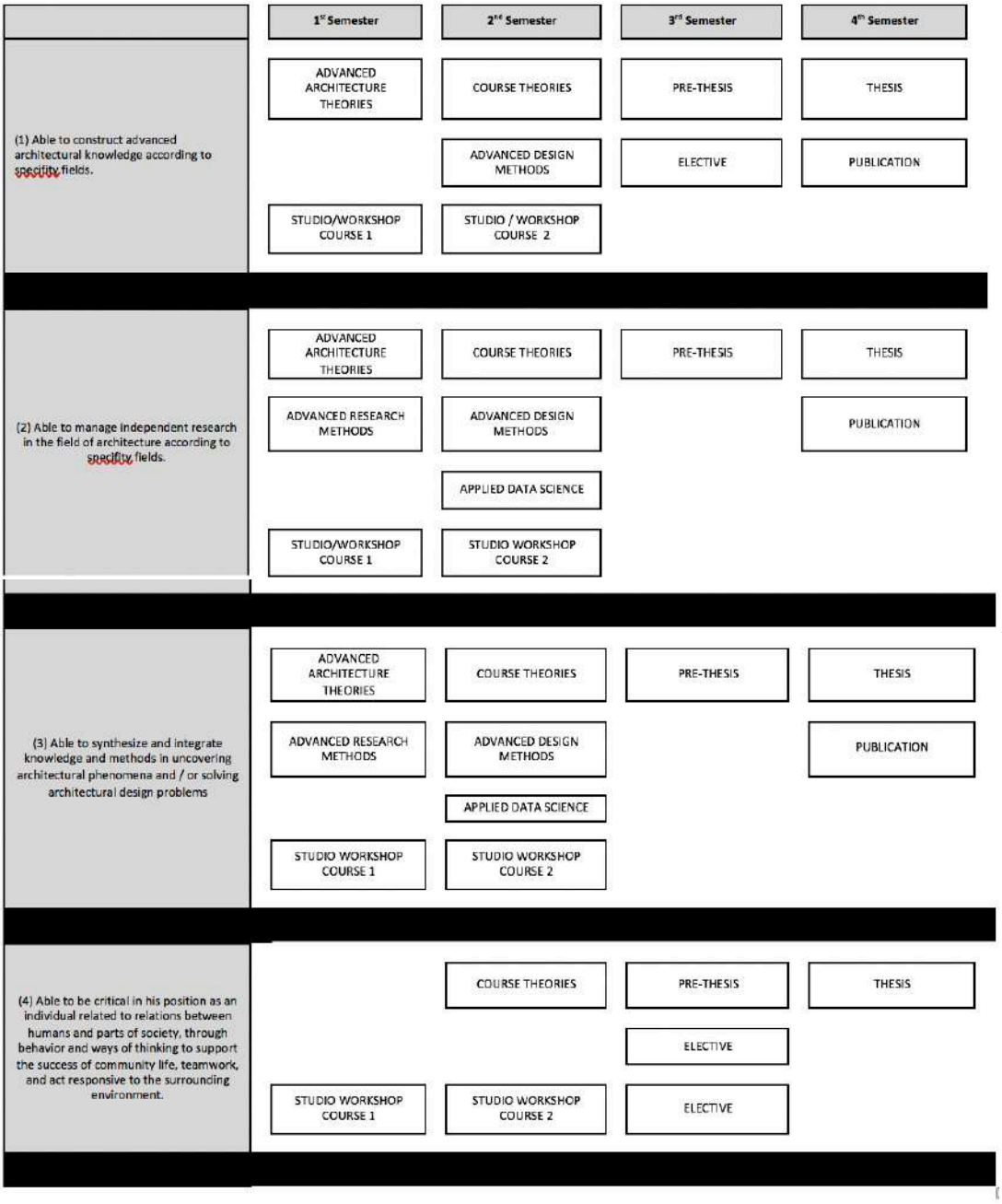


Figure 3 Course Diagram in Achieving Competencies for Master Degree in Architecture

Course Structure Master Program Architecture

Table 4 Curriculum Structure of Master of Architecture Program

Kode	Mata Ajar	Subjects	Peminatan					
			AD	UD	UHS	P	ATH	AS
Semester 1								
ENAR800001	Metode Penelitian Lanjut	Advanced Research Methods	3	3	3	3	3	3
ENAR800002	Teori Arsitektur Lanjut	Advanced Architectural Theories	3	3	3	3	3	3
ENAR800008	Studio Perancangan Arsitektur 1	Architectural Design Studio 1	5					
ENAR800009	Studio Perancangan Perkotaan 1	Urban Design Studio 1		5				
ENAR800010	Studio Perumahan dan Permukiman Perkotaan 1	Urban Housing and Settlement Studio 1			5			
ENAR800011	Workshop Properti 1	Property Workshop 1				5		
ENAR800012	Workshop Sejarah dan Teori Arsitektur 1	History and Theory Workshop 1					5	
ENAR800013	Workshop Arsitektur dan Keberlanjutan 1	Architecture and Sustainability Workshop 1						5
		Sub Total	**11**	**11**	**11**	**11**	**11**	**11**
Semester 2								
ENAR800003	Metode Perancangan Lanjut	Advanced Design Methods	3	3	3	3	3	3
ENAR800004	Ilmu Data Terapan	Applied Data Science	2	2	2	2	2	2
ENAR800014	Teori Perancangan Arsitektur	Architectural Design Theories	3					
ENAR800015	Teori Perancangan Perkotaan	Urban Design Theories		3				
ENAR800016	Teori Perumahan dan Permukiman Perkotaan	Urban Housing and Settlement Theories			3			
ENAR800017	Teori Properti	Property Theories				3		
ENAR800018	Teori dan Sejarah Arsitektur	Architectural Theory and History					3	
ENAR800019	Teori Arsitektur dan Keberlanjutan	Theory of Architecture and Sustainability						3
ENAR800020	Studio Perancangan Arsitektur 2	Architectural Design Studio 2	5					
ENAR800021	Studio Perancangan Perkotaan 2	Urban Design Studio 2		5				
ENAR800022	Studio Perumahan dan Permukiman Perkotaan 2	Urban Housing and Settlement Studio 2			5			
ENAR800023	Workshop Properti 2	Property Workshop 2				5		
ENAR800024	Workshop Sejarah dan Teori Arsitektur 2	History and Theory Workshop 2					5	

ENAR800025	Workshop Arsitektur dan Keberlanjutan 2	Architecture and Sustainability Workshop 2						5
		Sub Total	**13**	**13**	**13**	**13**	**13**	**13**
Semester 3								
ENAR800005	Pra Tesis	Pre-Thesis	4	4	4	4	4	4
	Pilihan	Elective	3	3	3	3	3	3
	Pilihan	Elective	3	3	3	3	3	3
		Sub Total	**10**	**10**	**10**	**10**	**10**	**10**
Semester 3								
ENAR800006	Publikasi Ilmiah	Scientific Publication	2	2	2	2	2	2
ENAR800007	Tesis	Thesis	4	4	4	4	4	4
		Sub Total	**6**	**6**	**6**	**6**	**6**	**6**
		Total	**40**	**40**	**40**	**40**	**40**	**40**

List of Elective Courses

CODE	MATA KULIAH	Elective Course	Credits
ENAR800026	Analisis Spasial Lanjut	Advanced Spatial Analysis	3
ENAR800027	Arsitektur dan Teks	Architecture and Text	3
ENAR800028	Arsitektur di Kawasan Pesisir	Coastal Architecture	3
ENAR800029	Arsitektur Etnik	Ethnic Architecture	3
ENAR800030	Arsitektur Pusaka	Heritage Architecture	3
ENAR800031	Arsitektur, Media dan Konteks	Architecture, Media, and Context	3
ENAR800032	Bangunan Hemat Energi	Energy Efficient Building	3
ENAR800033	BIM: Analisis & Asesmen Performa Bangunan	BIM: Building Performance Analysis & Assessment	3
ENAR800034	Desain Komputasi dan Permodelan Parametrik	Computational Design and Parametric Modelling	3
ENAR800035	Geometri dan Arsitektur	Geometry and Architecture	3
ENAR800036	Kajian Mandiri	Independent Study	3
ENAR800037	Kapita Selekta	Capita Selecta	3
ENAR800038	Kebijakan Perumahan	Housing Policy	3
ENAR800039	Keseharian dan Arsitektur	Everyday and Architecture	3
ENAR800040	Manajemen Proyek	Project Management	3
ENAR800041	Memahami Fenomena: Plato sampai dengan Derrida	Understanding Phenomenon: Plato to Derrida	3
ENAR800042	Morfologi Kota	City Morphology	3
ENAR800043	Perencanaan Kota	City Planning	3
ENAR800044	Psikologi Arsitektur	Architecture Psychology	3
ENAR800045	Teaching Assistantship	Teaching Assistantship	3
ENAR800046	Topik Khusus Perancangan Arsitektur	Special Topic on Architectural Design	3
ENAR800047	Topik Khusus Perancangan Perkotaan	Special Topic on Urban Design	3
ENAR800048	Topik Khusus Perumahan dan Permukiman Perkotaan	Special Topic on Urban Housing and Settlement	3
ENAR800049	Topik Khusus Properti	Special Topic on Property	3

ENAR800049	Topik Khusus Properti	Special Topic on Property	3
ENAR800050	Topik Khusus Sejarah, Teori dan Kritik Arsitektur	Special Topic on Architectural History, Theory and Criticism	3
ENAR800051	Topik Khusus Sustainabilitas	Special Topic on Sustainability	3

Curriculum Structure for Fast Track Program

Subject	SKS
Undergraduate Courses	
7th Semester	
Undergraduate Elective: Advanced Research Methods	3
Undergraduate Elective: Advanced Architectural Theories	3
Undergraduate Elective: (taken from Graduate Elective Course)	3
8th Semester	
Undergraduate Elective: Advanced Design Methods	3
Undergraduate Elective: Theory Peminatan	3
Total Transfer Credits	**15 SKS (34%)**
Graduate Courses	
1st Semester	
Graduate Required Course: Advanced Research Methods	3
Graduate Required Course: Advanced Architectural Theories	3
Graduate Elective	3
Sub Total	**9**
2nd Semester	
Graduate Required Course: Advanced Design Methods	3
Mata Ajar Peminatan S2 Theory Course	3
Studio/Workshop (Speciality) 2	5
Applied Data Science	2
Sub Total	**13**
3rd Semester	
Studio/Workshop (Speciality) 1	5
Pre-Thesis	4
Graduate Elective	3
Sub Total	**12**
4th Semester	
Thesis	4
Publication	2
Sub Total	**6**
Total Graduate Credits	**40**

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10
	Total	40

Transition Rules

1. The 2020 curriculum is implemented starting in the Odd Semester 2020/2021. In principle, after the 2016 Curriculum is implemented, only subjects in the 2020 Curriculum will be opened.
2. Class of 2019 and previously followed the 2020 curriculum with transitional rules.
3. A transitional period is for one academic year of 2020/2021 and implemented for subjects where the semester placement changes (from Even to Odd, or vice versa), if necessary, will be opened in both semesters during the transition period (Academic Year 2020 / 2021).
4. If there is a change in the credits of the subjects, the number of credits calculated for graduation is the number of credits at the time the courses are taken. Same or equal subjects with different Credits, if repeated or newly taken will be listed with a new name and calculated with new Credits.
5. For students who have not passed the required courses in the 2016 Curriculum, are required to take the same or equivalent courses in the 2020 Curriculum. (Curriculum 2016 courses that are not listed in the Equality Table means that they have not changed, both the name and the size of their SKS).
6. Students who have not passed Advanced Design and Research Methods (4 credits) in the 2016 Curriculum must take Advanced Design Methods (3 credits) and Advanced Research Methods courses (3 credits) in the 2020 Curriculum to fulfill the required courses.
7. Students in 2019 and previously who have taken Thesis (8 credits) but not yet finished it due to Covid-19 can still take Thesis (8 credits) in odd semester during the transition period.

Table 8 Equivalence of 2016 Curriculum and 2020 Curriculum Master Program in Architecture

No	Course Name in 2016 Curriculum	Credits 2016	Course Name in 2020 Curriculum	Credits 2020
1	Advanced Design and Research Methods	4	Advanced Design Methods	3
			Advanced Research Methods	3
2	Thesis	6	Thesis (will be opened in odd semester transition period)	8

Master Program in Chemical Engineering

Program Specification

1.	**Awarding Institution**	Universtas Indonesia	
2.	**Host Institution**	Universtas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program Title**	Master Program in Chemical Engineering	
5.	**Vision and Mission**	Vision Becoming a superior and competitive Chemical Engineering Study Program, through efforts to educate the nation's life to improve people's welfare, thus contributing to the development of Indonesian and world society Missions - Providing broad and fair access, as well as quality education and teaching in Chemical Engineering; - Organizing quality Tridharma activities that are relevant to national and global challenges; - Creating graduates of Chemical Engineering who are of high quality, noble character, and able to compete globally; - Creating an academic climate that can support the realization of the vision of the Department	
6.	**Class**	a. Chemical Engineering b. Gas Management c. Energy and Sustainable Process d. Process Intensification Technology e. Process Safety Management f. Research	
7.	**Final Award**	Magister Teknik (MT)	
8.	**Accreditation / Recognition**	BAN-PT: accredited A	
9.	**Language(s) Of Instruction**	Bahasa Indonesia	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	Bachelor degree / equivalent	
12.	**Study Duration**	4 (four) Semesters or 2 (two) Years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	16
	Short (opsional)		
13.	**Aims of the programme:** The aim of the Master in Chemical Engineering program is to provide high-quality graduate-level education so that graduates have the knowledge, abilities, and experience in researching the latest topics in chemical engineering		

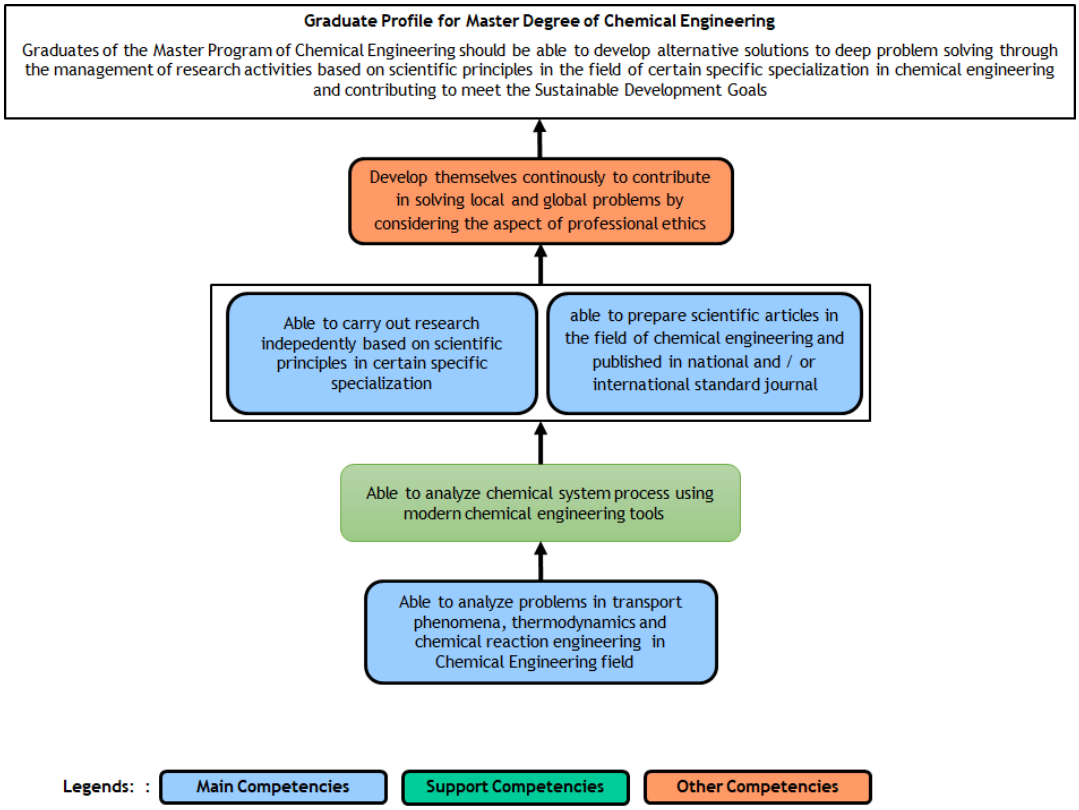
14.	**Graduate Profile:** The graduate who is able to develop alternative solutions to the problem deeply through the management of research activities based on scientific principles in the field of specific specialization in chemical engineering and contribute to meeting the Sustainable Development Goals (SDGs)
15.	**Expected Learning Outcomes (ELO):** 1. Able to analyze problem-related to thermodynamics, transport phenomena, and chemical reaction engineering in the field of chemical engineering 2. Able to analyze chemical process system using modern computation tools 3. Able to manage research activities independently based on scientific principles in certain fields of specialization 4. Able to write and manage scientific articles in the field of chemical engineering and published in national or international publication 5. Able to develop themselves continuously to be able to contribute according to professional ethics in solving local and global problems
16.	**Course composition**

No.	Type of Courses	Credit Hours (SKS)	Percentage
I	**Total Compulsory Credits**	21	52,5%
II	**Total Elective Credits**	9	22,5%
III	**Scientific Publication, Pra Thesis and Thesis**	10	25,0%
	Total	40	100 %
	Total Credit Hours To Graduate		40 Credits

Employment Prospects

A Graduate of Master in Chemical Engineering study program at UI can be contributed in the following areas: in various industrial companies, research, and education institutions such as the chemical industries, oil and gas industries, engineering consultants, LIPI, Lemigas, and other related fields. Job names suitable for graduates of this program include process engineers, control engineers, program managers, project managers, technical managers, lecturers, and researchers. Some graduates have started working before graduating from the study program.

The Network of Expected Learning Outcome (ELO)



Mapping Table for Achieving ELO in the Chemical Engineering Master Program for Regular Class

Expected Learning Outcome (ELO)	Name of Course			
	1st Semester	2nd Semester	3rd Semester	4th Semester
Able to analyze problem related to thermodynamics, transport phenomena, and chemical reaction engineering in field of chemical engineering	Adv Chemical Eng Thermodynamics	Advanced Transport Phenomena Advanced Chemical Reaction Engineering		
Able to analyze chemical process system using modern computation tools	Natural Gas Processing	Advanced Chemical Engineering Modeling		
Able to manage research activities independently based on scientific principles in certain fields of specialization		Research Methodology	Pre Thesis	Thesis
Able to write and manage scientific articles in the field of chemical engineering and published in national or international publication				Scientific Publication
Able to develop themselves continuously to be able to contribute according to professional ethics in solving local and global problems	Sustainable Energy Elective 1		Elective 2 Elective 3	

FACULTY OF ENGINEERING

Mapping Table for Achieving ELO in the Chemical Engineering Master Program for Gas Management Class

Expected Learning Outcome (ELO)	Name of Course			
	1st Semester	2nd Semester	3rd Semester	4th Semester
Able to analyze problem related to thermodynamics, transport phenomena, and chemical reaction engineering in field of chemical engineering	Adv Chemical Eng Thermodynamics			
Able to analyze chemical process system using modern computation tools	Natural Gas Processing	Natural Gas Economics		
Able to manage research activities independently based on scientific principles in certain fields of specialization			Pre Thesis	Thesis
Able to write and manage scientific articles in the field of chemical engineering and published in national or international publication				Scientific Publication
Able to develop themselves continuously to be able to contribute according to professional ethics in solving local and global problems	Sustainable Energy	System Eng Management.	Natural Gas Project Management	
	Elective 1	Elective 2	Health and Safety in Natural Gas Industry	
		Elective 3		

List of Courses for Chemical Engineering Master Program (Regular Class)

Code	Subject	SKS
	Compulsary Courses (21 Credits)	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800003	Advanced Transport Phenomena	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800005	Adv Chemical Eng. Modeling	3
ENCH800006	Research Methodology	3
ENCH800009	Natural Gas Processing	3
ENCH800027	Sustainable Energy	3
	Elective Courses (9 Credits)	
	Elective 1	3
	Elective 2	3
	Elective 3	3
	Special Courses (10 Credits)	
ENCH800007	Pre Thesis	2
ENCH800008	Thesis	6
ENCH800055	Scientific Publications	2
	Matriculation Courses for Non-Chemical Engineering Bachelor (13 Credits)	
ENCH600005	Numerical Computation	3
ENCH600010	Transport Phenomena	3
ENCH600013	Chemical Eng Thermodynamics	4
ENCH600019	Chemical Reaction Engineering 1	3

Curriculum Structure Master Program Chemical Engineering

Courses Structure of Master Program in Chemical Engineering for Regular Class

Code	Subject	SKS
	1st Semester	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800027	Sustainable Energy	3
ENCH800009	Natural Gas Processing	3
	Elective 1	3
	Sub Total	**12**
	2nd Semester	
ENCH800003	Advanced Transport Phenomena	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800005	Adv Chemical Eng. Modeling	3
ENCH800006	Research Methodology	3
	Sub Total	**12**
	3rd Semester	
ENCH800007	Pre-Thesis	2
	Elective 2	3
	Elective 3	3
	Sub Total	**8**
	4th Semester	
ENCH800008	Thesis	6
ENCH800055	Scientific Publication	2
	Sub Total	**8**
	Total	**40**

Courses Structure of Master Program in Chemical Engineering for Regular Class from Non-Chemical Engineering Bachelor

Code	Subject	SKS
	1st Semester	
Matrikulasi-ENCH600010	Transport Phenomena	-
Matrikulasi-ENCH600005	Numerical Computation	-
Matrikulasi-ENCH600019	Chemical Reaction Engineering 1	-
	Elective 1	3
	Elective 2	3
	Sub Total	**6**
	2nd Semester	
Matrikula-	Chemical Eng Thermodynamics	-

ENCH800003	Advanced Transport Phenomena	3
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800005	Adv Chemical Eng. Modeling	3
ENCH800006	Research Methodology	3
	Sub Total	**12**
	3rd Semester	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800027	Sustainable Energy	3
ENCH800009	Natural Gas Processing	3
ENCH800007	Pre-Thesis	2
	Elective 3	3
	Sub Total	**14**
	4th Semester	
ENCH800007	Thesis	6
ENCH800008	Scientific Publication	2
	Sub Total	**8**
	Total	**40**

List of Elective Courses

Code	List of Elective Courses Odd Semester	SKS	Code	List of Elective Courses Even Semester	SKS
ENCH800014	Oleochemical Industry	3	ENCH800034	Storage and Packing Technology	3
ENCH800015	Food Technology	3	ENCH800035	Bioinformatics	3
ENCH800016	Protein Engineering	3	ENCH800013	Drugs and Cosmetics Technology	3
ENCH800017	Herbal Technology	3	ENCH800037	Petroleum Processing	3
ENCH800018	Composite Material	3	ENCH800038	Petrochemical Processing	3
ENCH800019	Applied Thermodynamics	3	ENCH800039	Photocatalytic Technology	3
ENCH800020	Dynamic System	3	ENCH800040	Exploration and Production of Hydrocarbon	3
ENCH800021	Thermodynamics System of Hydrocarabon	3	ENCH800041	Waste Management and Prevention	3
ENCH800022	Lubricats Engineering	3	ENCH800042	Microalgae Cultivation & Development Tech	3
ENCH800023	Cryogenic Engineering	3	ENCH800043	Plant Utility and Maintenance	3
ENCH800024	Combustion Engineering	3	ENCH800044	Transp & Utilization of Natural Gas	3
ENCH800025	Plasma and Ozone Engineering	3	ENCH800045	Mixing Technology	3
ENCH800026	Heterogeneous Catalysts	3	ENCH800046	Problem Solving Skills	3
ENCH800028	Risk Management	3	ENCH800047	Polymer Technology	3
ENCH800029	Electrochemical Technology	3	ENCH800048	Genetic Modification Orgasnism	3
ENCH800030	Extraction & Isolation For Natural Product	3	ENCH800049	Technology of Controlled Drug Release	3
ENCH800031	Special Topics 1	3	ENCH800050	Special Topics 2	3
ENCH800032	Biochemical	5	ENCH800051	Biomass Termochemical Conversion	3
			ENCH800052	Basic Computer Programming	3

List of Courses of Master Program in Gas Management Specialization

Code	Subject	SKS
	1st Semester	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800027	Sustainable Energy	3
ENCH800009	Natural Gas Processing	3
	Elective 1	3
	Sub Total	**12**
	2nd Semester	
ENCH800011	Natural Gas Economics	3
ENCH800012	Management Systems Eng.	3
	Elective 2	3
	Elective 3	3
	Sub Total	**12**
	3rd Semester	
ENCH800007	Pre Thesis	2
ENCH800010	Natural Gas Project Management	3
ENCH800002	OHS in Natural Gas Industry	3
	Sub Total	**8**
	4th Semester	
ENCH800008	Thesis	6
ENCH800055	Scientific Publication	2
	Sub Total	**8**
	Total	**40**

List of Elective Courses

Code	Subject	SKS
	List of Elective Courses Odd Semester	
ENCH800040	Exploration and Production of Hydrocarbon	-3
	List of Elective Courses Even Semester	
ENCH800028	Risk Management	3-
ENCH800044	Transp & Utilization of Natural Gas	3

List of Courses of Master Program in Energy and Sustainable Process

Code	Subject	SKS
	1st Semester	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800027	Sustainable Energy	3
ENCH800009	Natural Gas Processing	3
ENCH800029	Electrochemical Technology	3
	Sub Total	**12**
	2nd Semester	
ENCH800051	Biomass Termochemical Conversion	3
ENCH800053	Green Hydrogen and Ammonia Production	3
ENCH800054	Carbon Capture, Utilization & Storage	3
	Elective 1	3
	Sub Total	**12**
	3rd Semester	
ENCH800007	Pre Thesis	2
	Elective 2	3
	Elective 3	3
	Sub Total	**8**
	4th Semester	
ENCH800008	Thesis	6
ENCH800055	Scientific Publication	2
	Sub Total	**8**
	Total	**40**

List of Elective Courses

Code	Subject	SKS
	List of Elective Courses Odd Semester	
ENCH800025	Plasma and Ozone Engineering	-3
ENCH800014	Oleochemical Industry	3
ENCH800020	Dynamic System	3

	List of Elective Courses Even Semester	
ENCH800042	Microalgae Cultivation & Development Tech	3
ENCH800039	Photocatalytic Technology	3
ENCH800046	Problem Solving Skills	3

List of Courses of Master Program in Process Intensification Technology

Code	Subject	SKS
	1st Semester	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800027	Sustainable Energy	3
ENCH800009	Natural Gas Processing	3
ENCH800056	Membrane Sepration Technology	3
	Sub Total	**12**
	2nd Semester	
ENCH800004	Advanced Chemical Reaction Engineering	3
ENCH800057	Membrane Technology for Advanced Treatment	3
	Elective 1	3
	Elective 2	3
	Sub Total	**12**
	3rd Semester	
ENCH800007	Pre Thesis	2
ENCH800025	Plasma and Ozone Engineering	3
	Elective 3	3
	Sub Total	**8**
	4th Semester	
ENCH800008	Thesis	6
ENCH800055	Scientific Publication	2
	Sub Total	**8**

List of Elective Courses

Code	Subject	SKS
	List of Elective Courses Odd Semester	
ENCH800026	Heterogeneous Catalysts	3
ENCH800018	Composite Material	3
ENCH800029	Electrochemical Technology	3
Code	**Subject**	**SKS**
	List of Elective Courses Odd Semester	
ENCH800039	Photocatalytic Technology	3
ENCH800041	Waste Management and Prevention	3
ENCH800065	Simulation for Waste Water Treatment	3

List of Courses of Master Program in Process Safety Management

Code	Subject	SKS
	1st Semester	
ENCH800001	Adv Chemical Eng Thermodynamics	3
ENCH800027	Sustainable Energy	3
ENCH800009	Natural Gas Processing	3
ENCH800058	Failure Prob & Process Safety Stat	3
	Sub Total	**12**
	2nd Semester	
ENCH800059	Process Control and Safety	3
ENCH800064	Risk Management of Process	3
	Elective 1	3
	Elective 2	3
	Sub Total	**12**
	3rd Semester	
ENCH800007	Pre Thesis	2
ENCH800060	Hazard Identification	3
	Elective 3	3
	Sub Total	**8**
	4th Semester	
ENCH800008	Thesis	6
ENCH800055	Scientific Publication	2
	Sub Total	**8**
	Total	**40**

List of Elective Courses

Code	Subject	SKS
	List of Elective Courses Odd Semester	
ENCH800063	Data Analysis in Process Safety	-3
	List of Elective Courses Even Semester	
ENCH800062	Asset Integrity Management	3-
ENCH800061	Process Safety Design	3

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10

Transition Guidance from Curriculum 2016 to 2020 for Master of Regular and Management Gas Classes

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. For class 2019 and above will follow these transition rules.
3. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd Semester while in the previous curriculum in even Semester (vice versa), then this course can be held (if necessary) in both semesters.
4. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020.
5. When there is a change in the course credits, then the number of graduation credits counted in is the number of credits when it was taken. The same or equivalent courses, when are equated with different credits, if retaken, or just taken, will be acknowledged under a new name and credits.
6. When a compulsory subject in the curriculum 2016 is deleted, and there is no equivalence in the curriculum 2020 then: For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 40 credits. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 40 credits.
7. In addition to changes in curriculum structure from 2016 to 2020, there are also the addition of several elective courses: Teknologi Elektrokimia), Teknologi Pencampuran (Mixing Technology), Teknologi Pengembangan dan Pemanfaatan Mikroalga (Microalgae Cultivation and Development Technology), Teknologi Ekstraksi dan Isolasi Bahan Alam (Extraction & Isolation Technology for Natural Products), Konversi Termokimia Biomassa (Biomass Termochemical Conversion Technology), Modifikasi Genetik Makhluk Hidup (Genetically Modified Organism), dan Dasar Pemrograman Computer (Basic Computer Programming)

Master Program in Industrial Engineering

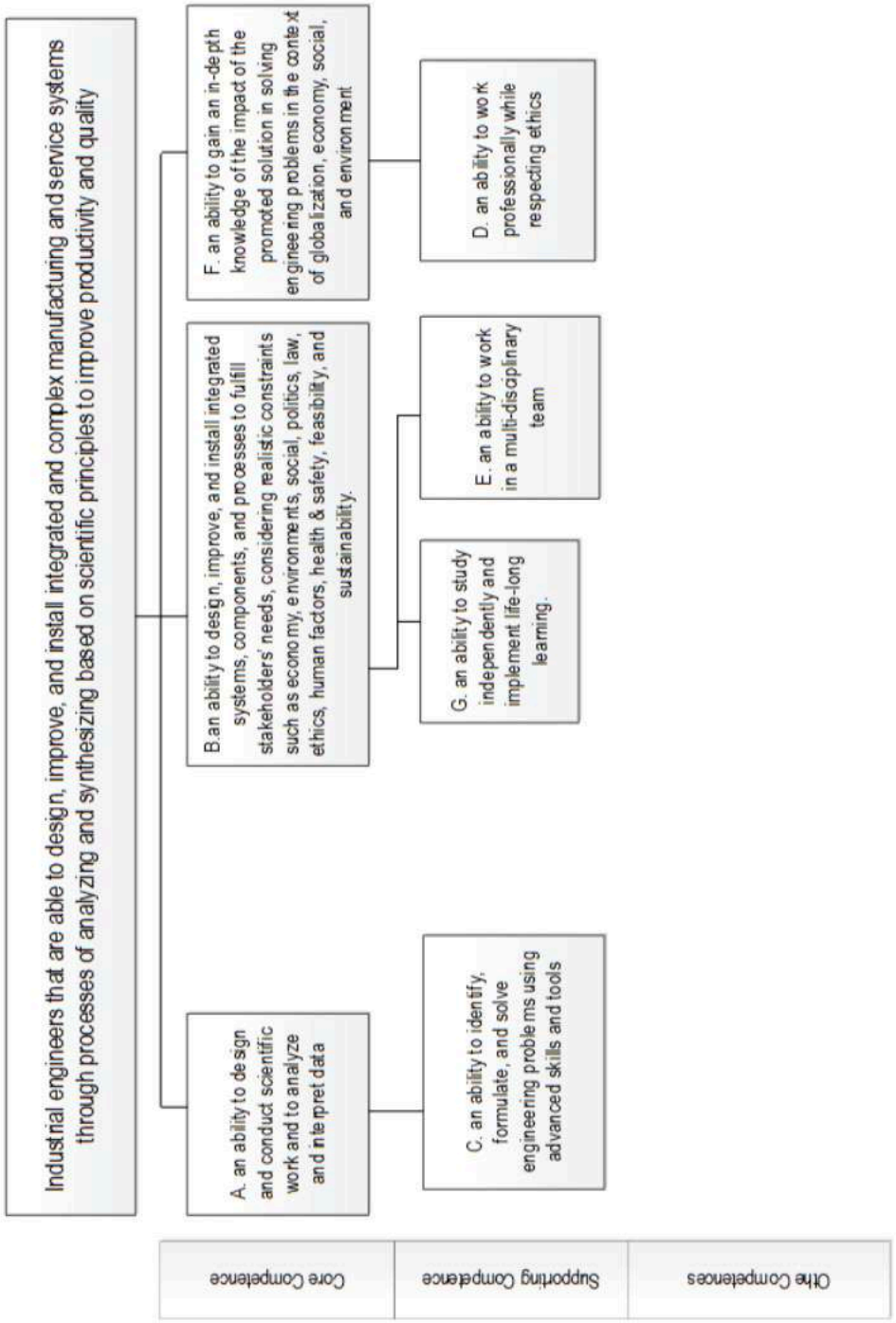
Program Specification

1.	**Degree Awarding University**	Universtas Indonesia	
2.	**Managing Institution**	Universtas Indonesia	
3.	**Faculty**	Engineering	
4.	**Study Program**	Master Program of Industrial Engineering	
5.	**Vision and Mission**	Vision: To be a leading master study program in Indonesia in developing industrial engineering knowledge to design, improve, and install a complex and industrial systems through analysis and synthesis processes in scientific research principles to increase productivity and sustainable quality. Mission: To conduct an Industrial Engineering graduate program with an international perspective supported by research that can compete internationally to support sustainable development goals in Indonesia.	
6.	**Class**	Reguler, Research	
7.	**Degree**	Master of Engineering	
8.	**Accreditation Status**	A-grade based on BAN-PT Accreditation	
9.	**Language**	Bahasa Indonesia	
10.	**Study Scheme**	Full Time	
11.	**Submission Requirement**	Hold a Bachelor's degree in Engineering, Natural Science, Economics, and Business; passed the UI entrance exam.	
12.	**Duration**	2 years	
	Semester	Number of semester	Number of weeks/semesters
	Reguler	4	16
	Short Semester	1	8
13.	**Aims of the program:** 1. To implement processes of analyzing and synthesizing based on scientific principles in Industrial Engineering's body of knowledge in designing, improving, and installing integrated systems. 2. To excel in research skills and scientific knowledge in advancing graduate students' careers. 3. To master the ethics of work in scientific communities for promoting improvement in the organizations.		
14.	**Graduates Profile:** Industrial engineers that are able to design, improve, and install integrated and complex manufacturing and service systems through processes of analyzing and synthesizing based on scientific principles to improve productivity and quality.		

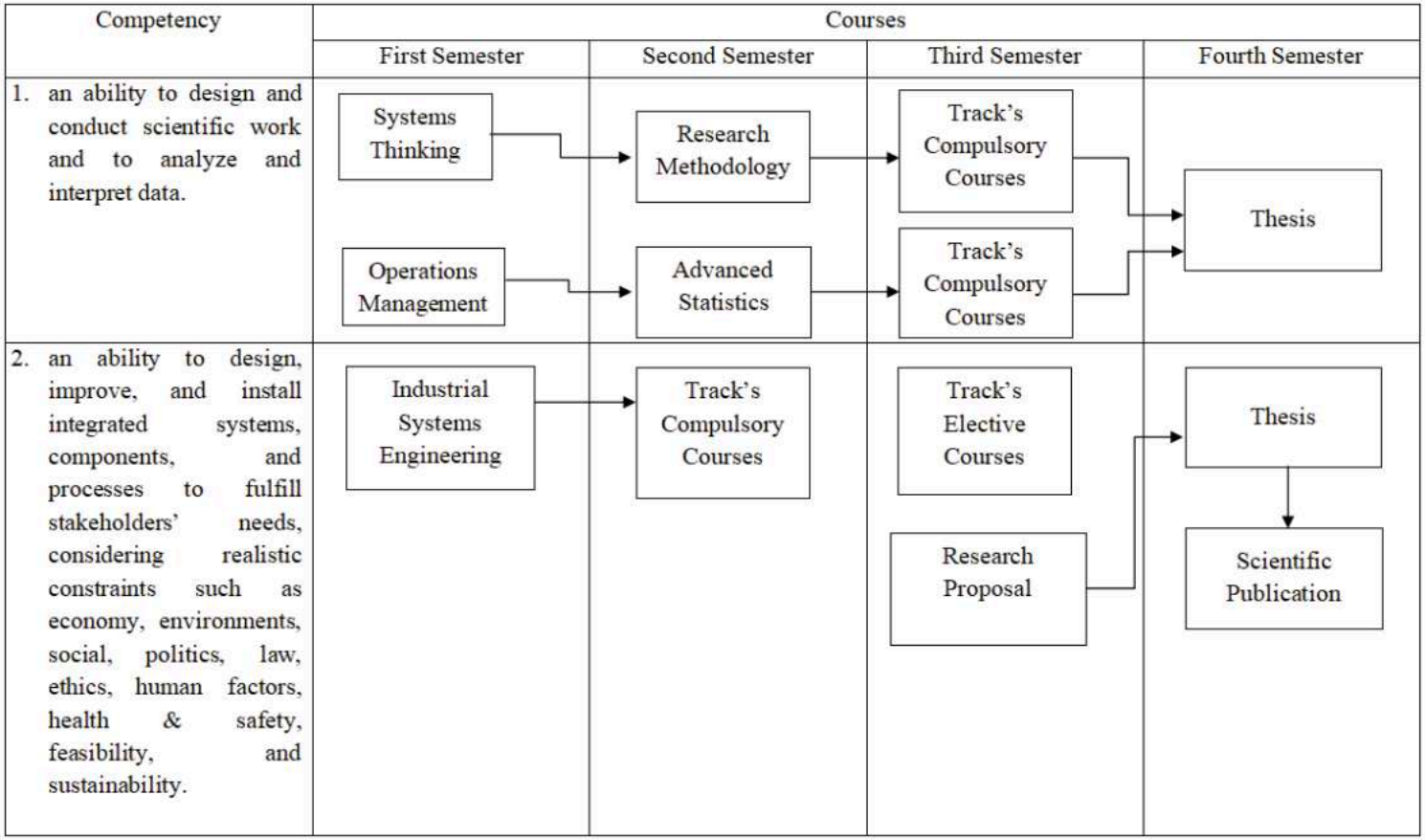
15.	**Expected Learning Outcomes:** 1. an ability to design and conduct scientific work and to analyze and interpret data. 2. an ability to design, improve, and install integrated systems, components, and processes to fulfill stakeholders' needs, considering realistic constraints such as economy, environments, social, politics, law, ethics, human factors, health & safety, feasibility, and sustainability. 3. an ability to identify, formulate, and solve engineering problems using advanced skills and tools. 4. an ability to work professionally while respecting ethics. 5. an ability to work in a multi-disciplinary team. 6. an ability to gain an in-depth knowledge of the impact of the promoted solution in solving engineering problems in the context of globalization, economy, social, and environment. 7. an ability to study independently and implement life-long learning.

No.	Type of Courses	Credit Hours (SKS)	Percentage
I	**Compulsory Courses of Study Program**	17	38,64%
II	**Compulsory Courses of Specialization**	9	20,45%
III	**Elective Courses**	6	13,64%
IV	**Matriculation**	12	
V	**Special Courses**	12	27,27%
	Total	44	100 %
	Total Credits		44 Credits

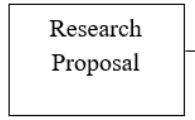
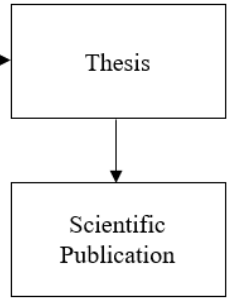
The Network of Expected Learning Outcomes



Flow Diagram of Courses based on Expected Learning Outcomes



3. an ability to identify, formulate, and solve engineering problems using advanced skills and tools.	Advanced Operations Research →	Track's Compulsory Courses →	Track's Elective Courses →	Thesis
4. an ability to work professionally while respecting ethics.		Research Methodology →	Research Proposal →	Thesis
5. an ability to work in a multi-disciplinary team.		Track's Compulsory Courses →	Track's Elective Courses	
6. an ability to gain an in-depth knowledge of the impact of the promoted solution in solving engineering problems in the context of globalization, economy, social, and environment.	Industrial Systems Engineering →	Track's Compulsory Courses →	Track's Elective Courses →	Thesis

7. an ability to study independently and implement life-long learning.				

Curriculum Structure of Industrial Engineering Master Program

Code	Subject	SKS
	1st Semester	
ENIE801001	Systems Thinking	3
ENIE801002	Industrial Systems Engineering	3
ENIE801003	Operation Management	3
ENIE801004	Advanced Operations Research	3
	Linear Programming	
	Basic Statistics	
	Sub Total	**12**
	2nd Semester	
ENIE801005	Research Methodology	2
ENIE801006	Advanced Statistics	3
	Track's Compulsory Courses	3
	Track's Compulsory Courses	3
	Engineering Economics	
	Human Factors in Engineering & Design	
	Sub Total	**11**
	3rd Semester	
ENIE800007	Research Proposal	2
	Track's Compulsory Courses	3
	Track's Elective Courses	3
	Track's Elective Courses	3
	Sub Total	**11**
	4th Semester	
ENIE800008	Scientific Publication	2
ENIE800009	Thesis	8
	Sub Total	**10**
	Total	**44**

Compulsory Specialization Subjects

Code	Subject	SKS
2nd Semester		
	Innovation And Design Engineering	
ENIE802108	Product and Service Innovation	3
ENIE802109	Work Safety Engineering and Management	3
	Production and Logistics System	
ENIE802216	Manufacturing System	3
ENIE802217	Inventory System	3
	Industrial Management	
ENIE802324	Industrial Project Development	3
ENIE802325	Industrial Strategic Management	3
	Data and Quality Engineering	
ENIE802432	Multivariate Analysis	3
ENIE802433	Quality and Reliability	3
	Systems Design and Management	
ENIE802540	Decisions and Risks in Systems Engineering	3
ENIE802541	Systems Engineering and Analysis	3
	Sub Total	
3rd Semester		
	Innovation And Design Engineering	
ENIE803110	Macroergonomics	3
	Production and Logistics System	
ENIE803218	Logistics System	3
	Industrial Management	
ENIE803326	Strategic Sourcing Management	3
	Data and Quality Engineering	
ENIE803434	Data Mining	3

	Systems Design and Management	
ENIE803542	Systems Performance Modeling	3
	Track's Elective Courses	3
	Track's Elective Courses	3
	Sub Total	

Elective Courses

Code	Subject	SKS
	Innovation And Design Engineering	
ENIE803111	Knowledge Management	3
ENIE803112	Cognitive Ergonomics	3
ENIE803113	Technopreneurship	3
ENIE803114	Human Performance Engineering	3
ENIE803115	Industrial Technology Management	3
	Production and Logistics System	
ENIE803219	Total Quality Management	3
ENIE803220	Lean Manufacturing	3
ENIE803221	Industrial Organization	3
ENIE803222	Maritime Logistics	3
ENIE803223	Transportation Systems	3
	Industrial Management	
ENIE803327	Engineering Management in the Value of Materials	3
ENIE803328	Industrial Economics	3
ENIE803329	Supply Chain Management	3
ENIE803330	Maintenance Management	3
ENIE803331	**Enterprise Information Systems**	3
	Data and Quality Engineering	
ENIE803435	Decision Uncertainties and Risk	3
ENIE803436	Consumer Relationship Management	3
ENIE803437	Advanced Optimization	3
ENIE803438	Prognostic and Machinery Health Management	3
ENIE803439	Service Engineering	3
	Systems Design and Management	
ENIE803543	Systems Engineering Management	3
ENIE803544	Supports and Logistics for Systems Engineering	3
ENIE803545	Technology Policy Modeling using System Dynamics	3
ENIE803546	Decision and Policy Models	3
ENIE803547	Renewable and Sustainable Energy Systems	3

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10

Transition Policy

1. New curriculum 2020 will be applied effectively from Odd Semester 2020/2021. In principle, after curriculum 2020 is implemented, then only courses from this new curriculum will be opened.
2. The enforcement of the transitional period is one year. During this transition period, if a course in curriculum 2020 is in odd semester while in previous curriculum in even semester (vice versa), then this course can be held (if necessary) in both semesters.
3. For students who have not passed the compulsory courses in curriculum 2016, are required to take the same course or equivalent in curriculum 2020. Equivalence courses can be seen in the table below. All courses in the curriculum 2016 that are not listed in equivalence table have not changed, both in names and credits.
4. When there is a change in the course credits, then the number of graduation credits counted in, is the number of credits when it was taken. The same or equivalent courses when are equated with different credits, if retaken, or just taken will be acknowledged under a new name and credits. (see course equivalence table).
5. When a compulsory subject in the curriculum 2016 is deleted and there is no equivalence in the curriculum 2020, then:

a. For students who have passed these subjects, the credits that are achieved will be counted in the calculation of graduation 44 credits.

b. For students who did not pass these courses, they can take new compulsory courses or choose elective subjects in the curriculum 2020 to complete 44 credits.

Table of Course Equivalency between Curriculum 2016 and 2020

No	Course Name in 2016 Curriculum	Credits 2016	Course Name in 2020 Curriculum	Credits 2020
1	Research Methodology	3	Research Methodology	2

Master Program

Energy Systems Engineering

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program Title**	Master Program in Energy Systems Engineering	
5.	**Vision and Mission**	**Vision :** Becoming an excellent Master's Program in Energy Systems Engineering at an international level. **Mission :** To provide students with interdisciplinary knowledge in energy systems engineering that covers technical, economic, environmental, and policy aspects.	
6.	**Class type**	Special Class	
7.	**Final Award**	MT	
8.	**Accreditation Status**	BAN-PT (accredited Very Good or "Baik Sekali")	
9.	**Language of Instruction**	Indonesia	
10.	**Study Scheme (Full Time / Part-Time)**	Full Time	
11.	**Entry Requirements**	Pass the entrance selection test (SIMAK-UI), and Bachelor (S1) graduates from the field of Engineering, Natural Sciences, and Economy (including Business and Management)	
12.	**Study Duration**	Scheduled for two years	
	Semester Type	Number of semester	Number of weeks/semesters
	Reguler	4	16
13.	**Aims of the programme:** The Master's Program in Energy Systems Engineering aims to produce graduates capable of designing, analyzing, and applying energy systems to solve problems in the energy sector by utilizing an interdisciplinary approach.		
14.	**Profile of Graduates:** A Master in Energy Systems Engineering can design energy systems and formulate energy policy to support sustainable development at national and international levels.		

15.	**Expected Learning Outcomes (ELO) :** Master's Program in Energy Systems Engineering has the following Expected Learning Outcomes: 1. Students can design sustainable energy systems based on renewable, low carbon and carbon neutral energy. 2. Students can evaluate energy economics and business models. 3. Students can develop energy planning and policy. 4. Students can comprehensively analyze interdisciplinarity of energy transition systems to achieve net zero emissions.		
16.	**Classification of Subjects**		
No.	**Types of Subjects**	**Credits**	**Percentage**
I	Compulsory courses at the study program level	26	62%
II	Elective courses	16	38%
	Total	42	100%
	Total Credits for Graduation		**42**

Job Prospects

Graduates of this study program can work on:

1. Business Institutions / Professionals.
2. Government Institutions, such as Kementerian Energi dan Sumber Daya Mineral (ESDM), Kementerian Badan Usaha Milik Negara (BUMN) and Kementerian Keuangan.
3. State-Owned Enterprises, such as Pertamina, PLN, and PGN.
4. Educational and research institutions.

Expected Learning Outcomes (ELO)

GRADUATE PROFILE:

A Master in Energy Systems Engineering can design energy systems and analyze energy policy to support sustainable development at national and international levels.

1. Students can design sustainable energy systems based on renewable, low carbon and carbon neutral energy.
2. Students can evaluate energy economics and business models.
3. Students can develop energy planning and policy.
4. Students can comprehensively analyze interdisciplinarity of energy transition systems to achieve net zero emissions.

Flowchart of courses to attain the expected learning outcomes in the Master's Program in Energy Systems Engineering

Expected Learning Outcomes	Courses			
	Semester 1	Semester 2	Semester 3	Semester 4
Students can design sustainable energy systems based on renewable, low carbon and carbon neutral energy.	Sustainable Energy Systems Energy Technology	Materials for Energy Smart Grid and Distributed Power Generation Renewable Energy	Energy Storage System Carbon Capture Utilization and Sequestration	
Students can evaluate energy planning, policies, economics and business models.	Advanced Engineering Mathematics	Energy Systems Modelling and Policy Analysis	Energy Regulations and Markets Energy Transition Economics Energy Planning and Policy	
Students can comprehensively analyze interdisciplinarity of energy transition systems to achieve net zero emissions.		Pre-Thesis		Thesis Scientific Publication

Core courses

Elective courses

Course Structure Master Program in Energy Systems Engineering

Core Courses

Code	Subject	SKS
	1st Semester	
ENES801001	Advanced Engineering Mathematics	4
ENES801002	Sustainable Energy Systems	4
ENES801003	Energy Technology	4
	Sub Total	**12**
	2nd Semester	
ENES802004	Pre-Thesis	2
	Elective 1	4
	Elective 2	4
	Sub Total	**10**
	3rd Semester	
ENES803005	Energy Planning and Policy	4
	Elective 3	4
	Elective 4	4
	Sub Total	**12**
	4th Semester	
ENES804006	Master Thesis	6
ENES804007	Scientific Publications	2
	Sub Total	**8**
	Total	**42**

Elective Courses

Code	Subject	SKS
ENES802008	Energy Systems Modelling and Policy Analysis	4
ENES803017	Energy Transition Economics	4
ENES802012	Materials for Energy	4
ENES803020	Energy Storage System	4
ENES802013	Smart Grid and Distributed Power Generation	4
ENES802014	Renewable Energy	4
ENES803015	Energy Regulations and Markets	4
	Carbon Capture Utilization and Sequestration	4

Students may take elective courses across departments within or outside the Faculty of Engineering. Taking these cross courses must be by following the Faculty of Engineering, Universitas Indonesia rules.

Study Program Magister of Urban and Regional Planning

Program Specification

1.	**Degree Awarding Institution**	Universitas Indonesia	
2.	**University/Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Major Name**	Study Program Magister of Urban and Regional Planning	
5.	**Mission and Vision**	Vision: "to become the center for development of multidisciplinary science with a focus on the application of smart cities and urban economic development based on the noble values of Indonesia, in the field of urban and Regional Planning at the National and International Levels." Mission: 1. Prepare graduates who are capable of lifelong learning, able to adapt to the field of work, have a good morals and leadership qualities, able to compete on the international market. 2. Produce useful work in the field or Urban and Regional Planning through structured academic and research programs at the post-graduate level (master). 3. Prepare planners who have competence in accordance with their specific and prospective fields in an interdisciplinary perspective.	
6.	**Type of Class**	Regular, Research	
7.	**Awarding Degree**	Magister Perencanaan Wilayah dan Kota (M.PWK.)	
8.	**Educational Accreditation**	BAN-PT: Very Good	
9.	**Language**	Bahasa Indonesia	
10.	**Learning Scheme (full/ part time)**	Full Time	
11.	**Requirements**	Bachelor degree/equal	
12.	**Study Period**	Scheduled for 2 years	
	Type Semester	Total Semester	Weeks per Semester
	Reguler	4	17
	In between (optional)		
13.	**Aims of the programme:** 1. Creating urban planners that are able to support city residents to have a sustainable life (by optimizing existing resources), both in terms of social. Economic. health, cultural. Political. Ecological and security aspects. 2. Emphasize aspects of the application of information technology. Community participation and appropriate theory and practice in the planning process. 3. Increase understanding of human settlements and urban planning issues so they can provide for and anticipate the needs of their citizens.		
14.	**Profile of Graduates:** Masters in Urban and Regional Planning who are able to produce substantives. Technical and administrative qualified urban panners. Bu considering the impacts of interventions on a city scape in social, economic, cultural, political, and security aspects from time to time.		

15.	**Learning Outcomes (CPL):** Master in Urban and Regional Planning has the following learning outcomes: 1. Able to analyze the growth and development of the city with appropriate approaches and appropriate technologies; 2. Able to predict the needs of an increasing complex city; 3. Able to test plans and policies using various urban method and technologies in an effort to improve and maintain the quality of life of the population; 4. Able to evaluate plans activities that can improve services to underprivileged residents; 5. Able to propose research designs and conduct applied research in the field of urban planning; 6. Able to conclude urban planning solutions and their documents in solving urban problems.
16.	**Course Composition**

No.	**Type of Course**	**Credits**	**Percentage**
I	University Course		
II	Faculty Course		
III	Required Structural Course	20	47,8%
IV	Elective Course	12	28,5%
V	Special Course: Thesis	8	19,0%
VI	Publication	2	4,7%
	Total	42	100%

Job Prospects

Graduates of this study program can work in:

1. Government Institutions, such as Ministry of National Development Planning of the Republic of Indonesia/ National Development of Planning Agency (BAPPENAS), The Ministry of Agrarian and Spatial Planning/ National Land Agency (BPN) of the Republic of Indonesia, Regional Development of Planning Agency (BAPPEDA), State- Owned Company In all regions in Indonesia that uses urban and regional planning experts (Adhi Karya, Hutama Karya, etc.).
2. Private Business/Professional Institutions engages in urban planning. Both from Indonesia (Arkonin, etc.) and outside Indonesia (Aecom, dll)
3. State owned and private research institutes. Such as: LIPI, PULSE LAB Jakarta
4. Entrepreneur in Urban Planning

Network of Competencies

Figure 1. Course Diagram in Achieving Competencies for Master Program in Urban and Regional Planning

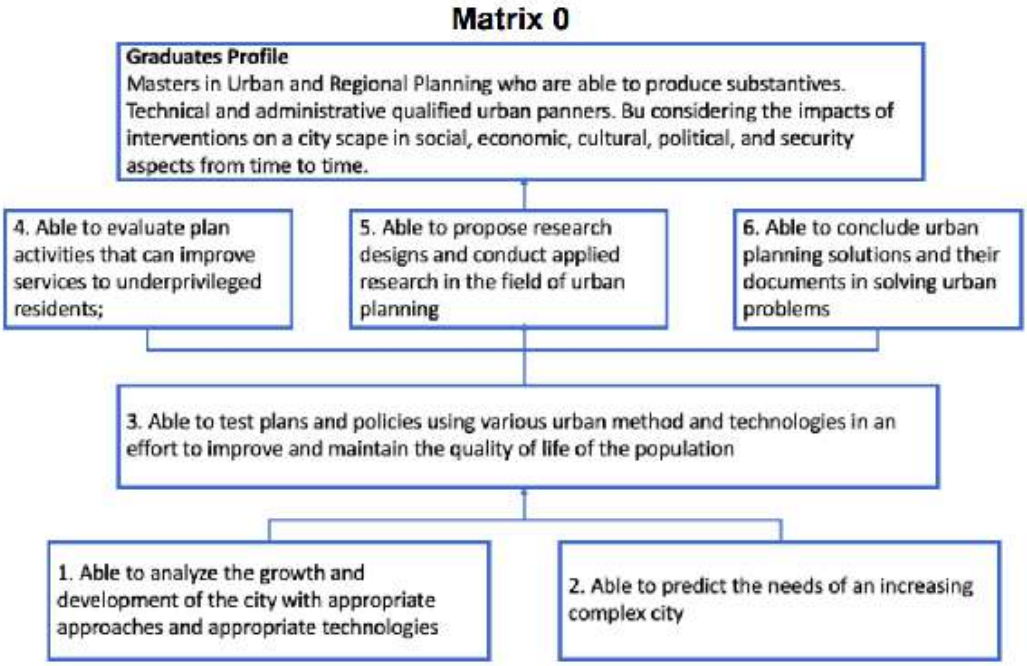


Table 1 Matrix 0 Study Program Master of Urban and Regional Planning

KKNI Level 8	General Competence	Outcome
1. Able to develop knowledge, technology, and or at in the field of science or professional practice through research, to produce innovative and tested works.	1. Able to analyze the growth of urban development with an appropriate technology approach; 2. Able to predict the needs of an increasingly complex city; 3. Able to conclude urban planning solutions and their documents in solving urban problems;	Theses. Papers, publication including thesis summary articles in journal format in the UI repository, Course Assignment report.
2. Able to solve problems of science, technology. And or art in the field of science through and inter or multidisciplinary approach.	4. Able to test plans and policies using various urban methods and technologies in an effort to improve and maintain the quality of life of the population.; 5. Able to plan activities that can improve services to underprivileged residents;	Course assignment report
3. Able to manage research and development that is beneficial to society and science. And is able to gain national and international recognition.	6. Able to propose research designs and conduct applied research in the field of urban planning.	Theses. Papers, publication including thesis summary articles in journal format in the UI repository.

Matrix 0A
ATTITUDE FORMULATION

Every graduate of academic. Vocational and professional education programs must have the following attitudes:

a. Fear God Almighty and be able to show a religious attituded;
b. Upholding human values in carrying out tasks based on religion, morals and ethics;
c. Contribute to the quality improvement of life in society, nation, state, and the progress of civilization based on Pancasila;
d. Act as citizens who are proud and live their homeland, have nationalism and a sense of responsibility to the country and nation;
e. Respects the diversity of cultures, views, religions, and beliefs, as well as the opinions or original findings of others;
f. Work together and have social sensitivity and concern for society and the environment;
g. Obey the law and discipline in the life of society and the state;
h. Internalize academic values, norms, and ethics;
i. Demonstrate a responsible attitude towards work in the field of expertise independently; and Internalize the spirit of independence, struggle, and entrepreneurship.

General Skills Formula

No	General Skills Formula for Master of Urban and Regional Planning (PWK)		Master Class Course
1.	Able to analyze growth and development of cities with appropriate approaches and technologies	Able to analyze community growth to understand developments that need to be planned	a. Urban and Regional Analysis b. Urban Planning Law
		Able to use appropriate approaches to analyze urban development	c. Planning Method and Theory d. Urban Theory and History e. Urban Housing and Settlement Theory
2.	Able to predict the needs of an increasingly complex city	Able to analyze urban infrastructure and transportation needs	a. Transport Planning and Policy b. Spatial Data Digitalization c. Project Investment and Finance d. Infrastructure Asset Management e. Transportation System f. Logistics Transportation
		Able to analyze urban spatial needs	g. Urban Design Theory h. Urban Studio i. Housing policy
		Able to analyze urban environmental management needs	j. Energy Efficient Building k. Water Resources Management l. Sustainable Infrastructure m. Watershed *(DAS)* Health Audit n. Data Management and Analysis o. Environmental Audit p. Life Cycle Analysis (LCA)
3.	Able to test plans and policies using a variety of urban methods and technologies to improve and maintain the quality of life of the population;	Able to use methods to test and evaluate city plans and policies	a. Urban Planning Law b. Housing Policy c. Water Resources Management d. Sustainable Infrastructure e. Energy Efficient Building f. Architecture And Sustainability Workshop
		Able to test efforts to improve the quality of life of city dwellers	g. Urban Studio h. Plan Making studio
4.	Able to plan activities that can improve services to underprivileged residents;	Able to propose activities that can improve services to underprivileged residents	a. Housing Policy b. Plan Making studio
		Able to produce draft regulations to improve services to citizens	c. Urban Planning Law d. Urban Studio

5.	Able to propose research designs and conduct applied research in the field of urban planning;		a. Thesis b. Scientific publications
6.	Able to conclude urban planning solutions and their documents in solving urban problems.	Able to produce city design that can solve urban problems	a. Urban Physical Planning b. Urban Studio c. Urban Planning Studio
		Able to formulate the system needed to plan the city	d. Housing Policy e. Property Workshop f. Water Resources Management g. Sustainable Infrastructure h. Infrastructure and Regional Development
		Able to formulate urban planning documents using appropriate methods to solve city needs from various economic, social, cultural, technological, and ecological aspects	i. Planning Method and Theory j. Plan Making Studio

Matrix 1

Table 2 Matrix 1 Master of Urban and Regional Planning

Group Level	Main Competencies	Supporting Competencies	Other Competencies
Basics and Personality			
Knowledge field	1. Able to analyze the growth and development of cities with appropriate approaches and technologies; 2. Able to predict the needs of an increasingly complex city		
Craftsmanship	3. Able to test plans and policies using various urban method and technologies in an effort to improve and maintain the quality of life of the population 4. Able to conclude urban planning solutions and their documents in solving urban problems. 5. Able to plan activities that can improve services to underprivileged residents	6. Able to propose research designs and conduct applied research in the field of urban planning;	
Work Behavior	7. Able to test and evaluate plans and policies using various urban methods and technologies in an effort to improve and maintain the quality of life of the population 8. Able to plan activities that can improve services to underprivileged residents		
Social life			

Matrix 2
Master's Study Program in Urban and Regional Planning

Table 3 Study Program Master of Urban and Regional Planning

No	Learning Objectives	Learning Experience		Main Substances and Sub-topics	Media and Technology	Course	Indicator	Assessment
		Sub-Objectives	Activity Method					
1	Able to analyze the growth and development of cities with appropriate approaches and technologies	Able to analyze community growth to understand developments that need to be planned	Lectures, Independent Assignments, Analysis, Literature Reviews, Observations, Discussions	Urban planning analysis method, using primary and secondary data; Defines a region; Analyze the demographic, social, and economic conditions of the region.	Laptop, LCD, Whiteboard, Internet	Urban and Regional Analysis	Students are able to perform and review various techniques, data sources, and skills to analyze the area from an economic, social and spatial perspective.	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Analysis, Literature Reviews, Discussions	legal framework in planning, the legal balance between the government's interest in promoting public welfare through land use regulation and the interest of private property owners in optimizing personal enjoyment and property value	Laptop, LCD, Whiteboard, Internet	Urban Planning Law	Students are able to use the legal framework in which planning takes place. In addition, students are also expected to emphasize the role of urban planning law in preparing local government responses to social, economic, and physical planning between local governments, central government, the private sector, and the community.	Written Examinations, Written Assignments, Presentations
		Able to use appropriate approaches to analyze urban development	Lectures, Independent Assignments, Literature Reviews, Case Studies, Discussions	A general outline of the city's history and human efforts to plan it; Connections between urban change, urban planning, and the forces of society that shape them; Aspects of urban theory and studies with current planning practice; Current debates about cities and their planning in historical contexts; Formulate questions for in-depth	Laptop, LCD, Whiteboard, Internet	Planning Method and Theory	Students are able to explain classical and contemporary planning theory, theoretical tools for planning analysis, intellectual dialogue through critical reading, information discussion and writing assignments	Written Examinations, Written Assignments, Presentations

				exploration in coursework and subsequent research.				
			Lectures, Independent Assignments, Literature Reviews, Discussions	Engineering theory, policy, politics, and narrative in planning; The evolution and interrelationships between major planning approaches and theoretical perspectives on them, including comprehensive (rational) planning (incremental, strategic, communicative planning), advocacy and equity planning, and radical/rebel planning; Professional planning codes of ethics, their strengths, and their limitations.	Laptop, LCD, Whiteboard, Internet	Urban Theory and History	Students are able to explain the origin and evolution of cities, the process of urbanization, planning efforts in the 19th century, international influences, and urban issues such as segregation between races, housing market differences, and urban sprawl.	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Literature Reviews, Discussions	Impact of housing development planning	Laptop, LCD, Whiteboard, Internet	Urban Housing and Settlement Theory	Able to analyze the impact of housing development planning in urban areas	Written Examinations, Written Assignments, Presentations
2	Able to predict the needs of an increasingly complex city	Able to analyze urban infrastructure and transportation needs	Lectures, Independent Assignments, Case Studies & Observations, Discussions	Transportation Policy Formulation; framework for assessing policy transportation - land use, accessibility, air pollution, noise, accidents and sustainability. Transport planning and policy and interaction with spatial planning. Institutional arrangements for transportation planning and management. Risk, uncertainty and complexity in determining transportation policy. Transport policies at the local, regional, metropolitan and national levels; logistics transportation policy	Laptop, LCD, Whiteboard, Internet	Transport Planning and Policy	Able to bring out the uniqueness and originality of the proposal in the preparation of transportation policy	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments,	Introduction to spatial data digitalization. digital data components, general planning	Laptop, LCD, Whiteboard,	Spatial Data Digitalization	1. Able to analyze muti-source digital data	Written Examinations, Written

			Literature Revies & Case Studies, Discussions	knowledge, definition of spatial data digitization, types of digital data spatial, data digitization development methods	Internet		2. Able to use data interoperability 3. Able to develop spatial data processing skills	Assignments, Presentations
			Lectures, Independent Assignments, Literature Revies & Case Studies, Discussions	Fundamentals of engineering economics; basics of technical economic analysis; decision making in engineering economics; inflation, depreciation, tax and sensitivity analysis; introduction to project funding; project funding structure; project funding sources; risk in project funding; project funding modeling; introduction to sharia-based project financing.	Laptop, LCD, Whiteboard, Internet	Project Investment and Finance	1. Being able to implement the principles of project financing in analyzing the risks associated with the financing of projects and to evaluate project funding 2. Ability to analyze cases of cases of investment and financing of projects in the real world	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Literature Revies & Case Studies, Discussions	Infrastructure asset management, asset evaluation, asset valuation, optimization in asset management, asset allocation, risk management on infrastructure assets	Laptop, LCD, Whiteboard, Internet	Infrastructure Asset Management	Able to identify and analyze infrastructure asset management processes; Able to explain infrastructure asset management and provide illustrations of asset management implementation on infrastructure to achieve sustainability in the infrastructure sector	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Case Studies and Reviews, Discussions	Transportation System Components, operating system, demand and supply	Laptop, LCD, Whiteboard, Internet	Transportation System	Students are able to analyze the components of the transportation system from various dimensions, as well as the latest issues related to the Indonesian and global transportation system; Students are able to design transportation systems that include operating, supply and demand systems that meet sustainability aspects.	Written Examinations, Written Assignments, Presentations
			Lectures, Independent	Transport Policy	Laptop, LCD,	Logistics Transportation	Able to bring out the uniqueness and originality of the proposal in	Written Examinations,

			Assignments, Case Studies and Reviews, Discussions		Whiteboard, Internet		the preparation of transportation policy	Written Assignments, Presentations
		Able to analyze urban spatial needs	Lectures, Independent Assignments, Literature Revies & Case Studies, Discussions	Review of the understanding of urban design. Historical studies and discourses on what is meant by "good city" through the views of theorists, among others: cosmological beliefs, formalists, functionalists, picturesque, organics, utopians, livability, ecological. questioning the "performance dimension" in urban design theory and understanding the relationship between urban design and perceptual/visual/social dimensions. Once students are introduced to the theoretical view, in this section they will explore different ways of interpreting and understanding the urban environment. Discussions about how urban environments mean different things to different people, depending on their cultural, economic, racial and gender backgrounds. Brief review of the relationship between urban design activities and the political-economic context of the urban development process.	Laptop, LCD, Whiteboard, Internet	Urban Design Theory	Students can explain various theories and paradigms in urban planning thinking.	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignment, Group Assignment, Analysis & Observations,	The site chosen is a piece of road or an area that is quite complex as far as possible and has a variety of elements and city elements so that it can provide opportunities for students to do "multiple analyses". Understand and apply the idea of "place making" in the private and public spheres, open spaces and	Studio, Panel, Drawing Tables, Model, Laptop LCD, Internet	Urban Studio	Students can apply urban design rules in stages, starting from arranging elements of urban spatial planning to compiling control devices for urban space use, with case studies of strips or mixed-use areas. Students are also equipped with the basics of urban design	Written Examinations, Written Assignments, Presentations

				buildings, to realize individual and community/public needs. Critically examine in a wider scale and context various types of city plans and regulations including master plans, zoning, UDGL, etc.			applications using the results of an in-depth and sharp analysis of regional contexts and issues.	
			Lectures, Independent Assignments, Case Studies & Observations, Discussions	Indonesia as an archipelagic country: developing country, economic disparity, and the formation of cities; Urbanization, migration: demographic characteristics of Indonesia; the constitution of society; Housing demand & supply (formal & informal sector); State politics and housing policy: Typology of housing provision in Indonesia (legal aspects; consumption mode; production mode); Housing economy and finance; land policy; Housing technology; Housing policies in Asian countries	Laptop, LCD, Whiteboard, Internet	Housing Policy	Students are able to explore housing policy as a set of concepts that underlie the implementation of the housing sector in a country, including among others: understanding, objectives, characteristics, motives, scope, and implementation. Discussing housing policy and its relation to political, social, economic, cultural, and environmental aspects and their impact on housing management practices, including in the scope of architecture and the city.	Written Examinations, Written Assignments, Presentations
		Able to analyze urban environmental management needs	Lectures, Independent Assignments, Discussions	Renewable energy, Climate and site, solar geometry, passive cooling, shading, natural & artificial light and solar cells.	Laptop, LCD, Whiteboard, Internet	Energy Efficient Building	Students understand the theoretical principles of energy-efficient building technology and can apply them to design climate-responsive and energy-efficient buildings	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Analysis and Case Studies, Discussions	Students are equipped with the ability to understand: 1. aspects of the principles and policies of water resources management (in Indonesia) and their developments; 2. aspects and models of integrated water resources management (IWRM) both on a national and national scale international; 3. management aspects based on government regulations and policies	Computer, LCD, Whiteboard, Internet	Water Resources Management	Able to work independently or work together in teams to carry out assessments (evaluating complex design processes or results) on various aspects of the scope of Water Resources Management in solving water resources problems and able to present the results of the assessment in the form of written documents that	Written Examinations, Written Assignments, Presentations

				related to 3 (three) pillars of natural resource management, namely Utilization, Control of Water Damage, Conservation; 4. supporting aspects of water resources management which include hydro-economy; 5. Natural resource management case (or project), selected in a WPSA (Water Resources Management Area) or river basin			systematic and able to communicate orally	
			Lectures, Independent Assignments, Case Studies and Reviews, Discussions	Introduction to sustainable infrastructure, Sustainable development, definition of sustainable infrastructure, elements of general planning knowledge, aspects of sustainable infrastructure pre-planning, development impacts, need for sustainable urban infrastructure development	Computer, LCD, Whiteboard, Internet	Sustainable Infrastructure	Able to span the impact of infrastructure development. Able to formulate sustainable infrastructure needs Able to analyze aspects of infrastructure development	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Case Studies and Reviews, Discussions	Land Use Planning, Land Conservation, Water Borders, Ideal Site Design, Erosion & Sedimentation Control, Rain Management, Liquid Waste Management, Stakeholder Awareness.	Laptop, LCD, Whiteboard, Internet	Watershed *(DAS)* Health Audit	1. Able to apply a rapid assessment of the health of a watershed based on the Center for Watershed Protection method, 2. Able to categorize watershed health status based on impermeable land cover, water quality, and benthic macro diversity, and 3. Able to provide follow-up recommendations for improving watershed health	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Case Studies and Reviews, Discussions	Elements of general planning knowledge, the purpose and meaning of data management and analysis, types of data management and analysis, methods of data analysis and management	Laptop, LCD, Whiteboard, Internet	Data Management and Analysis	Students are able to develop data management technique. Able to use econometric analysis Able to formulate data-based decisions	Written Examinations, Written Assignments, Presentations

			Lectures, Independent Assignments, Case Studies and Reviews, Discussions	Definitions, principles, concepts and environmental policies in Environmental Auditing. Legal Basis for Environmental Audit Policies and Regulations. Basic Principles of Environmental Auditing (Defining the main issues and scope of the audit). Understanding ISO 1400: Improved Environmental Management and Sustainable Development. A study of the Environmental Management Plan/RKL and Environmental Management Plan/RPL. Basic Principles of Auditing (Basic principles, procedures, hierarchies and processes in environmental auditing). Types of Audits (Revenue audits, waste audits, process audits). Audit Method (procedure for determination, weight, importance and valuation in environmental audit). Audit Documents. Audit Case Studies (case document studies).	Laptop, LCD, Whiteboard, Internet	Environmental Audit	Able to conduct audits and develop environmental audit reports	Written Examinations, Written Assignments, Presentations
			Lectures, Independent Assignments, Case Studies and Reviews, Discussions	Overview Integrated Solid Waste Management, concept of sustainable solid waste management, development of IWMS (case studies and analysis), elements of IWM, solid waste generation and composition, waste collection, central sorting, biological treatment, thermal treatment, landfilling, material recycling, model: STAN 2, Prognosis, and IWM 2	Laptop, LCD, Whiteboard, Internet	Life Cycle Analysis (LCA)	Able to use a set of models to conduct an assessment of sustainable solid waste management	Written Examinations, Written Assignments, Presentations
3	Capable to test the plans and policies by using various methods and urban technologies in an effort to increase	Capable to use methods to test and evaluate the urban policies and plans	Lecture, Individual Assignments, Studies and Case Study, Discussion	Legal framework in the planning, legal balance between Government's interests in promote the public wealth through the land use rules and private property owner's interests in optimizing the	Laptop, LCD, Whiteboard, Internet	Urban Planning Law	Students are capable to use the legal frameworks where the planning taken place. Besides, students encourage to emphasize the rules of urban planning law in arranging the	Written Examinations, Written Assignments, Presentations

	and defend the inhabitant's life quality			private leisure and their property values			Local Government's responses to the social, economic and physical planning between the Local Government, Private Sectors and people	
			Lecture, Individual Assignments, Studies and Case Study, Discussion	Indonesia as an archipelago; developed country, economic gap and city formation; Urbanization, migration, Indonesian demographic characteristics ; people's constitution ; Housing demand and offer (formal and informal sector); State's politics and housing policies ; Housing provision typologies in Indonesia (legal aspects ; consumption methods ; production mode) ; Finance and economic housings ; Land policies ; Housing technologies ; Housing policies in Asian countries	Laptop, LCD, Whiteboard, Internet	Housing Policy	Students are capable to explore the housing policies as set of concepts that underlies the housing sector enforcements in a country, covers : Understanding, objectives, characteristics, motives, scopes and the implementations. Discuss the housing policy and its relations with the political, social, economic, cultural and environmental aspects and its impacts to the housing practices, including within the architecture and city scopes	Written Examinations, Written Assignments, Presentations
			Lecture, Individual Assignments, Studies and Case Study, Discussion	Students are given skill provisions to understand : 1. Principal aspects and water resources management policies (in Indonesia) and its developments 2. integrated aspects and models of water resource management (IWRM) both national and scale internationally; 3. management aspects based on government regulations and policies related to 3 (three) pillars of SDA management, namely Utilization, Damaged Power Control Water, Conservation; 4. supporting aspects of water resource management which include hydro economy; 5. SDA management case (or project), selected in a WPSA	Computer, LCD, Whiteboard, Internet	Water Resources Management	Able to work independently or work together in teams to assess (evaluate complex processes or design results) on various aspects of the scope of Water Resources Management (MSDA) in solving water resource problems and able to present the results of such assessments in the form of systematic written documents and able to communicate them orally	Written Examinations, Written Assignments, Presentations

				(Water Resources Management Area) or river area				
			Lecture, Individual Assignments, Studies and Case Study, Discussion	Introduction to water management for urban areas in spatial planning and city infrastructure; Types of resources, water allocation and availability of water; critical water quality and water use in an infrastructure perspective; Water quality and load urban waste in relation to causality and health risks; account load of solid waste pollution and liquid waste; Capacity and load assignment on surface water; Calculation of Total Maximum Daily Load (TMDL) on the body water; Technological and policy interventions in water and waste quality control urban areas; Water quality modeling (QUAL2E, Epanet, Aquatox); Case implementation water quality management for urban use software.	Computer, LCD, Whiteboard, Internet	Urban Water and Waste Quality Managemeng	Students are able to predict (C5) the capacity and load on surface water with water quality modeling software.	Written Examinations, Written Assignments, Presentations
			Lecture, Individual Assignments, Discussion	Renewable energy, Climate and site, solar geometry, passive cooling, shading, natural & artificial light and solar cells.	Laptop, LCD, Whiteboard, Internet	Energy Efficient Building	Students understand the principles of energy-efficient building technology theory and can apply them to design climate-responsive and energy-efficient buildings	Written Examinations, Written Assignments, Presentations
		Able to test and evaluate efforts to improve the quality of life of the city's residents	Lecture, Individual Assignments,, Group Assignments, Analysis & Observation,	The results of the analysis will develop and apply the theory of building technology in a small-scale design research project.	Studio, Panel, Drawing Table, Model, Laptop,	Architecture and Sustainability Workshop	Students can develop and apply building technology theory in a small-scale design research project.	Presentation Examinations, Weekly Assignments

			Literature Studies, Discussion		LCD, Internet			
			Interactive Lecture Designing Practices Case Study Analysis & Observation Discussion	The site chosen is a piece of road or area that is as complex as possible and have a diversity of elements and elements of the city so as to provide opportunities for students to multiple analyses. Understanding and implementing the idea of "place making" in the private realm public, open spaces and buildings, to realize the needs of individuals and community/public. Critically reviewed in a broader scale and context of different types city plans and regulations including master plan, zoning, UDGL, etc.	Studio, Panel, Drawing Table, Model, Laptop, LCD, Internet	Urban Studio	Students can apply the rules of urban design gradually, ranging from organizing elements of urban layout to putting together a control device for the use of city space, with case studies of strips or mixed-use areas. Students are also provided with the basic basis of urban design application by using the results of analysis conducted in depth and sharply on the context and issues of the region.	Presentation Examinations, Weekly Assignments
			Interactive Lecture Designing Practices Case Study Analysis & Observation Discussion	Contemporary and effective physical planning; Physical planning decision making process; Analysis of planning and make professional reports; Digital spatial data to create effective maps	Studio, Panel, Drawing Table, Model, Laptop, LCD, Internet	Plan Making Studio	Students are able to apply the principles of urban planning by considering the political constraints of planning, planning ethics, negotiation / facilitation / mediation techniques, scenarios, impact reviews, and evaluation of alternative solutions.	Written Examinations, Written Assignments, Presentations
4	Able to plan activities that can improve services to underprivileged residents.	Able to propose activities that can improve services to underprivileged residents	lecture, Independent task, Case Studies & Observations, Discussion	Indonesia as an archipelagic country: developing country, economic disparity, and the formation of cities; Urbanization, migration: demographic characteristics of Indonesia; the constitution of society; Housing demand & supply (formal & informal sector); State politics and housing policy: Typology of housing provision in Indonesia (legal aspects; mode of consumption; mode of production); Housing economics and finance;	Laptop, LCD, Whiteboard, Internet	Housing Policy	Students are able to explore housing policy as a set of concepts that underlie the implementation of the housing sector in a country, including among others: understanding, objectives, characteristics, motives, scope, and implementation. Discussing housing policy and its relation to political, social, economic, cultural, and environmental aspects and their impact on	Written examination, Written Assignments, Presentations

				land policy; Housing technology; Housing policies in Asian countries			housing management practices, including in the scope of architecture and the city.	
			lecture, Independent task, Group task, Analysis & Observation, Literature Review, Discussion	Contemporary and effective physical planning; Physical planning decision-making process; Planning analysis and make professional reports; Digital spatial data to create effective maps	Studio, Panel, Drawing Desk, Model, Laptop LCD, Internet	Plan Making Studio	Students are able to apply the principles of urban planning by considering the political constraints of planning, planning ethics, negotiation / facilitation / mediation techniques, scenarios, impact review, and evaluation of alternative solutions.	Presentation Examinations, Weekly Assignments
		Able to produce draft regulations to improve services to citizens	lecture, Independent Assignments, Analysis, Literature Review, Case Studies, Discussion	the legal framework in planning, the legal balance between the government's interest in promoting the general welfare through land use regulations and the interests of private property owners in optimizing their personal enjoyment and property value	Laptop, LCD, Whiteboard, Internet	Urban Planning Law	Students are able to use the legal framework in which planning takes place. In addition, students are also expected to emphasize the role of urban planning law in preparing local government responses to social, economic, and physical planning between local governments, central government, the private sector, and the community.	Written examinations, Written Assignments, Presentations
			lecture, Independent task, Analysis, Literature Review, Case Studies, Discussion	The selected site is a piece of road or an area that is as complex as possible and has a variety of urban elements so it can provide opportunities for students to perform multiple analyzes. Understand and apply the idea of "place making" in the private and public sphere, open spaces and buildings, to fulfil individual and community/public needs. Critically examine in a wider scale and context various types city plans and regulations including master plan, zoning, UDGL, etc.	Studio, Panel, Drawing Desk, Model, Laptop LCD, Internet	Urban Studio	Students can apply urban design rules in stages, starting from arranging elements of urban spatial planning to compiling control devices for urban space use, with case studies of strips or mixed-use areas. Students are also equipped with the basics of urban design applications using the results of an in-depth and sharp analysis of regional contexts and issues.	Written examinations, Written Assignments, Presentations

5	Able to propose research designs and conduct applied research in the field of urban planning		Independent task	Defining the issues discussed, clearly formulated research questions, objectives in conduct research. Theoretical footing, selection of strategies or methods, disclosure of facts and synthesis of material that leads to answers to research questions, conclusions.		Thesis	Students are able to complete research in accordance with the theme and scope that has been approved by	Written examinations, Written Assignments, Presentations
			Independent task	The rules of scientific writing; various modes of scientific writing; strategy for formulating arguments in scientific writings that clearly show a position against existing knowledge; publication procedures in national/international seminars/conferences; publication procedures in international reputable journals; review of articles in internationally reputed journals in the field of related to urban and regional planning.		Scientific Publication	Students are able to complete research according to the theme and scope that has been approved by the supervisor	Written examinations, Written Assignments, Presentations
6	Able to conclude urban planning solutions and their documents in solving urban problems	Able to produce city design that can solve urban problems	Interactive Lecture Designing Practice Case study Analysis & Observation Discussion	Contemporary and effective physical planning; Physical planning decision-making process; Planning analysis and make professional reports; Digital spatial data to create effective maps	Studio, Panel, Drawing Desk, Model, Laptop LCD, Internet	Urban Physical Planning	Students are able to explain the principles of physical planning and apply principles and methods in urban planning project assignments	Presentation Examinations, Weekly Assignments

			Interactive Lecture Designing Practice Case study Analysis & Observation Discussion	The selected site is a piece of road or an area that is as complex as possible and has a variety of urban elements so it can provide opportunities for students to perform multiple analyzes. Understand and apply the idea of "place making" in the private and public sphere, open spaces and buildings, to fulfil individual and community/public needs. Critically examine in a wider scale and context various types city plans and regulations including master plan, zoning, UDGL, etc.	Studio, Panel, Drawing Desk, Model, Laptop LCD, Internet	Urban Studio	Students can apply urban design rules in stages, starting from arranging elements of urban spatial planning to compiling control devices for urban space use, with case studies of strips or mixed-use areas. Students are also equipped with the basics of urban design applications using the results of an in-depth and sharp analysis of regional contexts and issues.	Presentation Examinations, Weekly Assignments
			Interactive Lecture Designing Practice Case study Analysis & Observation Discussion	Contemporary and effective physical planning; Physical planning decision-making process; Planning analysis and making professional reports; Digital spatial data to create effective maps	Studio, Panel, Drawing Desk, Model, Laptop LCD, Internet	Urban Planning Studio	Students are able to apply the principles of urban planning by considering the political constraints of planning, planning ethics, negotiation / facilitation / mediation techniques, scenarios, impact review, and evaluation of alternative solutions.	Presentation Examinations, Weekly Assignments
		Able to formulate the system needed to plan the city	lecture, Independent task, Case Studies & Observations, Discussion	Indonesia as an archipelagic country: developing country, economic disparity, and the formation of cities; Urbanization, migration: demographic characteristics of Indonesia; the constitution of society; Housing demand & supply (formal & informal sector); State politics and housing policy: Typology of housing provision in Indonesia (legal aspects; consumption mode; production mode); Housing economics and finance; land policy; Housing technology; Housing policies in Asian countries	Laptop, LCD, Whiteboard, Internet	Housing Policy	Students are able to explore housing policy as a set of concepts that underlie the implementation of the housing sector in a country, including among others: understanding, objectives, characteristics, motives, scope, and implementation. Discussing housing policy and its relation to political, social, economic, cultural, and environmental aspects and their impact on housing management practices, including in the scope of architecture and the city.	Written Examinations, Written Assignments, Presentation

		Interactive Lecture, Independent task, Group task, Discussion	Dreams & products: product (preferred): residential property, commercial/retail property, office building/work property; money issues/feasibility studies: products & users / lifestyle; management aspects of property products: Proposed (future) products: residential property, commercial/retail property, office building/work property; finance & management.	Laptop, LCD, Whiteboard, Internet	Property Workshop	Students apply the link between architecture and real estate activities in a small-scale project. Related to the innovation of places for human activities such as new building types, lifestyles, market segmentation, and others.	Presentation Examinations, Weekly Assignments
		lecture, Independent task, Analysis and Case Studies Discussion	Students are equipped with the ability to understand: 1. aspects of water resources management principles and policies (in Indonesia) and their developments; 2. aspects and models of integrated water resources management (IWRM) both on a national and international scale; 3. management aspects based on government regulations and policies related to 3 (three) pillars of natural resource management, namely Utilization, Control of Water Damage, Conservation; 4. supporting aspects of water resources management which include hydro-economy; 5. Natural resource management case (or project), selected in a WPSA (Water Resources Management Area) or river basin	Komputer, LCD, Whiteboard, Internet	Water Resources Management	Able to work independently or work together in teams to carry out assessments (evaluating complex design processes or results) on various aspects of the scope of Water Resources Management (MSDA) in solving water resources problems and able to present the results of the assessment in the form of written documents that systematic and able to communicate orally	Written Examinations, Written Assignments, Presentations
		lecture, Independent task, Analysis and Case Studies Discussion	Introduction to urban water management in urban spatial planning and infrastructure; Types of resources, water allocation and water availability; Critical of water quality and water use in infrastructure perspective; Water	Computer, LCDs, whiteboards, Internet	Urban Water and Waste Quality Management	Students are able to predict (C5) the carrying capacity and load on surface water with water quality modeling software.	Written Examinations, Written Assignments, Presentations

				quality and urban effluent load in causality and health risk relationship; Calculation of the pollution load of solid waste and liquid waste; Determination of the capacity and load on surface water; Calculation of Total Maximum Daily Load (TMDL) in water bodies; Technological and policy interventions in urban water and sewage quality control; Water quality modeling (QUAL2E, Epanet, Aquatox..); Application of water quality management cases for cities using software.				
			lecture, Independent task, Group task, Case Studies & Observations, Discussion	Preliminary; Regional Development Theory; Developing the Concept of Transport Spatial Planning and Strategic Areas; Determining the Area of Influence of Infrastructure; Urban and Rural Area Development; Development and Spatial Planning of Coastal Areas; Future Spatial Planning; Developing Economic Corridors; Regional Connectivity; ASEAN Regional Connectivity; Regional Development Financing; Infrastructure in Regional Development; Case study of Infrastructure in Regional Development;	Computer, LCDs, whiteboards, Internet	Infrastructure and Regional Development	1. Able to identify and analyze the infrastructure development of a region related to the regional economy 2. Be able to explain the conception of the relationship between planning and infrastructure development in an area and its relationship to the regional economy	Written Examinations, Written Assignments, Presentations
		Able to formulate city planning documents using appropriate methods to solve the needs of cities from various aspects of economic, social, ekonomi, sosial, cultural, technological, and ecological	lecture Self-Help Tasks, Literature Studies, Case Studies, discussion	General outline of the city's history and human efforts to plan it; The connection between city change, urban planning, and the strength of the communities that make up them; Aspects of urban theory and study with current planning practices; The current debate about the city and its planning in a historical context; Formulate questions for in-depth	Laptop, LCD, Whiteboard, Internet	Planning Method and Theory	Students are able to explain classical and contemporary planning theory, theoretical tools for planning analysis, intellectual dialogue through critical reading, information discussion and writing tasks	Written Examinations, Written Assignments, presentations

			Interactive Lecture Designing Practices Case Study Analysis & Observation discussion	exploration in courses and subsequent research. Contemporary and effective physical planning; Physical planning decision making process; Analysis of planning and make professional reports; Digital spatial data to create effective maps	Studio, Panel, Desk Image, Model, LCD Laptop, Internet	Plan Making Studio	Students are able to apply the principles of urban planning by considering the political constraints of planning, planning ethics, negotiation / facilitation / mediation techniques, scenarios, impact reviews, and evaluation of alternative solutions.		Written Examinations, Written Assignments, presentations

Curriculum Structure Magister of Urban and Regional Planning

Code	Subject	SKS
	1st Semester	
ENUP80001	Planning Method and Theory	3
ENUP80002	Urban and Regional Analysis	3
ENUP80003	Urban Theory and History	3
ENUP80004	Urban Planning Law	3
	Sub Total	**12**
	2nd Semester	
ENUP80005	Urban Physical Planning	3
ENUP80006	Plan Making Studio	5
	Elective Course	3
	Sub Total	**11**
	3rd Semester	
	Elective Course	3
	Elective Course	3
ENUP80007	Pre-Thesis	4
	Sub Total	**10**
	4th Semester	
ENUP80008	Thesis	4
ENUP80009	Scientific Publication	2
	Elective Course	3
	Sub Total	**9**
	Total	**42**

List of Elective Courses

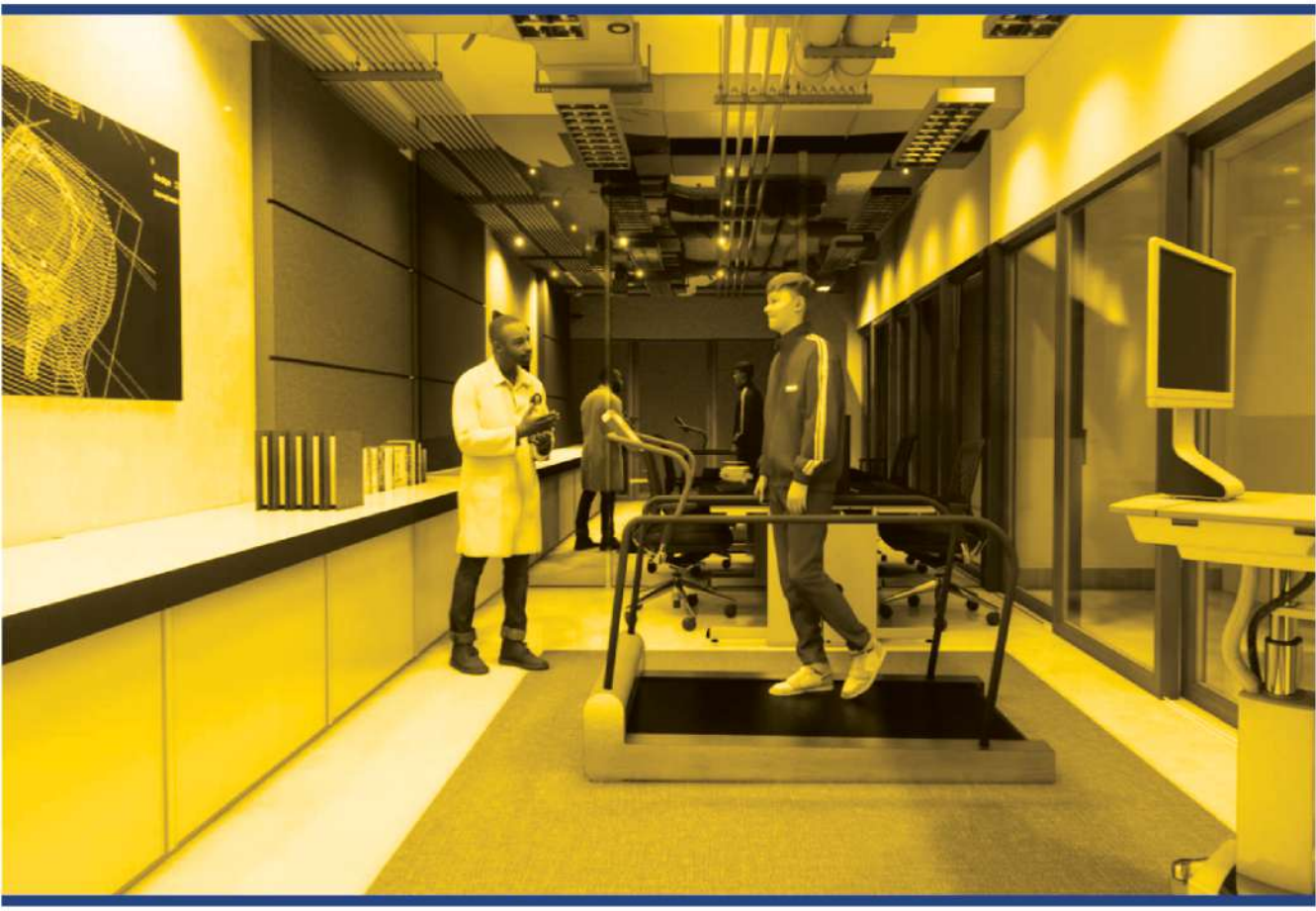
Code	Subject	SKS
Urban Spatial Planning		
ENAR800009	Urban Studio 1	5
ENAR800021	Urban Studio 2	5
ENAR800015	Urban Design Theory	3
ENAR800011	Property Workshop 1	5
ENAR800023	Property Workshop 2	3
ENAR800038	Housing Policy	3
ENAR800016	Urban Housing and Settlement Theory	3
ENUP80011	Data Management and Analysis	3
ENUP80012	Spatial Data Digitalization	3
Urban Environmental Planning		
ENAR800032	Energy Efficient Building	3
ENAR800013	Architecture and Sustainability Workshop 1	5
ENCV800401	Water Resources Management	3
ENCV803402	Watershed (DAS) Health Audit	3
ENCV802105	Environmental Audit	3
ENCV802202	Life Cycle Analysis (LCA)	3
ENUP80013	Sustainable Infrastructure	3
Infrastructure and Transportation Planning		
ENCV803602	Infrastructure Asset Management	3
ENUP80010	Infrastructure and Regional Development	3
ENCV801502	Transportation System	3
ENCV802502	Transport Planning and Policy	3
ENCV803508	Logistics Transportation	3
ENCV801601	Project Investment and Finance	3

Master By Research

Code	Subject	SKS
	1st Semester	
ENUP800102	Research Proposal Examination	4
ENUP800101	Scientific Seminar	8
	2nd Semester	
ENUP800203	Proceeding Publication	4
ENUP800204	Research Result Examination	6
	3rd Semester	
ENUP800105	Journal Publication	8
	4th Semester	
ENUP800206	Master Thesis	10

CHAPTER 7

DOCTORAL PROGRAM



Doctoral Program

FTUI holds Doctoral Program for the seven following study programs:

1. Civil Engineering
2. Mechanical Engineering
3. Electrical Engineering
4. Metallurgy & Material Engineering
5. Chemical Engineering
6. Architecture
7. Industrial Engineering

FTUI Doctoral program was officially opened in 2000 with the opening of the Civil Engineering and Electrical Engineering Doctoral program followed by the emersion of the Opto-electrotechnique and Laser Application study program into the Postgraduate Program of FTUI. The Mechanical Engineering study program was officially opened in 2006 while the Metallurgy & Material Engineering and Chemical Engineering followed in 2007. And In 2009, respectively Department of Architecture opened the Architecture Doctoral Program. In 2001, the Opto-electrotechnique and Laser Application was closed and was emerged into the Electrical Engineering study program. Each Doctoral study program is headed by the Head of Study Program which is held ex-officio by the Head of Department in the Faculty of Engineering UI. The Doctoral study programs have one or more focus subjects to give a more specific knowledge on engineering field to all students of the program.

Currently, the Doctoral Program is held in two ways: Lecture & Research; and Research.

New Students Selection

Selection process for new students for the FTUI Doctoral Program is as follow:

1. Pre-admission stage: future student is encouraged to informally contact their prospective Promotor or the Head of Department to further discuss his/her desired dissertation topic. This is important to make sure the availability of Promotor in accordance to said research topic. Communication may be done through email or face to face. The Head of Department and future Promotor then would discuss the student's proposal internally.
2. Future student should register online via http://penerimaan.ui.ac.id and complete the required documents and prerequisites.
3. Future student will then take the entrance examination (SIMAK UI) which consists of: (i) Academic Potential Examination and (ii) English Proficiency Test.
4. The results of the Entrance Examination will then be sent to FTUI by the UI Entrance Examination Committee. These results will then be discussed in a Department Committee Meeting headed by the Head of Department to determine which students accepted, and the proposed research topic approved, and the availability of future Promotor. An interview have to be arrange with the future student to determine the suitability of research topic, with previous study field, and the student's commitment to participate in the Doctoral program full time. Interview may be done directly or through email or messanger application.
5. The outcome of the Department Committee Meeting will then be submitted to the UI Entrance Examination Committee to be announced.

Academic Counseling

Since the day a student is registered as student for the Doctoral program until the time that he/she passes qualification examination, the student will be under the guidance of an academic advisor who the student expected to be their Promotor or Co-Promotor. Head of Department accepts a proposal of future Promotor/Academic Advisor from a committee in the Department. Once the student pass the qualification examination, the student will earn status as Doctor Candidate and the Academic Advisor's status will revert to Promotor/Co-Promotor.

Promotor and Co-Promotor

Promotor and Co-Promotor for Doctoral Program are lecturers or experts from related field and are assigned by Head of Department based on a Rector's Decree to guide and advise a Doctor candidate in conducting research and dissertation writing. Academic Advisor consist of 1 Promotor and a maximum of 2 (two) Co-Promotors. Promotor is a first chair Advisor who holds an academic degree of Professor or Doctor and a minimum of Senior Lecture academic position; has a relevant expertise in the field which the student's dissertation topic is; and is acknowledge as a full time faculty at the Universitas Indonesia, and for the last five years has produced at the latest: one scientific paper in an accredited national journal or a reputable international journal; or one other form of scientific product which is acknowledge by a group of experts set up by the Academic Senate of Universitas Indonesia.

Co-Promotors are the Promotor's companions who act as second and/or third chair advisor who hold academic degree of Doctor or Senior Lecturer, and has a relevant expertise in the field with the student's dissertation topic. Co-Promotor from outside of the Faculty of Engineering UI must have the approval from the Promotor. Promotor and Co-Promotors are appointed by the Rector based on the proposal submitted by the Dean which are also based on suggestions from the Head of Department after the student has pass the qualification examination. The appointment must be done at the latest 1 (one) semester after the qualification examination. A change of Promotor/Co-Promotor must be proposed by the Dean to the Rector based on a proposal from the Head of Department.

Program Specifications

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Programme Title**	Doctoral Program in Civil Engineering Doctoral Program in Mechanical Engineering Doctoral Program in Electrical Engineering Doctoral Program in Metallurgy & Material Engineering Doctoral Program in Architecture Doctoral Program in Chemical Engineering Doctoral Program in Industrial Engineering	
4.	**Class**	Regular	
5.	**Final Award**	Doctor (Dr.)	
6 .	**Accreditation / Recognition**	Civil Engineering Doctoral Program: Accreditation A from BAN-PT Mechanical Engineering Doctoral Program: Accreditation A from BAN-PT Electrical Engineering Doctoral Program: Accreditation A from BAN-PT Metallurgy & Material Engineering Doctoral Program: Accreditation A from BAN-PT Chemical Engineering Engineering Doctoral Program: Accreditation A from BAN-PT Architecture Doctoral Program: Accreditation A from BAN-PT Industrial Engineering Doctoral Program: Accreditation A from BAN-PT	
7.	**Language(s) of Instruction**	Bahasa Indonesia	
8.	**Study Scheme (Full Time / Part Time)**	Full Time	
9.	**Entry Requirements**	Master graduate from study programs in line with study program chosen and pass the entrance examination	
10.	**Study Duration**	Programmed for 3 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	6	14-17
	Streams: The Civil Engineering Doctoral Program has six streams as follow: • Structure • Construction Management • Transportation • Water Resource Management • Project Management • Geotechnique The Mechanical Engineering Doctoral Program has four streams as follow: • Energy Conversion		

	• Engineering Design and Product Development • Manufacture Engineering • Fire Safety Engineering and Management The Electrical Engineering Doctoral Program has eight streams as follow: • Telecommunication Engineering • Electrical Power and Energy Engineering • Photonic and Electronic Engineering • Control Engineering • Multimedia and Information Engineering • Security of Information Network Engineering • Telecommunication Management • Electrical Power and Energy Management The Metallurgy & Material Engineering Doctoral Program has two fields of specialization: • Corrosion and Protection • Material Engineering and Manufacture Process The Chemical Engineering Doctoral Program has five streams as follow: • Industry Catalist • Gas Management • Product Design and Chemical Process • Environmental Protection and Work Safety • Gas Technology The Industrial Engineering Doctoral Program has several research focus areas: 1. Manufacturing Systems Engineering • Industrial Policy and Analysis • Value Chain and Logistics • Quality and Reliability • Product/Process Design and Innovation 2. Service Systems Engineering • Product - Service - System • Service Design • Service Quality & Improvement • Decisions, Uncertainty & Risk 3. Optimization and Data Analytics • Operations Research • Data analytics and Forecasting • Real-time optimization
11..	**Graduate Profiles:** FTUI Doctoral Program Graduates haves the capabilities of demonstrating expansion, novelty breakthrough in research in the engineering or architecture field in accordance to certain stream or sub-stream. The FTUI Doctoral Program prepares student to work in academic and research in accordance to their own stream; dedicate their expertise in research laboratory, industry or government institution; or create a business based on their innovation. Graduates are able to posess the following skill: • Be able to show expertise in the engineering or architecture discipline; • Be able to uphold the academic and research ethics; • Be able to work collaboratively in research; • Be able to position themselves as leader in their community; • Be able to communicate well in their community and build networks; • Be able to demonstrate individual live skill in connection to human relationship; • Be able to demonstrate attitude, behavior and way of thinking which support their success in society.

12..	**Graduates Competencies:** The aim of Doctoral Program in FTUI is in line with the Doctoral Program of Universitas Indonesia, to produce quality graduates with the following competence: 1. Able to independently update their knowledge on science and technology in engineering or architecture through research based innovation breakthrough. 2. Able to show professionalism in their field of study that can be accountable towards the development of science and technology. 3. Able to write a scientific paper in engineering or architecture and convey the result of their research to the public both orally or written in an international scientific activity. 4. Able to recommend a solution for a complex problem faced by society in the field of engineering or architecture through inter, multi and trans discipline approach. 5. Able to lead a working or research team to solve problem in the field of engineering or architecture that can be of benefit for the good of mankind. 6. Able to develop and maintain a network of cooperation with fellow researcher and research community in the field of engineering and architecture both in national and international level.
13.	**Course Composition (Course & Research)**

No.	Classification	Credit Hours (SKS)	Percentage
i	Course Component	16	32%
ii	Research Component	34	68%
	Total	50	100%

14. Classification of Subjects. (Research)

No.	Classification	Credit Hours (SKS)	Percentage
i	Course Component	0	0 %
ii	Research Component	50	100 %
	Total	50	100%
	Total Credit Hours to Graduate	50 CP	

Curriculum Structure for FTUI Doctoral Program

The curriculum structure for the Doctoral Program in all study programs are the same, they are only differentiated by their codes for the research component. The code "xx" for each study programs are as follow:

ENCV for Civil Engineering, ENME for Mechanical Engineering, ENEE for Electrical Engineering, ENMT for Metallurgy & Material Engineering, ENAR for Architecture, and ENCH for Chemical Engineering, ENIE for Industrial Engineering

The FTUI Doctoral Program is held in two program: Course and Research and Research.

Doctoral Program (Course & Research)

The following is the curriculum structure for Course & Research Doctoral Program in Table 1.

Table 1. The Curriculum Structure – Doctoral Program in Course and Research

Code	Subject	SKS
	1st Semester	
ENGE901001	Advanced Research Method	6
ENXX900001	Special Subject I	3
	Sub Total	**9**
	2nd Semester	
ENGE902002	Qualitative & Quantitative Analysis	4
ENXX900002	Special Subject II	3
ENXX900004	Research Proposal	6
	Sub Total	**13**
	3rd Semester	
ENXX900006	Publication – International Conference	4
	Sub Total	**4**
	4th Semester	
ENXX900008	Research Result Examination	10
	Sub Total	**10**
	5th Semester	
ENXX900010	Publication International Journal	8
	Sub Total	**8**
	6th Semester	
ENXX900012	Promotion Examination	6
	Sub Total	**6**
	Total	**50**

The Lecture Component includes four subjects:

a. Advanced Research Method, 6 sks
b. Qualitative and Quantitative Analysis, 4 sks
c. Special Subject I, 3 SKS.
d. Special Subject II, 3 SKS.

The Research Component includes:

1. Research Proposal, 6 SKS
2. Publication – International Conference, 4 SKS
3. Research Result Examination, 10 SKS
4. Publication – International Journal, 8 SKS
5. Promotion Exam, 6 SKS

Doctoral Program (Research)

The following is the curriculum structure for Research Doctoral Program in Table 2.

Table 2. The Curriculum Structure – Doctoral Program in Research

Code	Subject	SKS
	1st Semester	
ENXX900003	Research Group Periodic Seminar	6
	Sub Total	**6**
	2nd Semester	
ENXX900005	Research Proposal	6
	Sub Total	**6**
	3rd Semester	
ENXX900007	Publication I – International Conference	6
	Sub Total	**6**
	4th Semester	
ENXX900008	Research Result Examination	10
	Sub Total	**10**
	5th Semester	
ENXX900009	Publication II – National Journal	8
	Sub Total	**8**

	6th Semester	
ENXX900011	Publication III – International Journal	8
ENXX900012	Promotion Examination	6
	Sub Total	14
	Total	50

Description of Subjects

Advanced Research Method

ENGE901001
6 SKS

Learning Objective(s): Course participants are expected to: (a) master the scientific work process based on science philosophy, which is the scientific justification aspects, innovative aspects and scientific ethics aspects, (b) able to write a research proposal and or draft of scientific writing related to the student's doctoral topic, (c) can map research result from the latest international journal in their field and understand the state-of-the-art from their research topic, and can determine the knowledge gap yet explored in the international level for further research in their Doctoral Program.

Syllabus: (1) Relationship between philosophy and engineering science; (2) Science Philosophy; (3) Epystemology in Engineering Science; (4) Research Method; (5) Problem formulation and hypothesis; (6) Research and state of the art; (7) Research Evaluation; (8) Design Evaluation and research Stages; (9) Introduction to the analysis of the data processing method; (10) Benchmark on research output and conclusion formulation; (11) Various citation method; (12) Finalization of research proposal draft and /or scientific article draft.

Prerequisite(s): None

Textbooks:

1. Haryono Imam R dan C. Verhaak, Filsafat Ilmu Pengetahuan, Gramedia, Jakarta, 1995
2. Willie Tan, "Practical Research Methods", Prentice Hall, 2002.
3. R. Kumar, *Research Methodology, A Step-by-step Guide for Beginner*, 3rd ed., Sage Pub, 2012

Qualitative and Quantitative Analysis

ENGE902002
4 SKS

Learning Objective(s): Discuss the qualitative and quantitative in data analysis and exploring specific data analysis areas. After participating in this subject which discuss the qualitative and quantitative approach in data analysis in exploring specific areas of data analysis. Students are expected to be able to build the following learning outcome: (1) awareness to situations requiring qualitative data analysis in the inductive paradigm; (2) awareness to situations requiring quantitative data analysis in the deductive paradigm; (3) appreciation toward various approaches; (4) possessing skills in giving critical appraisal; (5) possessing skills in performing qualitative and quantitative data analysis.

Syllabus: Introduction; Qualitative Analysis; Quantitative Analysis; Non-Parametric Analysis; Uncertainty Analysis; Critical Appraisal; Design of Experiment; ANOVA revisit; Multivariate Techniques.

Prerequisite(s): None

Textbooks:

1. Miles M & Huberman M, Qualitative Data Analysis, London Sage Publications, (1994)
2. Montgomery, D.C., & Runger, G.C, Applied Statistics and Probability for Engineers 3rd Ed., John Wiley and Sons, Inc., New York, (2003)
3. Kirkup, L, Experimental Method: An Introduction to the Analysis and Presentation, John Wiley and Sons, Australia, Ltd., Queensland, (1994)
4. Montgomery, D.C, Design and Analysis of Experiments 6th Ed., John Wiley and Sons, Inc., New York, (2005)
5. Hair, J.F., B.Black, B.Babin and R.E Anderson, Multivariate Data Analysis 6th Ed., Pearson Education Inc., New Jersey, (2006)

Special Subject 1

ENXX900001
4 SKS

Special Subject 2

ENXX900002
4 SKS

Special Subject 1 in the 1st first semester (4 SKS) and Special Subject 2 in the 2nd semester (4 SKS) are determined together with the student's Academic Advisor to support the student's research and/or to develop the student's knowledge with information and knowledge from unrelated field. Academic Advisor is also allowed to propose a special content for the student to Head of Department.

The following are the requirements for the implementation of Special Subject 1 and 2:

1. For students who do not have in line Master degree educational background from the Faculty of Engineering Universitas Indonesia, they are allowed to take the similar courses of the related field of study available at the Master Program in FTUI during the running semester.
2. Students are also allowed to take courses from other study programs within the Faculty of

Engineering Universitas Indonesia or courses from other faculties in UI as stated in the Guidance Book or the Master/Doctoral Program Catalog.

3. Students are allowed to take classes in other Master Program in the Faculty of Engineering Universitas Indonesia or other faculties within the Universitas Indonesia as deemed necessary by their Academic Advisor
4. In the event where neither conditions is viable for the students, the Academic Advisor is allowed to conduct a class of said course.

Research Group Periodic Seminar
ENXX900003
6 SKS

Research Group Periodic Seminar is an early activity of research in the Doctoral Program in Research where students conduct literature study in relation to the materials for their research. This literature study must be done intensively by mapping out the research results from the latest international journals in related field. The final aim was so that students have a state-of-the-art understanding of their research topic, and can determine the knowledge gap previously unexplored in the international level for further research in their Doctoral Program. The result of this literature study is compiled in a literature study report presented in the Research Group Periodic Seminar to be examined by a panel comprises of future Promoter/ Academic Advisor and Examiners from related field of study. Students will passed this Research Group Periodic Seminar if they received a minimum grade of B.

Research Proposal
ENXX900005
6 SKS

Research Proposal is the continuous activity of the literature study, where after gaining a state-of-the-art knowledge of their research topic, students can formulize the scope of their Doctoral research and determine which research method will be use. The result of this activity is a comprehensive research proposal which include: goals, background and data analysis from early study or experiments done. Included in this research proposal is plan of work for each semester and its publication goals. At this level, it is expected for students to begin experiment activity or early study which can show the direction of their research is feasible and recent in his field. The early experiment or study result, the literature study and the whole research plan is then compiled in a Research Proposal Report to be presented and examined in a Research Proposal Examination. Students will passed this Research Proposal if they received a minimum grade of B.

Research Result Examination
ENXX900008
10 SKS

At this stage, students are expected to have a research output with a minimum of 75% from their research plan. Doctorate candidate are expected to have reach a research outcome which is the main part of the originally planned contribution. The outcome of this research is measured through the Research Output Examination. The examination committee is appointed through the Dean's Decree based on the Head of Department's proposal. These examiners consist of experts related in the field of study of the Doctorate candidate with at least one examiner from an institution outside of Universitas Indonesia. Doctor Candidate will passed this Research Output Examination if they received a minimum grade of B. At this stage, a Doctor Candidate are allowed to design a scientific article framework to be published in an indexed International Journal and determine which International Journal they will send the article to.

Publication – International Conference
ENXX900006
4 SKS

Publication I – International Conference
ENXX900007
6 SKS

At this stage, students are expected to have an experiment result or study to focused on in their research topic and clarify their research direction. The result of the experiment must also show innovation or breakthrough, mastery of knowledge on their stream in relation to their research topic, the depth of their research materials, and the mastery of the state of the art development in their field or research interest, originality, and the contribution towards science and/or its implementation. Once presented in front of their promoter and co-promoter, the whole research result at this stage will be deemed worthy for international conference publication.

Publication II – International Journal
ENXX900009
8 SKS

Publication III – National Journal
ENXX900011
8 SKS

The scientific publication is an integral part of research activity and a prerequisite in participating in a Promotion Examination. International Journal meant here is an English language journal which its

editorial board consists of member from at least three different countries or more. A mandatory publication must have an "Accepted" status before the Promotion Examination. FTUI itself publish their own international journal, the International Journal of Technology (IJTech), which students can utilize as one of the international journal to publish their Doctoral research.

Promotion Examination

ENXX900012
6 SKS

Before deemed fit to participate in a Promotion Examination. Doctor Candidate are required to conduct additional research as a follow up from the Research Output Examination. The inputs and revisions given during the Research Output Examination must be completed and revised through a series of final research. At this stage, the Doctor Candidate must prove the authencity and originality of their research as new contribution to the scientific world. Thus, at this stage, the Doctor Candidate is required to have an "Accepted" for their international Journal, they are also required to complete their dissertation paper ready to be tested during the Promotion Examination.

Dissertation is an academic scientific paper study output and/or in depth research done independently and contained new contribution to issues that are temporary already known the answer or new questions ask on issues that are seen to have been established in the field of science and technology by the Doctor Candidate under the guidance of his Academic Advisor. A Doctor Candidate that has completed the revision of their dissertation are required to submit a completed version of their dissertation in five hard cover books and original approval form that has been signed by their advisors and submitted to PAF FTUI signifying the end of their study. The format for writing and binding the Dissertation should follow the writing and binding guidelines in the Technical Guidelines of Final Project Writing for Students of Universitas Indonesia that can be downloaded at http://www.ui.ac.id/download.

Promotion Examination is a scheduled academic activity as a medium of evaluation for the Doctor Candidate Dissertation as a requirement to obtain the highest academic title, Doctor. The requirements and provision for Promotion Examination are as follow:

- Promotion Examination can be done if all the scientific publication requirements are completed by the Doctor Candidate: a minimum of one publication in an International Scientific Journal (in "Accepted" status) in relation to their dissertation research. The Publication is required to state Faculty of Engineering Universitas Indonesia as one of the affiliation institution.
- Promoter and Co-Promoter gave a written approval on the dissertation as a sign that the dissertation can move forward to the Promotion Examination.
- The Promotion Examination is carried out by the Committee of Promotion Examination which is appointed with a Rector's Decree based on a proposal from the Head of Department and the Dean of the Faculty of Engineering Universitas Indonesia.
- The Committee of the Promotion Examination comprises of: (a) Promoter and Co-Promoter, (b) The Examiners, (c) a minimum of one examiner from outside of Universitas Indonesia.
- Examiners consist of experts from related field of study. In a special circumstances, an expert that is not from the academic community can be invited as part of the examiners team.
- The Promotion Examination is led by the Head of the Examiners Committee that is also a member of the committee outside of the Promoter/ Co-Promoter and outside examiner. If the Head of the Examiners Committee is unavailable, his/her position can be replaced by one of the member of the examiner team.
- The Promotion Examination is held as an open session for a period of maximum three hours divided into two stages: the dissertation presentation given by the Doctor Candidate for 15-30 minutes and a question and answer session for 120-165 minutes.
- The Doctor Candidate will pass the Promotion Examination if they received a minimum grade of B with GPA 3.00.

Facilities for Doctoral Program Students

To make sure that student of FTUI Doctoral Program are able to conduct full time research and produce excellent publications as required, FTUI provides the following facilities:

Doctoral Program Students' Workstation

Compact cubicles in comfortable rooms are available as Doctoral program students' workstation. The locations for these workstations are located on the 2nd and 3rd floor of the Engineering Center Building. Access to these workstations requires a swipe card to guarantee security. A round the clock wi-fi service is also available. To procure a workstation and access card, students are requested to register to the Associate Dean for General Affairs in the Dean's building, 2nd floor, FTUI Depok.

International Journal Article Writing Training

These free of charge trainings for the FTUI Doctoral program students are held several times each year. The information regarding these trainings are communicated through an announcement in SIAK-NG, posters at each Department, Doctoral program mailing list and FTUI website (www.eng.ui.ac.id).

Research Proposal Writing Training

These free of charge trainings for the FTUI Doctoral program students are held several times each year. The information regarding these trainings are communicated through an announcement in SIAK-NG, posters at each Department, Doctoral program mailing list and FTUI website (www.eng.ui.ac.id).

Line Editing Draft for International Journal Article

FTUI provides funds for line editing drafts for International Journal Articles. Requirement for applying for this funds are: the article must include the promoter name as part of the writing team and state FTUI as the main affiliation. To be grant this facility, students only needs to send a draft of their article through email to the FTUI Associate Dean of Academic and Research (risetft@eng.ui.ac.id). The time required for line editing is 2-4 weeks.

Doctoral Program Mailing-List

The Doctoral Program mailing list is used as a communication tool between the Dean's Faculty Heads, the Faculty Center Administration staff and all Doctoral program students in FTUI. Information regarding trainings, seminars, grants or other academic matters is announced through this mailing list. Complaints and suggestions are also accommodated by this mailing list. The mailing list address is: programdoktorft@group.eng.ui.ac.id

Research and Incentive Grants for Master and Doctoral Program

Research funds including consumables and tests for research as part of the thesis and dissertation writing is the responsibility of the student. There are a number of competitive research grants, incentive research grant schemes available from which Master and Doctoral program students may propose to finance his/her research. Complete guidance and research proposal examples are available at the Associate Dean for Research and Community Development secretary at the Dean's Building, 2nd floor or through http://research.eng.ui.ac.id.

International Journal Writing Incentive

This incentives are given to lecturer of State of Private Universities that have published an article in an international journal. Each proposer must be the first writer of the article and include an institution affiliation in Indonesia.

UNIVERSITAS INDONESIA

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