



UNIVERSITAS
INDONESIA

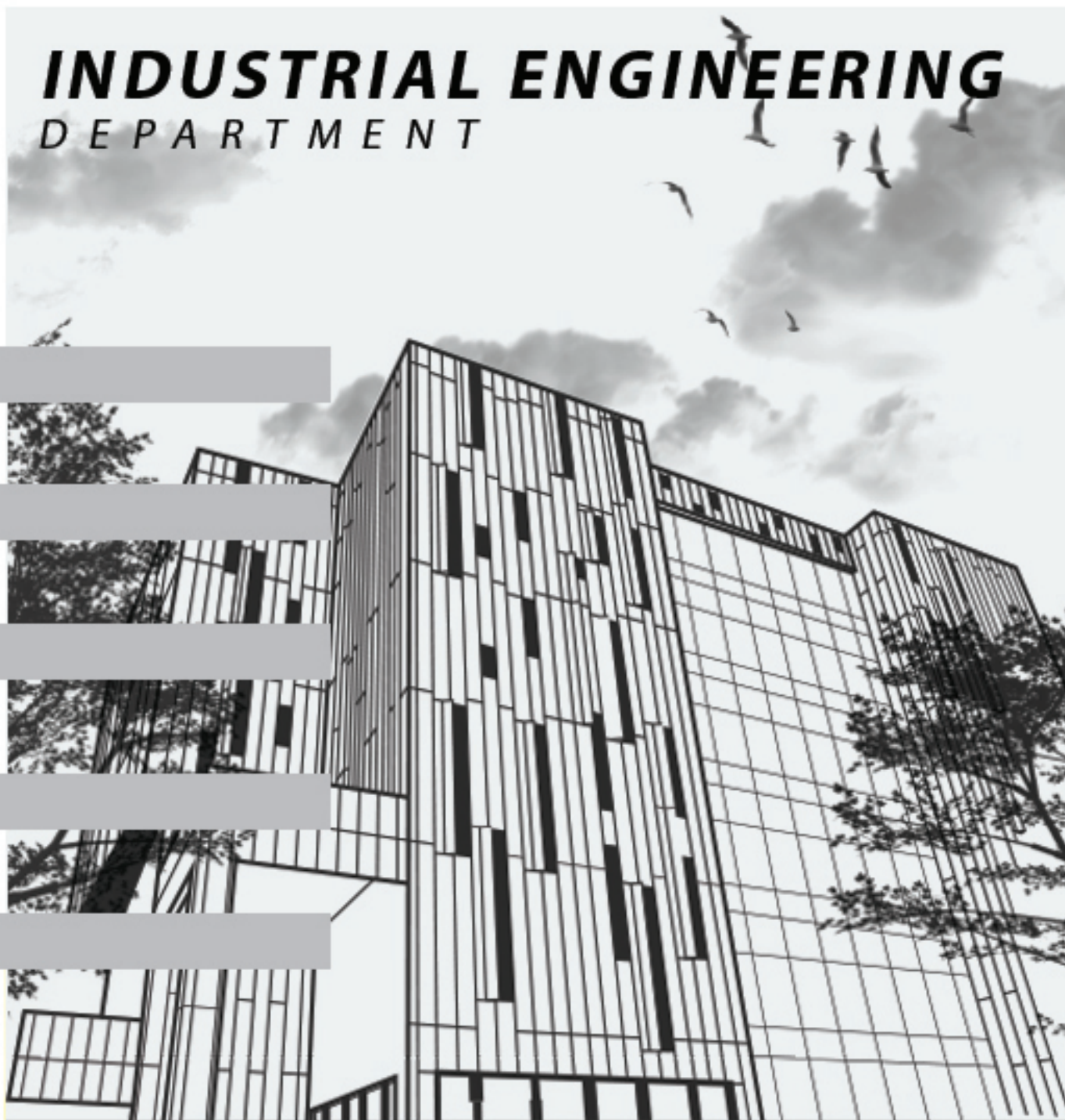
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FACULTY OF
ENGINEERING

ACADEMIC GUIDEBOOK

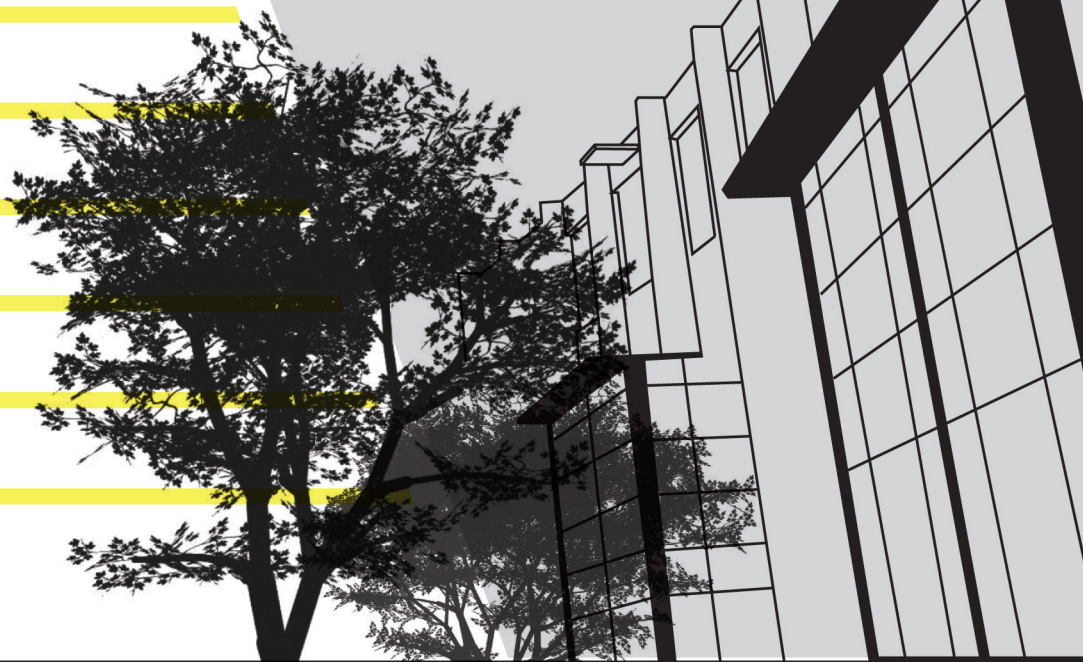
2017 edition

INDUSTRIAL ENGINEERING DEPARTMENT





PROFILE OF FTUI AND DEPARTMENTS



1. PROFILE OF FTUI AND DEPARTMENTS

1.1. HISTORY OF FTUI

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

After successful accomplishment of the street renovation project, these young engineers with their iron will felt that there was more that they could do to serve our 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 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. Roosseno as the first Dean of the Faculty of Engineering. The President also instructed that the new Faculty of Engineering would be part of the University of Indonesia under the leadership of its Rector, dr. Syarif Thayeb.

The Establishment of Faculty of Engineering UI

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

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

In 1985, the study program Gas Engineering (originally under the Metallurgy Study Program) joined the study program Chemical Engineering (originally under the Mechanical Study Program) and formed the Gas and Petrochemical Engineering Study Program with its first Head of Study Program, Dr. Ir. H. Rachmantio. The Industrial Engineering Study Program, the youngest Study Program in Faculty of Engineering UI, was opened in 1999 with its first Head of Study Program, Ir. M. Dachyar, M.Sc. The term Study Program was later changed to Department and is still used today.

1.2. VISION AND MISSION OF FTUI

FTUI Vision

FTUI as a leading engineering education institution with the ability to compete in the international world.

FTUI Mission:

- Preparing its graduates to become lifelong learners, to be able to adapt to the working environment, and to acquire decent personalities and leadership qualities.
- To be center of excellence for education and research activities, to serve stakeholders' needs through facilitation of conducive academic environment.
- To be a leading institution with the initiatives that responds to local, national and global societal needs.

1.3. UI and FTUI Administration

UI

Rector:

Prof. Dr. Ir. Muhammad Anis. M. Met.

Deputy Rector for Academic and Student Affairs:

Prof. Dr. Bambang Wibawarta, S.S., M.A.

Deputy Rector for Finance, Logistic and Facilities:

Prof. Dr. Adi Zakaria Afiff

Deputy Rector for Research, and Innovation

Prof. Dr. rer. nat Rosari Saleh

Deputy Rector for Human Resources, Development and Cooperation

Dr. Hamid Chalid, S.H., LL.M

FTUI

Dean of Engineering:

Prof. Dr. Ir. Dedi Priadi, DEA

Vice Dean I:

Dr. Ir. Muhamad Asvial, M.Eng

Vice Dean II:

Dr. Ir. Hendri DS Budiono, M.Eng

Associate Dean for Academic and Head of Faculty Administration Center:

Dr. Ir. Wiwik Rahayu, DEA

Associate Dean for Research & Community Service

Prof. Dr. Ir. Akhmad Herman Yuwono, M.Phil.Eng

Associate Dean for Cooperation, Students Affairs, Alumni & Venture :

Dr. Badrul Munir, ST., M.Eng.Sc

Associate Dean for General Affairs & Facilities

Jos Istiyanto, S.T., M.T., Ph.D

Head of Academic Quality Assurance Unit

Prof. Ir. Mahmud Sudibandriyo, M.Sc., Ph.D

Head of Management System Assurance Development Unit

Dr. Ir. Rahmat Nurcahyo, M.Eng. Sc.

Departments

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

Civil Engineering:

Prof. Ir. Widjojo A. Prakoso, M.Sc., Ph.D

Mulia Orientilize, S.T., M.Eng

Mechanical Engineering:

Dr.-Ing. Ir. Nasruddin, M.Eng

Dr. Ario Sunar Baskoro, ST., MT., M.Eng

Electrical Engineering:

Ir. Gunawan Wibisono, M.Sc., Ph.D

Dr. Arief Udhiarto, S.T., M.T

Metallurgy & Materials Engineering:

Dr. Ir. Sri Harjanto

Dr. Deni Ferdian, ST, M.Sc

Architecture:

Prof. Yandi Andri Yatmo, S.T., M.Arch., Ph.D

Rini Suryantini, S.T., M.Sc

Chemical Engineering:

Prof. Ir. Sutrasno Kartohardjono, M.Sc., Ph.D

Dr. Ir. Nelson Saksono, M.T.

Industrial Engineering:

Dr. Akhmad Hidayatno, S.T., MBT.

Dr.-Ing. Amalia Suzianti, ST., M.Sc.

BOARD OF PROFESSORS

Prof. Dr. Ir. Budi Susilo Soepandji

Prof. Dr. Ir. Sutanto Soehodo, M. Eng

Prof. Dr. Ir. Tommy Ilyas, M.Eng

Prof. Dr. Ir. Irwan Katili, DEA

Prof. Dr. Ir. I Made Kartika, Dipl. Ing.

Prof. Dr. Ir. Raldi Artono Koestoer

Prof. Dr. Ir. Bambang Sugiarto, M.Eng

Prof. Dr. Ir. Yanuar, M.Eng

Prof. Dr. Ir. Tresna P. Soemardi

Prof. Dr. Ir. Budiarmo, M.Eng

Prof. Dr. Ir. Yulianto S. Nugroho, M.Sc

Prof. Dr.-Ing. Nandy Putra

Prof. Dr. Ir. Djoko Hartanto, M.Sc

Prof. Dr. Ir. Dadang Gunawan, M.Eng

Prof. Dr. Ir. Bagio Budiardjo, M.Sc

Prof. Dr. Ir. Eko Tjipto Rahardjo, M.Sc

Prof. Dr. Ir. Harry Sudibyo

Prof. Ir. Rinaldy Dalimi, M.Sc., Ph.D

Prof. Dr. Ir. Rudy Setiabudy, DEA

Prof. Dr. Ir. Iwa Garniwa, MK., MT

Prof. Dr. Ir. Muhammad Idrus Alhamid

Prof. Dr.-Ing. Ir. Bambang Suharno

Prof. Dr. Ir. Bondan T. Sofyan, M.Si

Prof. Ir. Triatno Yudo Harjoko, M.Sc., Ph.D

Prof. Dr. Ir. Abimanyu Takdir Alamsyah, MS

Prof. Dr. Ir. Widodo Wahyu P, DEA

Prof. Dr. Ir. M. Nasikin, M.Eng

Prof. Dr. Ir. Anondho W., M.Eng

Prof. Dr. Ir. Setijo Bismo, DEA

Prof. Dr. Ir. Slamet, M.T

Prof. Dr. Ir. T. Yuri M. Zagloel, M.Eng.Sc

Prof. Ir. Sutrasno Kartohardjono, M.Sc., Ph.D

Prof. Dr. Ir. Yusuf Latief, MT

Prof. Dr. Ir. Dedi Priadi, DEA

Prof. Dr. Ir. Harinaldi, M.Eng

Prof. Dr. Ir. Djoko M Hartono, SE., M.Eng

Prof. Dr. Ir. Muhammad Anis, M.Met

Prof. Ir. Isti Surjandari Prajitno, MT., MA., Ph.D

Prof. Dr. Ir. Danardono Agus S, DEA

Prof. Dr. Ir. Nji Raden Poespawati, MT

Prof. Dr. Ir. A. Herman Yuwono, M.Phil.Eng

Prof. Yandi A. Yatmo, S.T., M.Arch., Ph.D



Prof. Dr. Ir. Riri Fitri Sari, M.Sc.MM	Prof. Dr. Kemas Ridwan Kurniawan, ST., M.Sc
Prof. Dr. Benyamin Kusumoputro, M.Eng	Prof. Dr. Ir. Adi Surjosatyo, M.Eng
Prof. Dr. Ir. Kalamullah Ramli, M.Eng	Prof. Ir. Widjojo Adi Prakoso, M.Sc., Ph.D
Prof. Dr. Ir. Eddy S. Siradj, M.Sc	Prof. Dr. Ir. Winarto, M.Sc
Prof. Dr. Ir. Johny Wahyuadi Mudaryoto	Prof. Dr. Ing. Ir. Misri Gozan, M.Tech.
Prof. Dr. Ir. Anne Zulfia, M.Sc	Prof. Dr. Ir. Nelson Saksono, MT
Prof. Ir. Mahmud Sudibandriyo, M.Sc., Ph.D	Prof. Paramita Atmodiwirjo, S.T., M.Arch., Ph.D.
Prof. Dr. Heri Hermansyah, S.T., M.Eng.	Prof. Dr. Ir. Gandjar Kiswanto, M.Eng
Prof. Dr. Ir. Sigit P. Hadiwardoyo, DEA	

INTERNATIONAL ADJUNCT PROFESSOR

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.

Prof. Dr. Josaphat Tetuko Sri Sumantyo, jtetukoss@faculty.chiba-u.jp (Fundamental Research Field of Remote Sensing: Microwave Remote Sensing), Center for Environmental Remote Sensing (CERES), Chiba University, Japan.

Prof. Dr. James-Holm Kennedy, jhk@pixi.com (Electronic & optical beam management devices, micromechanical sensors, chemical & biochemical sensors, novel electronic devices, force sensors, gas sensors, magnetic sensors, optical sensors.), University of Hawaii, USA.

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.

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.

Prof. Masaaki Nagatsu, tmnagat@ipc.shizuoka.ac.jp, (Plasma Science and Technology) Research Institute of Electronics, Shizuoka University

Prof. Michiharu Tabe, tabe.michiharu@shizuoka.ac.jp, (Nano Devices) Research Institute of Electronics, Shizuoka University

Prof. Hiroshi Inokawa, inokawa06@rie.shizuoka.ac.jp, (Nano Devices), Research Institute of Electronics, Shizuoka University

Prof. Hidenori Mimura, mimura.hidenori@shizuoka.ac.jp, (Vacuum Electron Devices) Research Institute of Electronics, Shizuoka University

Prof. Chit Chiow (Andy) Tan, School of Mechanical, Manufacturing and Medical Engineering, Queensland University of Technology, Australia, Mechanical Engineering

Prof. Kozo Obara, Dept. of Nanostructure and Advanced Materials, Kagoshima University, Japan, Nanomaterial dan Energi

Prof. Freddy Y.C. Boey, Nanyang Technological University, Singapore, Nanomaterial dan Biomedical Engineering

Prof. Kyoo-Ho Kim, Dr.Eng, School of Material Science and Engineering, Yeungnam University, Korea, Nanomaterial dan Energi

Prof. Bernard Cambou, Ecole Centrale de Lyon, France, INRETS (French National Institute for Transport and Safety Engineering), Transport and Safety

Prof. Chia-Fen Chi, Dept. of Industrial Engineering, National Taiwan University Science and Technology, Industrial Management

Prof. Dr. Katsuhiko Takahashi, Dept. of Artificial Complex Systems Engineering, Hiroshima University, Japan, Artificial Complex System Engineering

Prof. Martin Betts, Faculty of Built Environment and Engineering, Queensland University of Technology, Australia.

Prof. L. P. Lighthart (Emeritus), Delft University of Technology, Dutch

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.

Prof. Dr. Uwe Lahl

Prof. Dr. Tae Jo Ko

tjko@yu.ac.kr (BSc. Pusan National University; MSc. Pusan National University; Ph.D Pohang Institute of Technology) Micromachining, Nontraditional Manufacturing, Machine Tools

Prof. Dr. Keizo Watanabe

keizo@tmu.ac.jp (MSc. Tokyo Metropolitan University, 1970; Dr-Eng. Tokyo Metropolitan University, 1977) Drag Reduction, Fluid Mechanics

Prof. Philippe Lours, École nationale supérieure des mines d'Albi-Carmaux, (France) Superalloys, aerospace material

1.4. ACADEMIC PROGRAMS AT FTUI

FTUI consists of seven Departments and **twelve Undergraduate Study Programs**:

- | | |
|-------------------------------|--|
| (1) Civil Engineering | (7) Metallurgy & Materials Engineering |
| (2) Environmental Engineering | (8) Architecture |
| (3) Mechanical Engineering | (9) Interior Architecture |
| (4) Marine Engineering | (10) Chemical Engineering |
| (5) Electrical Engineering | (11) Bioprocess Engineering |
| (6) Computer Engineering | (12) Industrial Engineering |

seven Master Programs:

- | | |
|---|----------------------------|
| (1) Civil Engineering | (5) Architecture |
| (2) Mechanical Engineering | (6) Chemical Engineering |
| (3) Electrical Engineering | (7) Industrial Engineering |
| (4) Metallurgy and Material Engineering | |

and **seven Doctoral Programs:**

- | | |
|---|----------------------------|
| (1) Civil Engineering | (5) Architecture |
| (2) Mechanical Engineering | (6) Chemical Engineering |
| (3) Electrical Engineering | (7) Industrial Engineering |
| (4) Metallurgy and Material Engineering | |

and **one 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:

Civil Engineering : A	Industrial Engineering : A
Mechanical Engineering : A	Naval Architecture & Marine Engineering : A
Electrical Engineering : A	Computer Engineering : A
Metallurgy & Material Engineering : A	Environmental Engineering : A
Architecture : A	Architecure Interior : A
Chemical Engineering : A	Bioprocess Engineering : A

Accreditation for Master Program is as follows:

Civil Engineering : A	Architecture : A
Mechanical Engineering : A	Chemical Engineering : A
Electrical Engineering : A	Industrial Engineering : B
Metallurgy and Materials Engineering : A	

Accreditation for Doctoral Program is as follows:

Civil Engineering : A	Chemical Engineering : A
Electrical Engineering : A	Mechanical Engineering : A
Metallurgy and Materials Engineering : A	Architecture : B

In 2008 & 2010, the Departments of Mechanical Engineering, Civil Engineering, Electrical Engineering, Metallurgy and Materials Engineering, Architecture and Chemical Engineering have been accredited by the Asean University Network (AUN); and also In 2013 Departments of Industrial Engineering have been accredited by the ASEAN University Network (AUN).

International Undergraduate Program (Double-Degree & Single Degree)

Since 1999, Faculty of Engineering has established an international undergraduate program in engineering (double-degree program) with the following renowned Australian higher education institutions: Queensland University of Technology (QUT), Monash University, Curtin University of Technology, The University of Queensland and The University of Sydney. Graduates from this international undergraduate program will be awarded a Bachelor of Engineering degree from our Australian University partner and a Sarjana Teknik degree from Faculty of Engineering UI when they return to FTUI and fulfill certain requirements. The double degree cooperation with QUT involves the study programs Civil Engineering, Mechanical Engineering, Electrical Engineering and Architecture. The double degree cooperation with Monash University involves the study programs Metallurgy & Material Engineering and Chemical Engineering. The double degree cooperation with Curtin University involves the study programs Chemical Engineering, Architecture, Metallurgy & Material Engineering and Electrical Engineering, with other study programs to follow. The double degree cooperation with the University of Queensland involves the study programs Mechanical Engineering, Electrical Engineering, Chemical Engineering and Metallurgy & Material Engineering. This international undergraduate program provides high quality engineering education in the international level. Since 2011, students will also have a choice to continue their final two years at FTUI as part of the newly opened Single Degree International Program.

Since 2011, students will also have a choice to continue their final two years at FTUI as part of the newly opened Single Degree International Program. The undergraduate international single degree program was launched in 2011 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 semester of study at one of our partner universities like their classmates who wishes to pursue a double degree. However, students of single degree program are required to do Study Abroad for a period between one to four semesters at an overseas university. The aims are to widen the international perspective of the students, to have experience to study in an overseas university, to enhance language capability, to enhance cross-cultural adaptability. Study Abroad can be conducted during regular semesters.

Undergraduate Parallel Class Program (Diploma Track) (Extension Program)

The Undergraduate Extension Program in FTUI was initiated in 1993. At the beginning the program was held for only four Study Programs (Civil, Mechanical, Electrical and Metallurgy Engineering). In 1995 the program was also opened for 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 cancelled. However, the faculty still give the opportunity for future FTUI students that are graduates from Diploma Program who wishes to continue their study into the FTUI Undergraduate Program. Students are now able to apply through the Undergraduate Parallel Program (Diploma Track) by using the Credit Transferred System. The number of credits acknowledge will be decided by their respective Departments.

The Undergraduate Parallel Program is a full time program where students are expected to be a full time students in campus. This is due to the schedule set for the program which started from the morning period and well into the afternoon. Currently there are six Study Programs available to choose from: Civil Engineering, Mechanical Engineering, Electrical Engineering, Metallurgy & Material Engineering, Chemical Engineering, Industrial Engineering.

1.5. DEPARTMENT OF INDUSTRIAL ENGINEERING

GENERAL

Industrial Engineering Education is an answer to a growing need of industrial engineers who have the capabilities of managing production or operations process efficiently and effectively to achieve excellence. Industrial Engineers should be one of the backbones for transforming our national industry to be more competitive and contribute to our nation's welfare. The scope of the term industry is for both service and manufacturing industry.

Industrial Engineering Program was actually formed in the mid 1970s as a part of Mechanical Engineering Department, due to the market needs for a specialized mechanical engineers which defines the current definition of industrial engineers. In 1998, based on Decree by Higher Education Director No 207/DIKTI/Kep/1998 dated June 30 1998, the Industrial Engineering Department was born. With the new status as department, the program had more autonomy and opportunity to enhance the Industrial Engineering Discipline in Indonesia.

After 10 years as an independent Department, Industrial Engineering has been recognized by the national public and industry as one of the forefronts industrial engineering education in Indonesia. This is shown by the high demand and acceptability of our graduates. Today, our graduates have been accepted not only in the manufacturing industry but also service industry such as governments, hospital, financial service, consulting, information technology and many others. In the manufacturing area, we have graduates in charge of production or operations management, human resource development, maintenance, inventory and logistics, and many more.

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<http://www.ie.ui.ac.id>

VISION and MISSION

Vision

“ To be a premier industrial engineering higher education institution with good national and international reputation in providing high quality graduates and researches.”

- Establishing education to provide high quality graduates accepted by national and international industry
- Fostering researches to answer the needs of national industry
- Harnessing the knowledge of industrial engineering for the welfare of the society

STAFF OF THE DEPARTMENT OF INDUSTRIAL ENGINEERING

Head of Department:

Dr. Akhmad Hidayatno, ST, MBT

Vice Head of Department:

Dr.-Ing. Amalia Suzianti, ST., M.Sc.

Head of Laboratory

Head of Manufacturing System Laboratory:

Prof. Dr. Ir. T. Yuri M. Zagloel, MEngSc

Head of Human Factors Laboratory:

Ir. Boy Nurtjahyo, MSIE

Head of System Engineering Modeling and Simulation Laboratory:

Dr. Akhmad Hidayatno, ST, MBT

Head of Statistics and Quality Engineering Laboratory:

Prof. Ir. Isti Surjandari P., MT, MA, PhD

Head of Product Development and Innovation Laboratory:

Dr.-Ing. Amalia Suzianti, ST, MSc.

Head of Management Information System and Decision Support Laboratory:

Dr. Ir. M. Dachyar, MSc

BOARD OF PROFESSORS

Prof. Dr. Ir. Teuku Yuri M. Zagloel, MEngSc.

yuri@ie.ui.ac.id (Ir, UI; MEngSc., University of New South Wales, Australia ; Dr, UI), Introduction to Industrial Engineering, Total Quality Management, Lean Operations, Sustainable Manufacturing and Innovation, Manufacturing Facilities Planning and Analysis, Manufacturing System.

Prof. Ir. Isti Surjandari P., MT., Ph.D

isti@ie.ui.ac.id (Ir, UI; MT, ITB; MA, Ohio State University, USA; Ph.D, Ohio State University, USA) Introduction to Economics, Industrial Statistics, Multivariate Analysis, Data Mining, Decisions, Uncertainties and Risks, Service Engineering, Advanced Statistics.

FULL-TIME FACULTY

Akhmad Hidayatno, akhmad@eng.ui.ac.id (Ir, UI; MBT, Univ. Of New South Wales, Australia, Dr, UI) System Modelling, Quality System, Industrial Simulation, System Engineering, Technology

Management, System Dynamics, Interpersonal Skills, Advance Modelling, System Thinking.

Amalia Suzianti, suzianti@ie.ui.ac.id (ST, UI; MSc., BTU Cottbus, Germany; Dr.-Ing., TU-Berlin, Germany - University of Luxembourg) Product Design, Industrial Engineering Design, Industrial Technology Management, Product Lifecycle Management, Sustainable Manufacturing and Innovation, Knowledge Management, Industrial System Design, Technology Entrepreneurship.

Armand Omar Moeis, armand.moeis@gmail.com (ST, UI; MSc, TU Delft, The Netherlands; Cand Dr., UI) System Modelling, System Engineering, Industrial Simulation, System Dynamics, Advanced Modelling, System Thinking.

Arian Dhini, arian@ie.ui.ac.id (ST, ITB; MT, UI; Cand Dr, UI) Statistics and Probability, Industrial Statistics, Cost Accounting, Multivariate Analysis, Advanced Statistics.

Arry Rahmawan, arry.rahmawan@gmail.com (ST, UI ; MT, UI) System Modelling, System Engineering, Industrial Simulation, System Dynamics

Billy M. Iqbal, billy.iqbal87@gmail.com (SDs, ITB ; MT, UI) Cognitive Ergonomics, Human Digital Modelling and Simulation, Human Factors in Industrial Design, Product Design

Boy Nurtjahyo Moch, boymoch@eng.ui.ac.id (Ir, UI; Wayne State University, USA) Methods, Standards and Work Design, Macro Ergonomics, Cognitive Ergonomics, Human Digital Modelling and Simulation, Human Factors in Industrial Design, Safety Engineering and Management.

Dendi P. Ishak, dendi@ie.ui.ac.id (BSIE ; MSIE, Wayne State University, USA; Cand Dr, University of Malaya, Malaysia) Introduction to Industrial Engineering, Maintenance System, Customer Relationship Management, Competitive Analysis, Information System, Industrial Project Management, Safety Engineering and Management.

Djoko S. Gabriel, dsihono@ie.ui.ac.id (Ir, ITB; MT, ITB; Dr, UI) Plant Layout Design, Industrial Feasibility Analysis, Supply Chain Management, Technology Management.

Erlinda Muslim, erlinda@eng.ui.ac.id (Ir, ITB; MEE, UTM Malaysia) Cost Accounting, Product Design, Industrial Feasibility Analysis, Competitive Analysis, Industrial Psychology and Organization, Industrial Strategic Design, Human Capital Management, Technology Policy, Industrial Policy, Industrial System Design.

Fauzia Dianawati, fauzia@ie.ui.ac.id (Ir, UI; MSi, UI; Cand Dr, ISSTIA, France) Industrial Psychology and Organization, , Industrial Project Management, Industrial Strategic Design, Human Capital Management.

Farizal, farizal@ie.ui.ac.id (SMIA, UI; MSc, Oklahoma State University, USA ; PhD. University of Toledo, USA) Engineering Economics, Linear Programming, Finance and Investments, Operations Research, Advanced Operations Research, Advanced Optimization, Interpersonal Skills.

Inaki M. Hakim, inakimhakim@ie.ui.ac.id (ST, Universitas Sebelas Maret Surakarta ; MT, ITB) Production Process, Industrial Psychology and Organization, Sustainable Manufacturing and Innovation, Reconfigurable Manufacturing System

Komarudin, komarudin01@gmail.com (ST, UI; MEng. UTM, Malaysia; Dr, VU, Brussel, Belgium) System Modelling, Advanced Operations Research, Advanced Optimization, Game Theory, Linear and Stochastic Programming, Queuing Theory.

M. Dachyar, mdachyar@yahoo.com, mdachyar@ui.ac.id (Ir, UI; MSc, VU Brussel, Belgium; Dr, IPB) Information System, Industrial Project Management, Customer Relationship Management, Innovation Management, Decisions, Uncertainties and Risks, Service Engineering, Operations Management.

Maya Arlini, maya@ie.ui.ac.id (ST, UI; MT, UI; MBA, NTUST, Taiwan) Methods, Standards and Work

Design, Macro Ergonomics, Human Factors in Industrial Design, Safety Engineering and Management.

Rahmat Nurcahyo, rahmat@eng.ui.ac.id (Ir, UI; MEngSc. Univ of New South Wales, Australia; Dr, UI) Production Planning and Inventory Control, Total Quality Management, Maintenance System, Industrial Feasibility Analysis, Competitive Analysis, Human Capital Management.

Yadrifil, yadrifil@yahoo.com (Ir, UI; MA, Oregon State University, USA) Production System, Production Planning and Inventory Control, Lean Operations, Manufacturing Facilities Planning and Analysis, Manufacturing System, Industrial Strategic Design, Operations Management.

PART-TIME FACULTY

Amar Rachman, amar@ie.ui.ac.id (Ir, UI; MEIM, KULeuven, Belgium) Linear Programming, Operations Research, Advanced Operations Research, Introduction to Mechanics and Electronics in Factory.

Romadhani Ardi, romadhani@ie.ui.ac.id (ST, UI; MT, UI; Dr, UDE, Germany) Production System, Production Planning and Inventory Control, Quality System, Advanced Modelling.

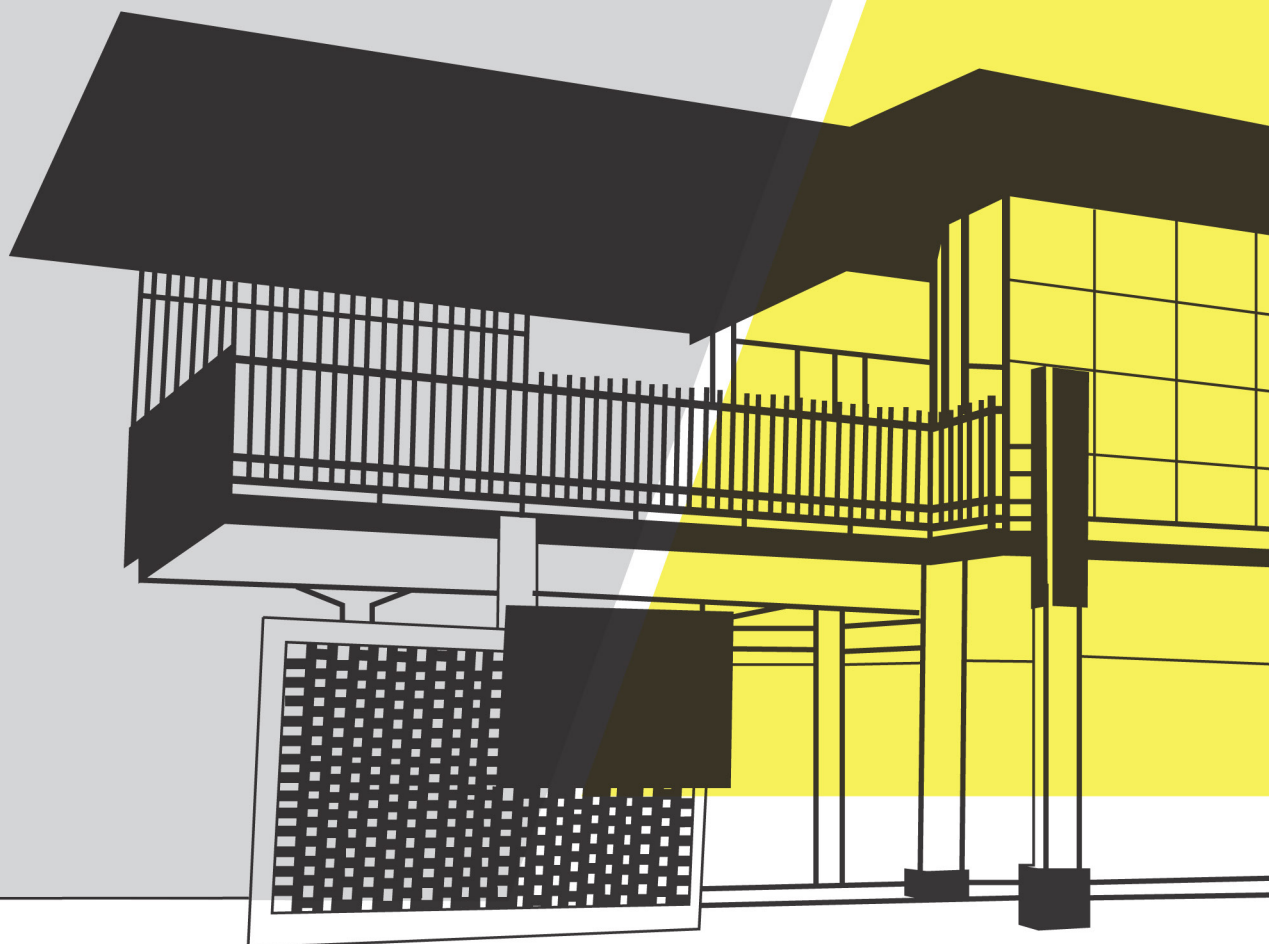
Shabila Anjani, shabila@ie.ui.ac.id (ST, UI ; MT, UI ; MBA, NTUST, Taiwan) Product Design, Cost Accounting, Sustainable Manufacturing and Innovation, Industrial Engineering Design, industrial Systems Design, Technology Entrepreneurship

Sri Bintang Pamungkas, sri-bintang@ie.ui.ac.id (Ir., ITB; MSc., University of Southern California, USA; Ph.D, Iowa state University, USA) Introduction to Economics, Finance and Investments, Introduction to Mechanics and Electronics in Factory, Supply Chain Management, Industrial Policy.

Tegar Septyan Hidayat, tegar_ti08@yahoo.com (ST, UI ; MT, UI) Methods, Standards and Work Design, Macro Ergonomics, Human Factors in Industrial Design

Zulkarnain, zulkarnain@ie.ui.ac.id (ST, UI; MT, UI; Dr, Oulu Univ, Finland) Operations Research, Supply Chain Management.

ACADEMIC SYSTEM AND REGULATION



2. ACADEMIC SYSTEM AND REGULATION

The educational system in the Faculty of Engineering, Universitas Indonesia refers to the prevailing system of education at Universitas Indonesia.

2.1. GENERAL

Teaching and Learning Activities

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

Semester Credits Units (SKS)

Education in the Faculty of Engineering, Universitas Indonesia is held in a variety of ways such as lectures, assignments (ex: calculation tasks, planning, design), practical work, seminars, lab, studio, and research for thesis writing. All educational activities that must be undertaken by each student to earn a bachelor's degree are contained within the academic loads and measured in units of semester credit (SKS).

Semester Credit is a measurement on the learning experiences obtained by students on 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 in 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.

Activities for one semester consist of 16-18 weeks of lectures or other scheduled activities and its additional activities. Also included in the schedule are two weeks of midterm examination and another two weeks for final examination.

All educational activities must be performed by each student to earn a bachelor's degree is an academic load of 144-145 credits divided 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 minimal 18 -20 hours of scheduled interaction 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 (12,5%), Basic Engineering Subjects (15-20%), Basic Skills Subjects (30-35%), Core Subjects (35-40%). Subjects can be categorized as compulsory subjects and electives. They can be taken across departments or across faculties.

Grade Point Average

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

$$\text{GPA} = \left(\frac{\sum_{\text{courses}} (\text{Grade Point Value} \times \text{Semester Credit Unit})}{\sum_{\text{courses}} \text{Semester Credit Unit}} \right)$$

The summation made by multiplying the weight of credits with a letter grade for each course, divided by the number of credits.

Semester Performance Index / Indeks Prestasi Semester (IPS)

The Semester Performance Index is calculated from all subjects taken in each semester, except for subjects with letter grade of BS, I, and TK. Achievement Index that takes into account all of the subjects for a certain semester is called the Semester Performance Index (IPS) and used to determine the maximum academic load that the student may take in the upcoming semesters.

Grade Point Average (GPA/IPK)

If the calculation involves the entire grade point value of subjects taken during the educational program period, the result of the summation is a Grade Point Average (GPA) that is used as a basis for study evaluation. Courses taken into account are the ones listed in the Study Plan Form (FRS). GPA 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 letter grade of BS, I, and TK.

Academic Performance Evaluation

Assessment of academic ability is performed on an ongoing basis by assigning tasks, homework, quizzes, or exams which are given throughout the semester. For each subject, there are at least two components of assessment which may include a midterm exam (UTS) and a final exam (UAS). A student will be assessed on his academic ability if he meets 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 each semester, students may download Semester Grade Record as a report on their academic performance from SIAK NG. Assessment of study efficacy is carried out using letters and academic load in accordance with Table 2.1.

Table 2.1. Grade Value and Points

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

The highest grade is A with grade point of 4.00 and the minimum passing grade of a course is C with grade point of 2.00. The instructor may assign the 'Incomplete' (I) grade if the student has not made a reasonable attempt to complete major session assignments, laboratory projects and the lecturer has made a reasonable effort to inform the student as early as possible that an important part of session work is incomplete. The 'I' mark should be changed to other grade within 1 month, otherwise, it will be automatically changed to 'E' grade. The "T" mark is given for no attendance in exam. The "BS" mark is given for Special Lecture (such as Internship, Seminar & Final Project) that has not been completed. These BS courses are not taken into account in the calculation of Semester Study Unit, IPS and GPA.

Length of Study and Academic Load

Undergraduate Program

The academic load a student can take is determined by the Academic Counselor based on the previous Semester Performance Index (IPS) as stated in the Study Plan Form (FRS). Students must take the entire allocated credits of the entire courses in the first and second semester. Academic Load for Undergraduate Program is 144 (one hundred and forty four) credits including final assignment and maximum academic load is 160 (one hundred and sixty) credits including final assignment and can be completed in minimum 7 (seven) semesters and maximum of 12 (twelve) semesters.

As for the second semester, these following rules apply:

- For students obtaining an IPS of 2.00 or less, they must take all credits load allocated for the second semester according to the structure of the applicable curriculum.
- For students obtaining an IPS of 2.00 or more, the maximum credits that can be taken follow that of the provisions in the Maximum Credit Load Table.
- From the 3rd semester onwards, the maximum credit loads that may be taken is determined by IPS of the previous semester and follow provisions in Maximum Credit Load as shown in Table 2.2 with respect to course prerequisites (if any). If necessary, Academic Counselor (PA) can add a maximum of 2 credits more than the provision in the Table through the approval of the Vice Dean.

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

IPS	Maximum SKS
< 2,00	12
2,00 - 2,49	15
2,50 - 2,99	18
3,00 - 3,49	21
3,50 - 4,00	24

Master Program

Academic load in the FTUI's Master Program curriculum is 40-44 credits after finishing the undergraduate program with the following study period:

- For Regular Master Program, the length of study is scheduled for 4 (four) semesters and can be completed in at least 2 (two) semesters and a maximum of 6 (six) semesters.
- For Non-Regular Master Program, the length of study is scheduled for 5 (five) semesters and can be completed in at least 3 (three) semesters and a maximum of 7 (seven) semesters.

Academic Load for each semester is set by the Academic counselor (PA) based on the IPS of the last semester as stated in the Semester Grade list (DNS). Provisions on the academic load are as follows:

- A semester's academic load is registered by a student as he carries out online registration according to the pre-determined schedule. Students are required to take all subjects as allocated in the first semester curriculum.
- For students with less than a 2,5 IPS, a provision stating that the number of credits taken for the following semester does not exceed 9 credits is applicable.
- The maximum number of credits that can be taken on Master Program is 16 (sixteen) credits (for Regular Master Program) and 12 (twelve) credits (for Non Regular Master Program) per semester.

Exemption from the provisions of academic load should be with the permission of the Vice Dean.



Matriculation for Master

The Matriculation Program is aimed to synchronize the students' ability to achieve the minimum requirements to continue in the Master Program in the Faculty of Engineering Universitas Indonesia. Matriculation is done by taking classes of subjects required by each Faculty/ Study Program within the Curriculum of Undergraduate Program. The allowed credit load for this Matriculation program is 12 (twelve) credits that can be completed in 1 (one) or 2 (two) semesters. Students are allowed to continue their study in the Master Program only if they passed all Matriculation subjects within the maximum of 2 (two) semesters allowed with a Matriculation GPA of 3,00 (three point zero).

Doctoral Program

Academic load in the FTUI's Doctoral Program curriculum is 48-52 credits after finishing the Master Program, including 40 credits of research activities. A semester's academic load is registered by the student through online academic registration during a pre-determined schedule. New students are required to take all subjects as allocated in the curriculum for the first and second semesters. Students must re-take research courses with a BS grade from previous semesters. Student's Academic Load for each semester is established by the Academic Advisor (PA) or the doctorate Promoter based on a discussion with the student from the doctoral program.

The length of doctoral program for all scheduled courses is 6 (six) semesters and in its implementation can be completed in at least 4 (four) semesters and maximum of 10 (ten) semesters. Students in the Doctoral Program may be granted an extension of study period up to a maximum of 2 (two) semesters if their study time have never been extended before, have achieved a minimum grade of B for Research Result Examination, and obtained a recommendation from their promoter and a guarantee that they will complete their study within the granted extended study period. The proposal for such extension is regulated through a Rector's decree based on proposal from the Dean/ Director of School.

Undergraduate Thesis / Final Project

Undergraduate Thesis is mandatory course for undergraduate students of Faculty of Engineering UI. The course is the application of science that has been obtained in accordance with the basic scientific disciplines that the student has studied, in the form of scientific paper, engineering design, assembly or models and accessories. Undergraduate thesis is mandatory to complete the requirements in order to earn a degree in the field of engineering. Undergraduate Thesis status is equivalent to other skill courses is tailored in accordance with the scope of each study program. Undergraduate Thesis must meet certain requirements, both academic and administrative requirements. Students are allowed to start composing undergraduate thesis if:

- The Undergraduate Thesis has been registered in the Study Plan 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 Thesis can be taken in both odd and even semester in the running academic year. On SIAK NG system, student must fill out the name of his thesis supervisor and the title of thesis which will be verified by the Vice Head of the Department. At the end of the semester, the Undergraduate Thesis supervisor will submit the student's thesis's grade to SIAK NG and change the title of undergraduated thesis (if necessary). The completed undergraduated thesis must be submitted in the form of hard-covered book and CD within the pre-determined time limit. The undergraduate thesis must first be assessed in an undergraduated thesis examination by the supervisor and examiners assigned by the Head of the Department.

Thesis (Master Program)

Thesis is a report of the results of research activities 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 the theory and use of certain methods. Thesis should be written in Bahasa with an English abstract. For Master program students who are given the opportunity to conduct research and thesis preparation abroad, they are allowed to write thesis in English with abstracts in the Bahasa, while still following the appropriate format stated in the Final Project Writing Guideline of Universitas Indonesia. Exemption of this rule applies only to study programs that hold a joint collaboration with university's abroad as stated in the charter of cooperation.



Requirements to start making Thesis are:

- Thesis has been registered in Study Plan Form [FRS] in every semester
- Students have passed courses with a load of 20 credits with a GPA ≥ 3.00
- Head of the study program has set lecturer's name as a thesis supervisor.

Students are responsible for all thesis research costs. Students can actively meet with any of their lecturers as a potential supervisor, to request a thesis topic. In addition, in middle of the second semester, Head of the Study Program can start announcing thesis topics from which the students of the Master program could choose from to prepare the thesis proposal in the form of seminars. The Head of the Study Program announces a list of thesis supervisor who are assigned to guide the students in writing and finishing the approved topic. Thesis examination committee consists of Head of the committee, a minimum 3 or a maximum 5 examiners including the thesis supervisor. Responsible for the implementation of the thesis is the thesis coordinator in each department. Thesis counseling should be carried out with maximum of two people, Supervisor I and Supervisor II. Supervisor I should have a PhD or Master degree with a minimum of 5 years teaching experience and have expertise relevant to the student's thesis. Supervisor II should at least have a minimal master degree & have expertise relevant to the student's thesis.

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

- Thesis has been registered in Study Plan Form [FRS] in said semester
- The thesis has been declared eligible for examination by the Thesis Advisor
- Students have passed seminar examination and have met the requirements for thesis examination set by the study program.
- The thesis 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 are done under the guidance and evaluation of Promoter with the following qualification: Full Time University Lecture; a Professor or Doctor with an academic title of Associate Professor; Have a relevant expertise with the Dissertation Topic; 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 acknowledge by a team of expert appointed by the Academic Senate of Universitas Indonesia. 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. Co-promoter must have the following qualification: a full time or a part time lecture or an expert from other institution; hold a minimum title of Doctor/Ph.D with an academic title of a minimum Senior Lecture; Have a relevant expertise with the Dissertation Topic.

Internship

Internship is an out-of-campus activity to apply the scientific knowledge in a real work situation. Requirements for Internship is set up by each department and is 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 undergraduate double degree program, students are required to complete internship when they are in the partner universities. For example in Australia internship is one of the requirements set by the Institute of Engineers Australia (IEAust) to obtain accredited B.E. (Bachelor of Engineering) degree. Internship is a good opportunity for students to apply their skills and build networks in the industry. It is strongly suggested that students should do their Internship in partner universities. However, if they cannot do so in partner universities, they are allowed to do it in Indonesia with prior permission from partner university.

Supplementary Exam

Students are allowed to take a Supplementary Examination for Mid Term and Final Examination the following condition: Sick, Grievance; or representing Universitas Indonesia in a Competition. Students with Sickness excuse are obliged to submit the application for Supplementary Exam signed by their parents/guardian and a Medical Certificate from Doctor or Hospital where they was treated; Students with Grievance or death in the family (death to Father, Mother, Older or Younger Siblings) are obliged to submit the application for Supplementary Exam signed by their parents/guardian; Students representing

Universitas Indonesia in a Competition are obliged to submit a Letter of Assignments/ Letter of Reference stating the Competition which they represented UI in. The Supplementary Exam can only be done by a 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 a number of credits a student may obtained from a university after an evaluation process by a Credit Transfer Team on each Faculty /School in a University. Students who have registered and study at an undergraduate study program or other equivalent education programs, both within the Universitas Indonesia or in 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 with the courses listed in the curriculum for undergraduate program in FTUI, (ii) the academic record must be dated not more than a maximum of 5 years from the credit transfer application date, (iii) if the academic record are obtained from other universities outside of the 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 an Undergraduate Program is a maximum of 50 (fifty) percents of the total academic load that a student is required to complete in accordance to the curriculum of the study program he/she is currently studying. The courses transferred will be indicated with “TK” mark in the academic transcript.

Credit Transfer procedure are as follows: (i) Student submit a letter requesting Credit Transfer to the Head of the designated department, (ii) The Head of the Department will form a team to recommend which courses the student has previously taken can be transferred, (iii) Recommendation will be sent to the Dean of FTUI, (iv) FTUI Dean issues the Credit Transfer Decree, (v) The Faculty’s Center of Administration assigned “TK” marks for all relevant courses in the student’s SIAK NG account.

Credit Transfer for Parallel Class Students of Diploma Graduates

Starting in 2011, all extension programs in FTUI were merged into Parallel Classes in the Undergraduate Program. Diploma graduates who are registered as a student in these parallel classes, credits obtained from the previous diploma program will be transferred in blocks of 36-41 credits. Students begin their study in the third semester by taking all academic load according to package provided for the third semester. Afterward, they can take credits in accordance with their IPS in the following semester.

Study Abroad

There are many opportunities available for undergraduate students, both from Regular and Parallel programs to participate in Student Exchange program abroad, such as in Japan, Korea, Taiwan, Singapore, and many other countries. Student exchange programs generally last for 1-2 semesters and is 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. Student 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

FT UI students, Regular, Parallel 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 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 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:

- a. 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.
- b. For the Master Program is 40-44 credits including the 16-22 credits from subjects mentioned in point a above and are acknowledge through credit transfer.

If 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 an elective subjects in their completion of the Undergraduate Program and cannot be acknowledge 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:

Having a minimum GPA of 3.50

Having a minimum Institutional TOEFL/EPT score of 500 (students may use the score from the EPT test they took as new student in FTUI)

Having a high motivation for research

Procedure for Fast Track Program:

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).

Students who are interested in participating in the Fast Track Program are required to fill out the Registration Form downloadable through the <http://www.eng.ui.ac.id/index.php/ft/downloadindeks> (titled: (FormulirPendaftaran Fast Track Magister FTUI).

Students registering for the BeasiswaUnggulan from the Ministry of Education and Culture selection are required to fill out the BeasiswaUnggulan registration form downloadable from the same web page.

The Fast Track Registration Forms will be evaluated by a team headed by the Head of Department.

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. The student's study plan 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.

Undergraduate thesis and thesis of the student are expected to be of continuous research to maximize knowledge, experience and quality research result.

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.

2.2. 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 2017/2018 *)

Administrative registration in Universitas Indonesia
July - August 2017

Academic registration in Universitas Indonesia
January - February 2017

Course period
August - December 2017



Mid-semester examination
October 2017

End of Semester Examination
December 2017

Deadline for grade assignment in SIAK-NG
January 2018

Departmental Judicium
1st, November 2017
2nd, January 2018

Faculty Yudicium
1st, November 2017
2nd, January 2018

Graduation
February 2018

Term 2 *)

Administrative registration in FTUI
January - February 2018

Academic registration in FTUI
January - February 2018

Course Period and examination
February - May 2018

Mid-semester examination
March - April 2018

End of Semester Examination
May 2018

Graduation
August 2018

Short Semester *)

Administrative Registration
June 2018

Academic Registration
May - June 2018

Course period
June - August 2018

Mid-semester Examination
July 2018

End of Semester Examination
August 2018

Note:

*) Schedules are subject to change

Note:

- Short Semester course period is held for 8 weeks, including mid-semester and final semester examinations.
- 2 credit courses consist of twice 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.
- 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.
- A student can take up to a maximum of 12 credits during the short semester.
- Courses offered are determined by the Department.

- 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.
- 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.
- 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. 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 Course 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 particularly in selecting courses and in solving their academic problems
- Monitoring and evaluating student's academic performance during their period of study.

Students should logon to <https://academic.ui.ac.id> using username and password provided by the Office of Pengembangan Pelayanan Sistem Informasi (PPSI) 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 cannot follow the academic activities in the current semester, which is included as their length of study.
3. Students who are not active as referred to in points (1) are not charged with tuition payments.
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.
5. Active students who do not complete the payment in accordance with the agreement until the end of the semester goes imposed the fine of 50% of the unpaid amount.
6. Payment of fines referred to in points (5) shall be paid at the following semester Academic Registration

Exception Administrative Registration

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

- Obtain the approval from 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 current semester.
- The approval will be used by the students for paying the tuition fee manually.
- 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 minimum GPA as required at the end fourth semester for the 2+2 program;
2. 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 Program curriculum for semester 1-4.
3. Achieve minimum IELTS or TOEFL scores as required.
4. If GPA less than required, the students must stay at UI and repeat some subjects to improve their GPA, while administratively and academically registered at FTUI.
5. If 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
QUT	3.0	IELTS min. 6.5 with no band lower than 6 ibT min 90 with no band lower than 22
Curtin		
UQ		
Uni Sydney		
Monash	3.2	

English Language Requirements for Undergraduate International Program Single Degree

Students of the Undergraduate International Program Single Degree (class of 2012 and after) are obligated 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	6.5	No bands lower than 6.0
TOEFL iBT	80	No bands lower than 20

This English Language Certificate is one of the requirements before they may proceed to have their Undergraduate Thesis/ Final Project Exam. The date of said English Language Certificate is taken at least during their third semester of study.

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

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

2.3. GRADUATE PREDICATE

Students are considered to have passed the undergraduate program and earned a Bachelor 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 mandatory courses and acquired a minimum of 144 credits in accordance with the applicable curriculum with "C" as the lowest grade and completed all 8 semesters scheduled academic load within 8-12 semesters; 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 $\geq 2,00$ (two point zero). Honor predicate for graduates are determined by the student's final GPA as follow: Cum Laude (3,51 - 4,00), Very Satisfactory (3,01 - 3,51), and Satisfactory (2,76 - 3,00). For an undergraduate student to earn the Cum Laude degree, he must finished his study within 8 (eight) semesters time without retaking any courses.

Students are considered to have passed the Master program and earned a Master of Engineering or Master of Architecture Degree if they have passed all the required 40 - 42 credits, a ≥ 3.00 GPA

with “C” as the lowest grade and do not exceed study period and have met all administrative requirements. Honor predicate for graduates are determined by the student’s final GPA as follow: Cum Laude (3.71 - 4.00), Very Satisfactory (3.41 - 3.70), and Satisfactory (3.00 - 3.40). For a Master program student to earn the Cum Laude degree, his length of study must not exceed 4 (four) semesters time without retaking any courses.

Students are considered to have passed the Doctoral program and earned a Doctor Degree if they have passed all the required 48 - 50 credits, a minimum GPA of 3.00 with a minimum “C” for in-class courses and a minimum “B” for research courses, do not exceed study period and have met all administrative requirements. Honor predicate for graduates are determined by the student’s final GPA as follow: Cum Laude (3.71 - 4.00), Very Satisfactory (3.41 - 3.70), and Satisfactory (3.00 - 3.40). For a Doctoral program student to earn the Cum Laude degree, his length of study must not exceed 6 (six) semesters time without retaking any courses. The mark “BS” is not counted as course repetition. If a student’s final GPA is within the 3.71 - 4.00 range but he fail to meet the other requirements, he will be awarded the “Very Satisfactory” predicate.

2.4. 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 eighth semester;
- Attain all required credit with a minimum of C at the end of their twelfth semester;

Or:

- Have the following problem: 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.
- 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 Dean with a copy to the Head of the Department.

Master 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 14-18 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 $\geq 3,00$ (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 Dean with a copy to the Head of the Department.

Doctoral Program

The Maximum length of study earn a Doctoral degree in FTUI is 10 (ten) semesters, starting from registration time to graduation.

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

- Students who do not register academically and administratively for two consecutive semesters will be automatically considered to have resigned from UI.
- Failed to obtain a minimum of B for their Research Proposal Examination or similar exam at the end of their fourth semester;
- Failed to obtain a minimum of 50 (fifty) percent for their Research based on the judgment of the promoter team at the end of their sixth semester;
- Failed to obtain a minimum of 75 (seventy five) percent for their Research based on the judgment of the promoter team at the end of their eight semester;
- Failed to obtain the following by the end of their study period of ten semesters: produce 1 (one) scientific paper based on research for their dissertation as main writer that can be accompanied by the promoter team and has been accepted to be published in an indexed international journal (8 credits); submit proof of compliance of requirements as stated before as part of the requirements for promotion exam; submit 1 (one) Dissertation and participate in a Promotion Exam as the final step of the Doctoral Program (6-8 credits).
- Exceeded the maximum length of study (10 semesters).
- Proven to be in violation of rules or regulations that caused the student to lose his right as FTUI students.

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 who do not register academically and administratively for two consecutive semesters will be automatically considered to have resigned from UI;
- Failed to obtain a minimum of B for their Research Proposal Examination or similar exam at the end of their fourth semester;
- Failed to obtain a minimum of 50 (fifty) percent for their Research based on the judgment of the promoter team at the end of their sixth semester;
- Failed to obtain a minimum of 75 (seventy five) percent for their Research based on the judgment of the promoter team at the end of their eight semester;
- Failed to obtain the following by the end of their study period of ten semesters: produce 1 (one)



scientific paper based on research for their dissertation as main writer and be presented at an international scientific conference and published in the proceeding as a full paper (6 credits); produce 1 (one) scientific paper based on research for their dissertation as main writer that can be accompanied by the promoter team and has been accepted to be published in an indexed international journal (8 credits); submit 1 (one) scientific paper that has been accepted to be published in a nationally accredited journal; submit proof of compliance of requirements as stated before as part of the requirements for promotion exam; submit 1 (one) Dissertation and participate in a Promotion Exam as the final step of the Doctoral Program (6-8 credits).

- Exceeded the maximum length of study (10 semesters).
- Proven to be in violation of rules or regulations that caused the student to lose his right as FTUI students.

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.

2.5. ACADEMIC LEAVE

Student who wishes to be away from his/her academic endeavors at FTUI for one to two semesters, but intend to return to FTUI are eligible for academic leave of absence. Leave of absence could be only given to student who has studied at least two semesters at FTUI, unless with specific circumstances. Academic leave for special circumstances are academic leave that is given to students for an unavoidable hindrance, such as: state task, university task, or undergoing medication which prohibited said student to participate in academic activity. Academic leave is not counted as part of the length of study.

Procedures of Academic Leave

1. To obtain academic leave, a student must write a letter requesting for academic leave to the Dean before the beginning of the administrative registration period of semester.
2. If the academic leave is approved, PAF will change the status of the student as academic leave before the beginning of the administrative registration period of semester and the amount of tuition fee will automatically be changed.
3. The student must pay 25 % of tuition fee during the period of administrative registration of the intended semester.
4. If a student has been granted an academic leave but fail to pay the obligated fee due to them during the registration period, the academic leave will be canceled and the student status will revert to inactive (empty).
5. In the situation as stated above, if the student still insist on making payment after the registration period has passed, the student will be charged with a late administration registration fee in the amount stated in the regulation issued in the Rector's Academic Fee.
6. If the students fail to pay during the prescribed period of administrative registration, Exceptional Administrative Registration will apply.
7. If the Academic Leave is proposed not accordance with point (1) above, or is proposed after the semester is on, the student should pay full amount (100 %) of tuition fee.

2.6. FACULTY and DEPARTMENT JUDISIUMS

Judisium 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.

2.7. 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 based on student's request while the diploma and academic transcripts are issued only once at the time of the student's graduation. Contained within the Student Academic History and Academic Transcript are name, course code and grades of all courses that the students took 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 latest education), 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 as hard copy based on a student request as required. A valid DNS is signed by official handling the academic administration in the Faculty level.

Academic Record recorded chronologically all academic activity of a student since they first registered as a student until they are no longer registered, due to graduation, drop out, or resignation. The academic status of a student of each semester is recorded in the Academic Record. The Academic Record is also used as a source of information for student, Academic Advisor, and Study Program to the success of a student study and is issued as required based on the student's request and validated by the Vice Dean of the Faculty.

Academic Transcript is given to student that has been declared as a graduate from a Study Program which is decided in a graduation determination meeting and contained 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 language, Bahasa Indonesia and English. The Academic Transcript will be given to students with no arrears of tuition fees.

Diploma is given to student that has been declared as a graduate from a Study Program which is decided in a graduation determination meeting. Diploma contained information on the identity of the diploma holder (name, place and date of birth), academic title, name and signature of the Rector and Dean, date of diploma issued, 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 is allowed to request a 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 arrears of tuition fees.

2.8 OFFENSES AND SANCTIONS

In any particular courses, no students shall engage in any form of unethical or improper conduct, such as but not limited to examination offenses:

Utilizing unauthorized materials/notes to enhance performance during on examination.

Attempting to observe the work of another student.

Taking an examination for another person, or permitting someone else to do so.

Collaborating improperly by joint effort on discussion in anyway expressly prohibited by lecturer.

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 PanitiaPenyelesaianPelanggaran Tata Tertib (Offence Settlement Committee) (PT32) may be held.

Academic Sanction for Perpetrators of Academic Cheating In Exams

- a. Academic sanction in the form of the cancellation of said exam (E grade) for student caught or proven committing academic fraud in examination process, such as working with other student, copying other student's work or giving answer to other student;
- b. Academic sanction in the form of study period cancellation (for all subjects) for said semester



- for student caught or proven committing academic fraud in examination process such as opening books, notes or other equipment planned before;
- c. Academic sanction in the form of cancellation study period for said semester and one semester suspension for student caught or proven committing academic fraud in examination process due to working together with outside person(s) outside of the examination room;
 - d. Academic sanction in the form of expulsion from the Faculty of Engineering Universitas Indonesia (expelled) for student caught or proven committing academic fraud in the examination process by replacing other examinee or by having someone else take their place;
 - e. Academic sanction in the form of expulsion from the Faculty of Engineering Universitas Indonesia (expelled) for student caught or proven committing academic fraud in the examination process for planning and carrying out the plan to help other examinee;
 - f. Other academic fraud will be handled through a hearing by the Committee of Rules and Conduct Regulation Violation (Panitia Penyelesaian Pelanggaran Tata Tertib (P3T2)) Faculty of Engineering Universitas Indonesia;
 - g. Student is entitled to an appeal with the help of their Academic Advisor and the Vice Dean for Academic, Research, and Student Affairs Faculty of Engineering Universitas Indonesia, submitted to the Faculty Academic Senate in the quest of justice.

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 through 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.

2.9. ACADEMIC REGULATION OF THE UNIVERSITAS INDONESIA

List of Academic Regulations at Universitas Indonesia can be accessed via <http://resipatory.ui.ac.id>.

Below is a list of Decrees that functioned as reference for education program at Universitas Indonesia

GENERAL:

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:

Decree of the Rector Universitas Indonesia

Number: 285/SK/R/UI/2003 on the Implementation Guidelines for Cross-Faculty Lectures in Universitas Indonesia

Decree of the Board of Trustees Universitas Indonesia

Number: 006 / MWA-UI/2004 on the Universitas Indonesia's Academic Curriculum

Decree of the Rector of Universitas Indonesia

Number: 491/SK/R/UI/2004 on Universitas Indonesia Education Activities Conclusion Regulations

Decree of the Board of Trustees Universitas Indonesia

Number: 001 / TAP/MWA-UI/2005 on the Establishment of Academic Degrees in the Universitas Indonesia.

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

Regulation of the Board of Trustees Universitas Indonesia

Number: 006 / Peraturan/MWA-UI/2005 on Student Learning Outcomes Evaluation at Universitas Indonesia

Regulation of the Board of Trustees Universitas Indonesia

Number: 007 / Peraturan/MWA-UI/2005 on Academic Education Implementation Norms in Universitas Indonesia



Number: 008 / Peraturan/MWA-UI/2005 on Professional Education Curriculum Norms in Universitas Indonesia

Decree of the Rector of Universitas Indonesia

Number: 838/SK/R/UI/2006 on Administration of Universitas Indonesia Student's Learning Outcomes

Decree of the Rector of Universitas Indonesia

Number: 012/SK/R/UI/2007 on Implementation of the of Students Learning Activity in Universitas Indonesia

Decree of the Rector of Universitas Indonesia

Number: 450/SK/R/UI/2008 on the Implementation of E-Learning in the University Indonesia

Decree of the Dean of Faculty of Engineering Universitas Indonesia

Number: 290/D/SK/FTUI/VI/2013 on the English Requirements for Undergraduate International Program Single Degree Faculty of Engineering Universitas Indonesia.

Decree of the Rector of Universitas Indonesia

Number :014 year 2016 on the Implementation of Undergraduate Program in Universitas Indonesia

Decree of the Rector of Universitas Indonesia

Number :015 year 2016 on the Implementation of Master Program in Universitas Indonesia

Decree of the Rector of Universitas Indonesia

Number :016 year 2016 on the Implementation of Doctoral Program in Universitas Indonesia

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.

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.

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.

RESEARCH

Decree of the Board of Trustees Universitas Indonesia

Number 002/SK/MWA-UI/2008 on University's Research Norms

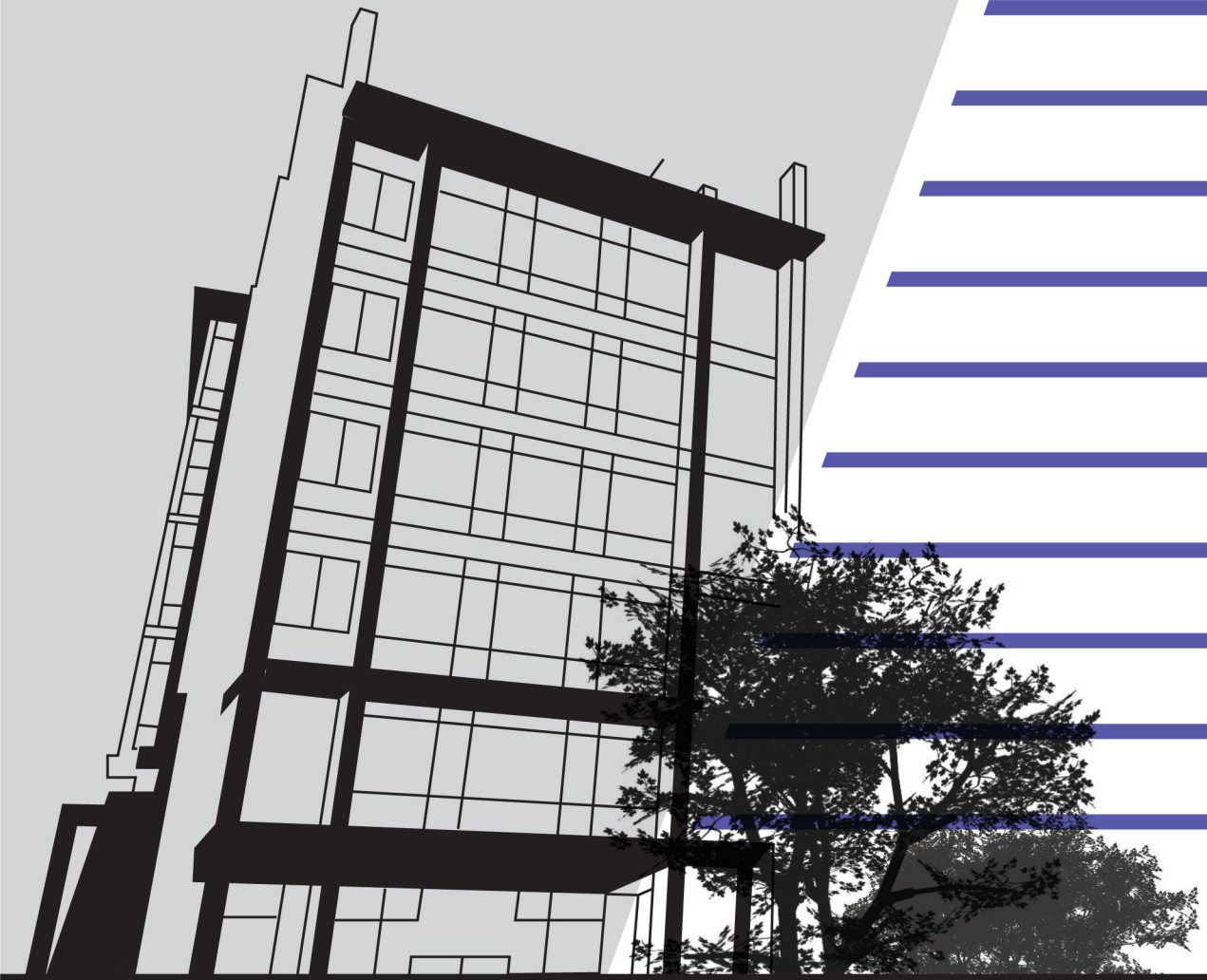
Decree of the Board of Trustees Universitas Indonesia

Number 003/SK/MWA-UI/2008 on Research Policy at Universitas Indonesia

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

FACILITIES AND CAMPUS LIFE



3. 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. Starting from April 2012, we have started to tests all of our cafeteria vendors for E-Coli. Working together with the Faculty of Public Health, we conducted several Hygiene tests to our vendors. Between these tests we also conducted seminars, socialization, and counseling to all of our food vendors regarding the level of cleanliness and hygiene level expected from them. We also improved the sewer, sink and the vendor's facilities to achieve the desired effect. By February 2015, all food vendors in our Student's Cafeteria are 100% free of E-Coli, Salmonella and Borax. Thus, making us proud to say that FTUI's Students' Cafeteria is one of the healthiest in the university.

3.1. 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.

3.2. FACULTY ADMINISTRATION CENTER (PAF)

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 16.00 from Monday to Friday, at PAF building.

3.3. 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:

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

3.4. 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.

3.5. STUDENT WELFARE**3.5.1. 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.

3.5.2. 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”.

3.5.3. 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.

3.5.4. 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:

a. Public Health Service

b. 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
2nd floor, Student Welfare & Facility Center Building
UI Campus Depok

Phone : +6221-96384797

BKM UI staff of counselors consists of psychologists, 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

3.5.5. UI 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, cafeteria, 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

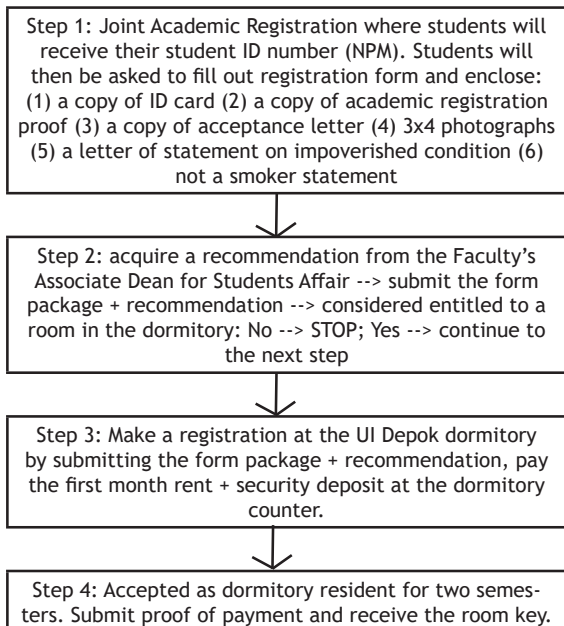
- Standard room: Standard bed, table, chair, bookcase, wardrobe, shoe rack, lamp, outdoor bathroom, non AC.
- Standard plus room: Standard bed, table, chair, book case, wardrobe, shoe rack, lamp, outdoor bathroom, air conditioned.
- Bungur and Melati room: Spring bed mattress, table, chair, indoor bathroom,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

- tory 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



3.5.6. 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

3.5.7. 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' activities such as an 300-400 person auditorium.

3.5.8. 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.

3.5.9. 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)

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.

3.5.10. BIKE TO CAMPUS

As a proof to Universitas Indonesia's commitment in implementing the "Go Green" program, UI has provided free bicycles as a mean of transportation within the campus area. Started in 2008, this program establishes collaboration with the Bike to Work and Polygon, making UI the first campus in Indonesia with their own Bike to Campus program.

These bicycles, which colors and form are specially design for UI, are single seat bicycles. By July 2009, there are around 300 units of bicycle available for use and will continue to be added in accordance with the campus development or demand.

How to Borrow:

1. Students simply showed their student ID card (KTM) to officer in charge of each bike shelter.
2. Campus bicycle can only be use on the available bicycle track. It is forbidden to ride them outside of the available track or to take them outside of campus area.
3. Each bicycle is equipped with a trunk with a maximum capacity of 10 kg and is not to be use as a passenger space.
4. Borrowed bicycle is the responsibility of each student until it is returned to the officer in

charge of each bike shelter.

5. Students may return the borrowed bicycle at the nearest bike shelter by showing their student ID card (KTM) to the officer of said shelter.

Service time for Bike to Campus is Monday to Friday, 08.00 - 17.00. For usage outside of service day and time, interested party must coordinate in accordance to the existing regulation.

A few points worth noting in cycling:

Once you've received your borrowed bicycle from the shelter officer, please do the following:

1. Make sure that your bicycle are in good order and function well.
2. Make sure that you have both hand on the bicycle handle, put your books/bags on the provided space.
3. Arrange your seat in accordance to your height, the height of your seat determines your comfort in cycling.
4. Each bicycle has three shifter levels, use them in accordance.
5. Ride the bicycle on the provided track, stay at the left side of the track when passing other bicycle.
6. Pay special care to motorcycles at each crossing.
7. Pay special attention to cycling safety.

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

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 Sivas 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

g. Others

1. Wira Makara (Student Regiment)
2. Students' Mountaineering Club (Mapala)

3.7. CAREER DEVELOPMENT CENTER (CDC)

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

3.8. 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>

3.9. 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.

LIST OF NAME OF SCHOLARSHIP DONOR/SPONSOR FOR UNIVERSITAS INDONESIA STUDENTS

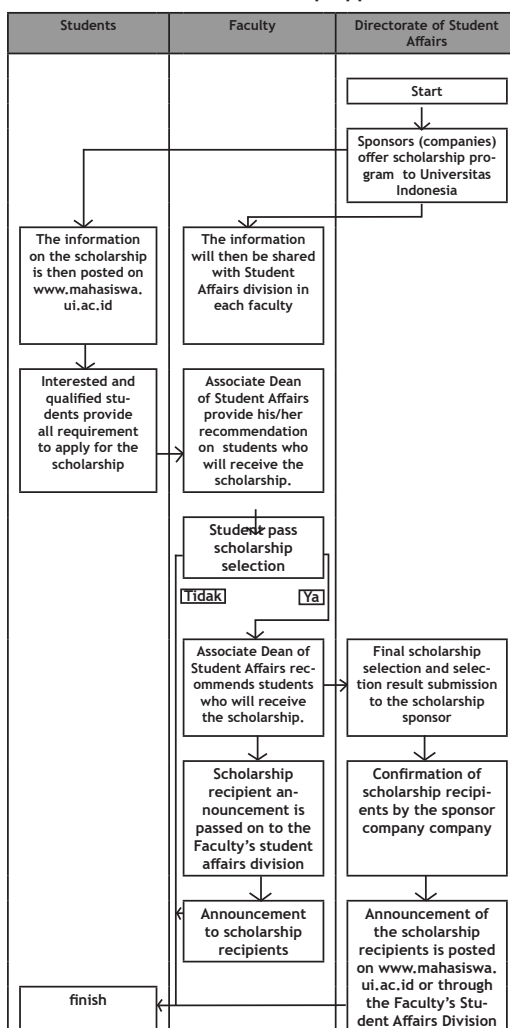
1. Bank BNI 46
2. Bank Central Asia
3. Bank Indonesia
4. Bank KEB Indonesia
5. Bank Lippo
6. Bank Mandiri
 - Bank Mandiri
 - Bank Mandiri Prestasi
7. Bank Mayapada
8. Bank Niaga
9. Bank Permata
10. Bank Tabungan Negara
11. Student Special Aid
 - Special Aid for Undergraduate Program Student
 - Special 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

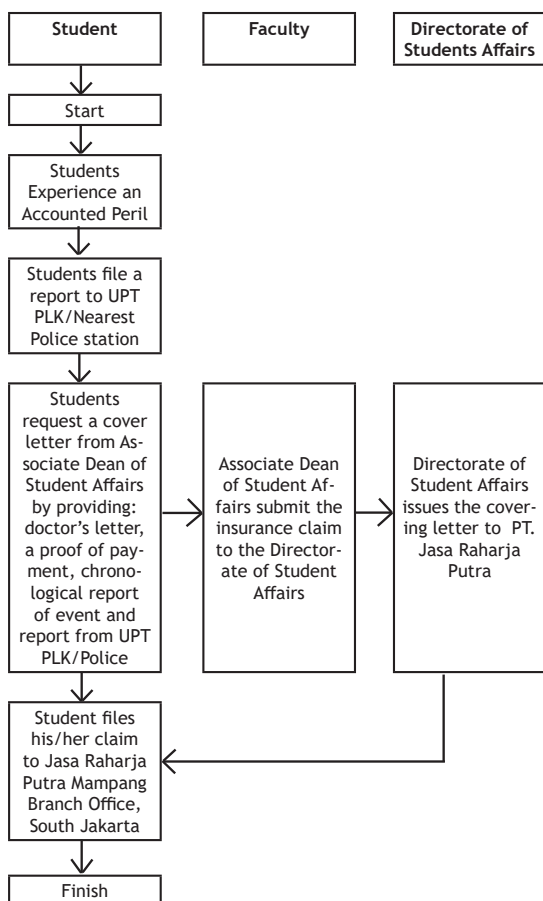
Flowchart of Scholarship Application



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 Claims Process



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. KAL)
		4. Autopsy report from the hospital
Road Accident	Injured	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.
	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. Treatment report from the attending doctor
		4. Original receipt from the hospital or the attending physician and the pharmacy
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
Road Accident	Injured	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.
	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
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		2. Accident Report issued by the police
		3. Accident Report from Transportation Agency
		4. Autopsy report from the hospital
Road Accident	Injured	5. Death Certificate
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		8. Heir certificate letter from the local district office.
	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



3.10. 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.

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

3.11. 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

3.12. 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

3.13. QUALITY IN RESEARCH (QIR) CONFERENCE

QIR Conference is a bi-annual international conference organized by FTUI since 1998. The 13th QIR was held in Yogyakarta from 25 - 28 June 2013. It was attended by over 400 participants from 16 different countries in the world. 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 14th QIR will be held in August 2015. For more detail information on QIR, please visit: <http://qir.eng.ui.ac.id>.

3.14. 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

A composite image featuring a campus scene. The background is a grayscale photograph of trees and a clock tower. Overlaid on the left is a large, dark blue triangle. The foreground consists of a geometric pattern of squares and rectangles, some in blue and some in gray, creating a sense of depth and perspective. The title 'UNDERGRADUATE PROGRAM' is centered in the upper half, underlined.

UNDERGRADUATE PROGRAM

4.12. UNDERGRADUATE PROGRAM IN INDUSTRIAL ENGINEERING

Program Specification

1	Awarding Institution		Universitas Indonesia
2	Teaching Institution		Universitas Indonesia
3	Programme Title		Undergraduate Program in Industrial Engineering
4	Class		Regular, Parallel, International
5	Final Award		Sarjana Teknik (S.T)
6	Accreditation / Recognition		BAN-PT: A - accredited AUN - QA
7	Language(s) of Instruction		Bahasa Indonesia and English
8	Study Scheme (Full Time / Part Time)		Full Time
9	Entry Requirements		High school /equivalent, or D3 / Polytechnique / 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	17
	Short (optional)	3	8
11	Graduate Profiles: <i>An Industrial engineer who has the capabilities of designing, improving, operating and maintaining integrated and multi-level manufacturing and service systems by means of analytical, computational and experimental methods with regard to professionalism values in order to increase the productivity and quality.</i>		
12	Expected Learning Outcomes: 1. Ability to implement the knowledge of mathematics, science and engineering principles. 2. Ability to design and perform research projects, and analyze and interpret data. 3. Ability to design a system, component or process to fulfill the needs within realistic limitations such as economics, environment, social, politics, ethics, health and safety, feasibility and sustainability. 4. Ability to identify, analyze and solve engineering problems. 5. Ability to use techniques, tools and methods in engineering practices. 6. Ability to take part of a multidisciplinary team. 7. Ability to work professionally with ethical responsibility. 8. Has a broad knowledge to understand the impact of engineering problem solving in a global, economic, environmental and social context. 9. Ability to learn independently and continuously (lifelong learning). 10. Ability to use verbal and non-verbal communications in Bahasa and English for academic and non-academic purposes. (UI competency) 11. Ability to use information and communication technology. (UI competency) 12. Ability to identify the opportunity of establishing entrepreneurship based on innovation, ethics and independence (UI competency). 13. Ability to be a critical thinker, creative and innovative and has the intellectual curiosity to solve problems in an individual and group level (UI competency). 14. Ability to give alternative solutions of problems occurred in the society and country level in Indonesia (UI competency).		



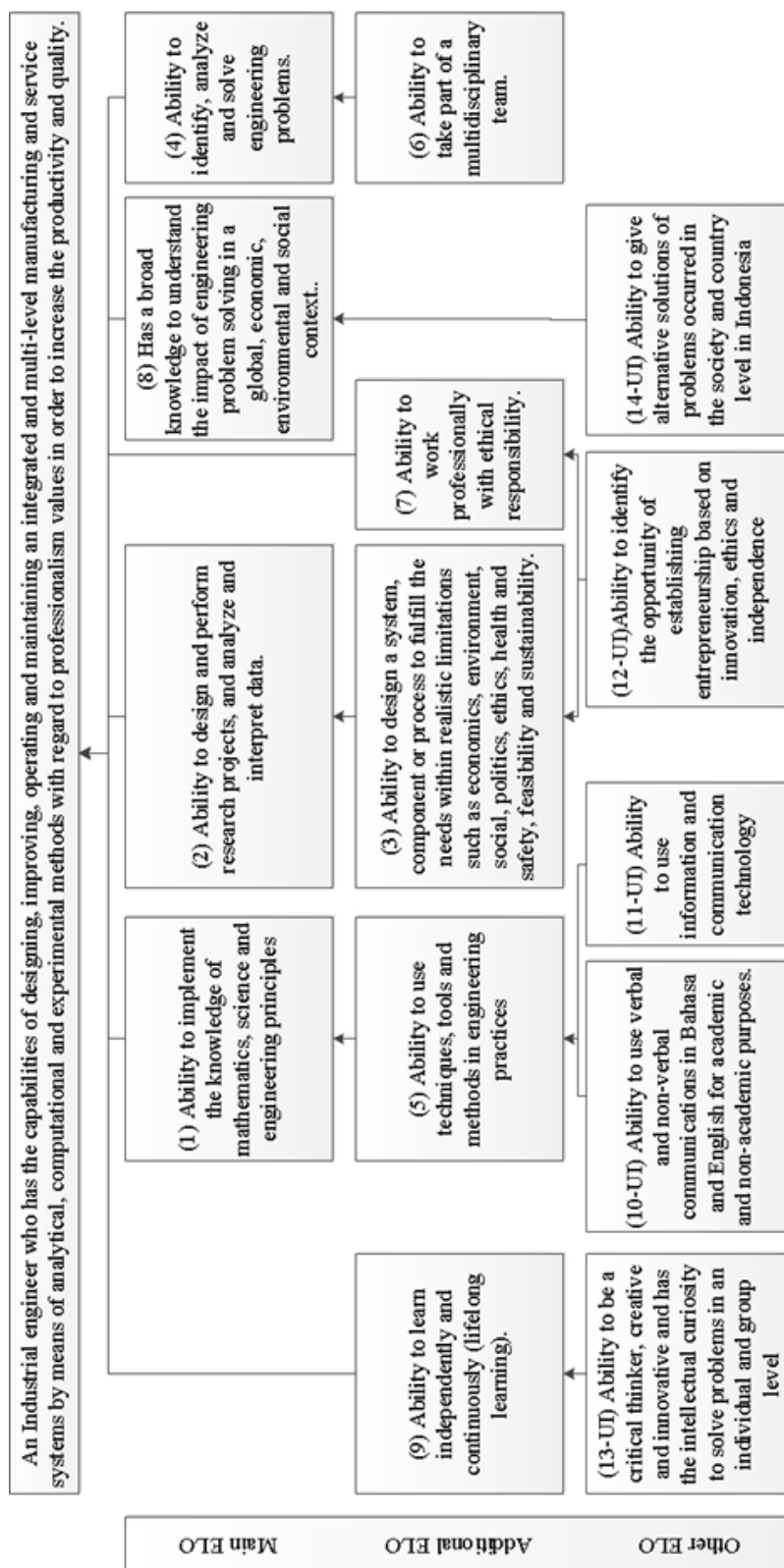
13	Classification of Subjects		
No	Classification	Credit Hours (SKS)	Percentage
i	University General Subjects	18	12.5 %
ii	Basic Engineering Subjects	25	17.4 %
iii	Core Subjects	71	49.3 %
iv	Elective Subjects	21	14.6 %
v	Internship, Seminar, Undergraduate Thesis, Project	9	6.2 %
	Total	144	100 %
14	Total Credit Hours to Graduate		144 SKS

Career Prospects

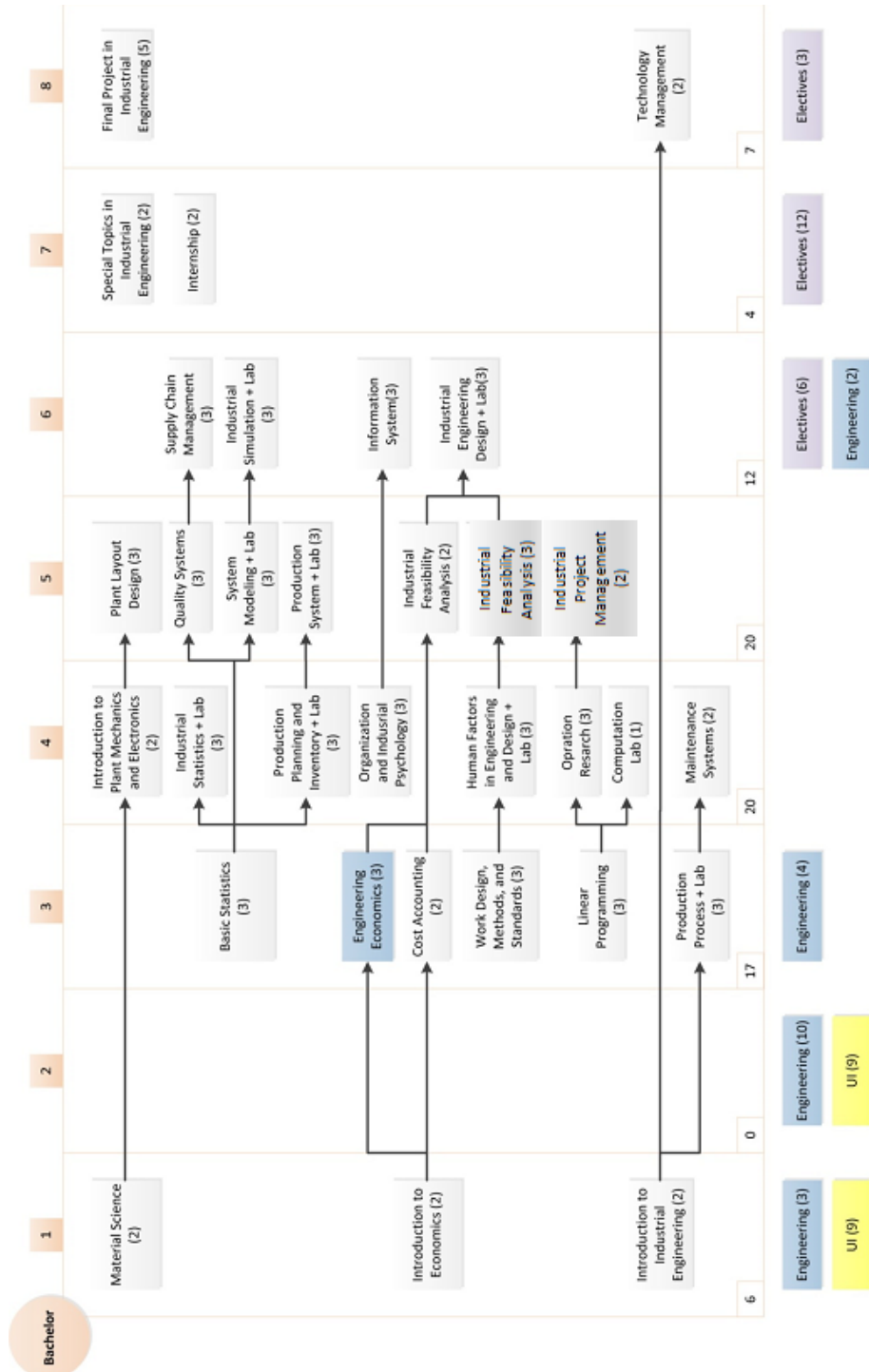
Public or private manufacturing and service industries, such as production management, HR, maintenance system, logistics and supply chain management, finance and banking, management and IT consulting services.



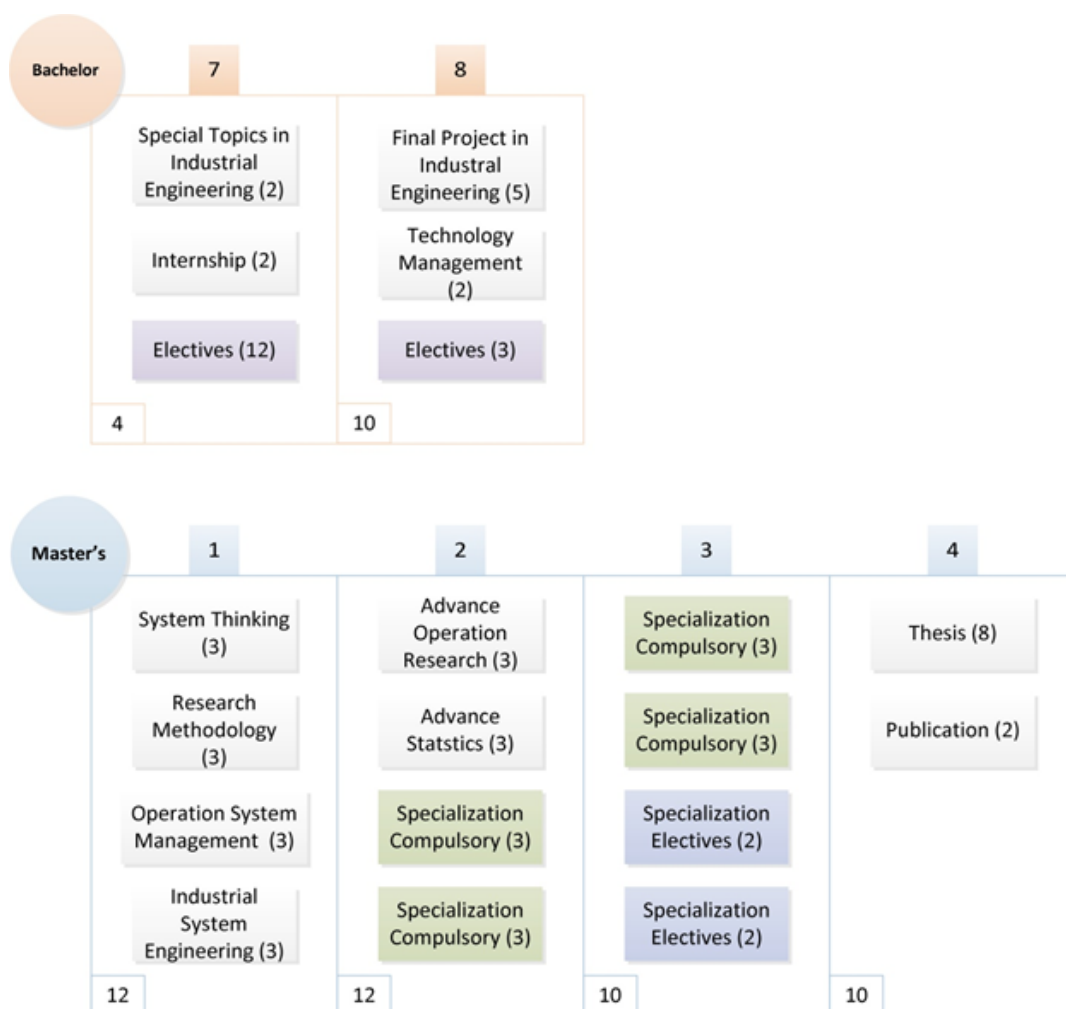
Flow Diagram of Expected Learning Outcomes (ELOs)



Flow Diagram of Subjects



Flow Diagram for Fast Track Students (Leading to Master's)



CURRICULUM STRUCTURE UNDERGRADUATE INDUSTRIAL ENGINEERING

KODE	SUBJECT	SKS
1st Semester		
UIGE600002	Integrated Character Building B	6
UIGE600003	English	3
ENGE600001	Calculus 1	3
ENIE601001	Intro to Industrial Engineering	2
ENIE601002	Introduction to Economics	2
ENIE601003	Material Sciences	2
	Sub Total	18
2nd Semester		
UIGE600010-15	Religion	2
ENGE600004	Linear Algebra	4
ENGE600005	Physics (Mechanics and Thermal)	3
ENGE600006	Physics (Mechanics and Thermal) Lab	1
UIGE600001	Integrated Character Building A	6
UIGE600020 - 48	Sport / Art	1
ENIE602001	Engineering Drawing	2
	Sub Total	19
3rd Semester		
ENGE600007	Physics (Electricity, MWO)	3
ENGE600008	Physics (Electricity, MWO) Lab	1
ENIE603003	Work Design, Methods & Standards	3
ENIE603004	Cost Accounting	2
ENIE603005	Production Process + Lab	3
ENGE600011	Engineering Economics	3
ENIE603006	Basic Statistics	3
ENIE603007	Linier Programming	3
	Sub Total	21
4th Semester		
ENIE604008	Intro to Mechanics & Electronics Factory	2
ENIE604009	Human Factor in Eng. & Design + Lab	3
ENIE604010	Maintenance Systems	2
ENIE604011	Industrial Statistics + Lab	3
ENIE604012	Production Plan & Inventory Control + Lab	3
ENIE604013	Organization & Industrial Psychology	3
ENIE604014	Operation Research	3
ENIE604015	Computation Lab	1
	Sub Total	20



5th Semester		
ENIE605016	Plant Layout Design	3
ENIE605017	Product Design + Lab	3
ENIE605018	Industrial Feasibility Analysis	2
ENIE605019	Quality Systems	3
ENIE605020	System Modeling + Lab	3
ENIE605021	Production Systems + Lab	3
ENIE605022	Industrial Project Management	3
	Sub Total	20
6th Semester		
ENGE600012	HSE Protection	2
ENIE606024	Supply Chain Management	3
ENIE606025	Industrial Simulation + Lab	3
ENIE606026	Industrial Engineering Design + Lab	3
ENIE606027	Information System	3
ENIE606028	Elective 1	3
ENIE606029	Elective 2	3
	Sub Total	20
7th Semester		
ENIE607028	Special Topics in Industrial Engineering	2
ENIE600029	Internship	2
	Electives	3
	Electives	3
	Electives	3
	Electives	3
	Sub Total	16
8th Semester		
ENIE600030	Final Project in Industrial Engineer	5
ENIE608031	Technology Management	2
	Electives	3
	Sub Total	10
	TOTAL	144

Resume

Wajib Universitas	18
Wajib Fakultas	20
Wajib Program Studi	85
Jumlah	123
Pilihan	21
Total Beban Studi	144



ELECTIVES

Code	SUBJECT	SKS
ENIE605032	Multivariate Analysis	3
ENIE605033	Interpersonal Skills	3
ENIE605034	Product Life Cycle Management	3
ENIE605035	Macro Ergonomics	3
ENIE605036	Finance and Investments	3
ENIE605037	Innovation Management	3
ENIE605038	Customer Relationship Management (CRM)	3
ENIE605039	Lean Operations	3
ENIE605040	Reconfigurable Manufacturing System	3
ENIE605041	Linear and Stochastic Programming	3
ENIE605042	Queuing Theory	3
ENIE606043	Data Mining	3
ENIE606044	Systems Engineering	3
ENIE606045	Enterprise Competitiveness Analysis	3
ENIE606046	Advance Optimization	3
ENIE606047	Sustainable Manufacturing and Innovation	3
ENIE606048	Human Digital Modeling and Simulation	3
ENIE606049	Decision Uncertainties and Risk	3
ENIE606050	Maritime Logistics	3
ENIE606051	Energy Management	3
ENIE606052	Design Thinking	3
ENIE606053	Numerical Methods and Application	3
ENIE606054	Business Process Reengineering	3
ENIE606055	Algorithm and Programming	3
ENIE606056	Heuristic Methods in Optimization	3
ENIE606057	Constraint Programming	3



COURSE STRUCTURE INTERNATIONAL UNDERGRADUATE INDUSTRIAL ENGINEERING

CODE	SUBJECT	Credits
1st Semester		
UIGE610001	Integrated Character Building Course A	6
UIGE610002	Academic Writing	3
ENGE610001	Calculus 1	3
ENIE611001	Introduction to Industrial Engineering	2
ENIE611002	Introduction to Economics	2
ENIE611003	Material Sciences	2
	Sub Total	18
2nd Semester		
UIGE610005 -9	Religion	2
ENGE610004	Linear Algebra	4
ENGE610005	Physics (Mechanics and Thermal)	3
ENGE610006	Physics(Mechanics and Thermal) Laboratory	1
UIGE610001	Integrated Character Building Course A	6
UIGE610003	Sport/ Art	1
ENIE612001	Engineering Drawing	2
	Sub Total	19
3rd Semester		
ENGE610007	Physics (Electric, Magnet,Wave & Optic)	3
ENGE610008	Physics (Electric, Magnet,Wave & Optic)Laboratory	1
ENIE613003	Work Design, Methods, and Standards	3
ENIE613004	Cost Accounting	2
ENIE613005	Production Process + Lab	3
ENGE610011	Engineering Economics	3
ENIE613006	Basic Statistics	3
ENIE613007	Linear Programming	3
	Sub Total	21
4th Semester		
ENIE614008	Introduction to Mechanics and Electronics Factory	2
ENIE614009	Human Factor in Engineering & Design + Lab	3
ENIE614010	Maintenance Systems	2
ENIE614011	Industrial Statistics + Lab	3
ENIE614012	Production Planning and Inventory Control + Lab	3
ENIE614013	Organization & Industrial Psychology	3
ENIE614014	Operation Research	3
ENIE614015	Computation Lab	1
	Sub Total	20



5th Semester		
ENIE615016	Plant Layout Design	3
ENIE615017	Product Design + Lab	3
ENIE615018	Industrial Feasibility Analysis	2
ENIE615019	Quality Systems	3
ENIE615020	System Modeling + Lab	3
ENIE615021	Production Systems + Lab	3
ENIE615022	Industrial Project Management	3
	Sub Total	20
6th Semester		
ENIE616023	Occupational, Health, Safety & Environment	2
ENIE616024	Supply Chain Management	3
ENIE616025	Industrial Simulation + Lab	3
ENIE616026	Industrial Engineering Design + Lab	3
ENIE616027	Information System	3
	Electives	3
	Electives	3
	Sub Total	20
7th Semester		
ENIE617028	Special Topics in Industrial Engineering	2
ENIE610029	Internship	2
	Electives	3
	Electives	3
	Electives	3
	Electives	3
	Sub Total	16
8th Semester		
ENIE618030	Final Project in Industrial Engineering	5
ENIE618031	Technology Management	2
	Electives	3
	Sub Total	10
	TOTAL	144

Resume

Wajib Universitas	18
Wajib Fakultas	20
Wajib Program Studi	85
Jumlah	123
Pilihan	21
Total Beban Studi	144

Electives

Code	Electives	Credit
ENIE615032	Multivariate Analysis	3
ENIE615033	Interpersonal Skills	3
ENIE615034	Product Life Cycle Management	3
ENIE615035	Macro Ergonomics	3
ENIE615036	Finance and Investments	3
ENIE615037	Innovation Management	3
ENIE615038	Customer Relationship Management (CRM)	3
ENIE615039	Lean Operations	3
ENIE615040	Reconfigurable Manufacturing System	3
ENIE615041	Linear and Stochastic Programming	3
ENIE615042	Queuing Theory	3
ENIE616043	Data Mining	3
ENIE616044	Systems Engineering	3
ENIE616045	Enterprise Competitiveness Analysis	3
ENIE616046	Advance Optimization	3
ENIE616047	Sustainable Manufacturing and Innovation	3
ENIE616048	Human Digital Modeling and Simulation	3
ENIE616049	Decision Uncertainties and Risk	3
ENIE616050	Maritime Logistics	3
ENIE616051	Energy Management	3
ENIE616052	Design Thinking	3
ENIE616053	Numerical Methods and Application	3
ENIE616054	Business Process Reengineering	3
ENIE616055	Algorithm and Programming	3
ENIE616056	Heuristic Methods in Optimization	3
ENIE616057	Constraint Programming	3

Electives can also be taken at the Partner University starting from 6th Semester. Detail List of Courses will be provided by the Partner Universities as soon as possible.



Course Syllabus**MPKT B / INTEGRATED CHARACTER BUILDING B**

General Instructional Objective: Develop students participation to improve awareness of social issues, national state, and the environment that is based on faith and piety, manners, and ethics in the context of academic science and technology development.

Learning Objectives: Students are expected to capable of: (1) Understanding, explaining, and analyzing the philosophy and logical science, attitude, social and culture in Indonesia. (2) Understanding academic and nation values from social and cultural diversity in Indonesia. (3) Understanding the problems by applying step learning actively and using information technology (4) Using Bahasa Indonesian in discussion and academic writing as well.

Syllabus: Topic which appropriate with target and method learning, problem based learning (PBL), Collaborative Learning (CL) and Computer mediated learning (CML)

Pre-requisite(s): -

Text Book(s): Appropriated with topic

ACADEMIC WRITING

Learning Objectives: After attending this subject, students are expected to capable of use English to support the study in university and improve language learning independently.

Syllabus: Study Skills: (Becoming an active learner, Vocabulary Building: word formation and using the dictionary Listening strategies Extensive reading) Grammar: (Revision of Basic grammar Types of sentences Adjective clauses, Adverb clauses Noun clauses, Reduced clauses) Reading: (Reading skills: skimming, scanning, main idea, supporting ideas, Note-taking Reading popular science article, Reading an academic text) Listening: (Listening to short conversations, Listening to a lecture and notetaking, Listening to a news broadcast, Listening to a short story) Speaking: (Participating in discussions and meetings, Giving a presentation) Writing: (Writing a summary of a short article Describing graphs and tables, Writing an academic paragraph, Writing a basic academic essay (5 paragraphs))

Pre-requisite(s): -

Text Book(s): Poerwoto, C. et.al. Reading Comprehension for Engineering Students

INTRODUCTION TO INDUSTRIAL ENGINEERING

Learning Objective(s): Early understanding about the Industrial Engineering Discipline scope and contributions, which includes concepts, methods and tools and how it relates to each other in service or manufacturing industry.

Syllabus: History of Industrial Engineering, Scope of Industrial Engineering, Brief introduction and explanation of component system which build Industrial Engineering, Explanation of curriculum structure in Industrial Engineering, Example of contribution of Industrial Engineers in service and manufacturing industry, Development of Industrial Engineering in the future, Profesionalism definition and Ethics Engineering, and Cases in Ethics and Profesionalism.

Pre-requisite(s): -

Text Book(s):

1. Maynard Harold B. (ed.), Maynard's Handbook of Industrial Engineering. McGraw-Hill Professional, 2001.
2. Badiru, Adedeji B., Handbook of Industrial and System Engineering, CRC Taylor-Francis, 2006.

INTRODUCTION TO ECONOMICS (2 SKS)

Learning Objective(s): Introduce the scope of economics science and business as an integral part of human activities to survive.

Syllabus: Basic Concepts. Supply, Demand and Market. Workforce, Land and Assets. Trade and Tax. Economic activities and National Income. Consumption and Investment. Money, Financial Market and Moneter. Unemployment, Inflation, and Economic Policy. Growth and Development. The purpose of Business. Business Plan. Start up. Business Operations. Capital. Marketing Principles. Financial Management. Resource Management. Service, Productivity and Information.

Pre-requisite(s): -

Text Book(s):

1. Samuelson, Paul E. dan William 1. D. Nordhaus. 2005. Economics. Boston: McGraw-Hill.).



2. Griffin, Ricky W. and Ronald J. Ebert. 2002. Business. Upper Saddle River: Prentice Hall.

INTRODUCTION TO ENGINEERING MATERIALS

Learning Objective(s): Students are expected to understand the processing, characteristics and application of engineering materials. structure and bonding in materials, material processing for all types of engineering materials as well as basic concept in materials testing.

Syllabus : (1) Types of engineering materials and their applications; (2) Structures of engineering materials; (3) Properties of material; (4) Manufacturing and Processing of Metallic Materials; (5) Steel and iron: production and properties; (6) Aluminium: production and properties; (7) Other non-ferrous alloys: production and properties; (8) Polymer: processing and properties; (9) Ceramic: processing and properties; (10) Composite: processing and properties

Prerequisite : -

Textbooks :

1. Bondan T. Sofyan, Pengantar Material Teknik, Penerbit Salemba Teknik, 2010
2. W.D. Callister, Materials Science and Engineering: An Introduction, 6th ed., John Wiley & Sons, 2003
3. William F. Smith, Introduction to Materials Science and Engineering

ISLAMIC STUDY

General instructional objectives: The cultivation of students who have concern for social, national and country's issues based on Islamic values which is applied in the development of science through intellectual skills.

Learning Objectives: Course participants are expected to do the following when faced with a problem or issue which they must solve:

1. Analyze the problem based on the Islamic values they adopted
2. Analyze the problem by implementing active learning stages
3. Discuss and express their thoughts and ideas by using proper and correct Indonesian language in discussion and academic writing

Syllabus: Islam history: the meaning of Islam, the characteristic of Islam, the sources of Islamic teachings, Muhammad SAW as prophet and history figure, introduction of Islam in Indonesia, the teaching essence of Islam: the basic principle of Islam teachings, the unity of Allah, worship practice in live, eschatology and work ethics, human's basic rights and obligation, social structure in Islam: sakinah mawaddah and ramhah family, the social implication of family life, Mosque and the development of Islam, zakat and the economic empowerment of the people, Islam society, Science: reason and revelation in Islam, Islam's motivation in development of science, science characteristics, source of knowledge, IDI (each Faculty and Department/Study Program)

Prerequisite(s): MPKT

Textbooks: Adjusted to topics

CATHOLIC STUDY

General instructional objectives:

1. To help deliver students as intellectual capital in implementing lifelong learning process to become scientists with mature personality who uphold humanity and life.
2. Be scholars who believe in God according to the teachings of Jesus Christ by continuing to be responsible of his faith in life in church and society.

Syllabus: Almighty God and the God teachings; Man, Morals, science technology and art; harmony between religions; Society, Culture, Politics, Law: the substance of theses studies will be addressed by integrating the four dimensions of the teachings of the Catholic faith: the personal dimension, the dimension of Jesus Christ, the dimension of the Church, and Community dimension. Dimensions are implemented in the following themes: People, Religion, Jesus Christ, the Church, and Faith in the society.

Prerequisite(s): MPKT

Textbooks: Adjusted to topics



General instructional objectives: Cultivating students with comprehensive Christian knowledge and teaching in the midst of the struggle and the fight of the nation while also discussing the student's participation in line with the study to help improve and build our country.

Learning Objectives: Course participants are expected to do the following when faced with a problem or issue which they must solve:

1. Analyze the problem based on the Christian values
2. Analyze the problem by implementing active learning stages
3. Discuss the problem by using proper and correct Indonesian language

Syllabus: : History (Historical terms): Status of the Bible, the existence of God and Morality, Christ the Savior, the Holy Spirit as existence reformer and outlook on the world: Faith and Knowledge of Science, Church and service, Ecclesiology, Spiritual and enforcement of Christian Human Rights and the world of ethics: Christian Ethics, Christian and worship, Christianity and politics, Christian love and social reality: Christian Organizations, Students and Service, Christian and expectations.

Prerequisite(s): MPKT

Textbooks: Adjusted to topics

BUDHIST STUDY

Syllabus: Almighty God and the God Study (Faith and piety, Divine Philosophy / Theology), Human (Human Nature, Human Dignity, Human Responsibility), Moral (Implementation of Faith and Piety in everyday life), Science, Technology and Art (Faith, Science and Charity as a unity, the Obligation to study and practice what you are taught, Responsibility for nature and environment), harmony between religion (religion is a blessing for all mankind, the essence of the religious plurality and togetherness), community (the role of religious society in creating a prosperous independent society, the responsibility of religious society in the realization of human rights and democracy), Culture (the responsibility of religious society in the realization of critical thinking (academic), work hard and fair), Politics (Religion contribution in the political life of nation and country), Law (Raise awareness to obey and follow God's law, the role of religion in the formulation and enforcement of law, the function of religion in the legal profession)

Prerequisite(s): MPKT

Textbooks: Adjusted to topics

HINDU STUDY

Syllabus: Character, History (Character in Hindu religion, Hindu history), Source and scope of Hinduism (the Veda as the source of Hindu religion teachings, the scope of the teachings in Hindu religion), The concept of the God (Brahman) according to the Veda, the Path to Brahman (Catur Marga Yoga, Mantra and Japa), Human Nature (The purpose of human life, Human's duties, obligations, and responsibilities both individually or collectively), Ethics and morality (Principles teaching, self-control), in-depth understanding of the scripture (deep understanding of the Bhagawadgita, deep understanding of the Sarasamuschaya), The Role of Hinduism in science, technology, and art (Hinduism benefits in science and technology in accordance with each department, benefit / the role of Hinduism in the arts), Cohesion and community's prosperity / independence (Benefits of unity in the religious plurality, independent community (kerthajagathita) as a common goal, Tri Pitakarana), Culture as an expression of Hindu religious practice, Contribution to the Hindu religion teachings in the political life of nation and country, laws and the enforcement of justice, Awareness of and obeying the Rita / Dharma.

Prerequisite(s): MPKT

Textbooks: Adjusted to topics

LINEAR ALGEBRA

Learning Objectives: Students can explain/ understand/apply linear algebra and associate this subject with some other subjects.

Syllabus: Introduction of elementary linear algebra, Matrix, Determinant, Vectors in R² and R³. Euclidean vector space, General vector space, Review of vector space, Product space, Value and



diagonalization eigen vector, Linier Transformation, Application on the system of differential equation, Application on the quadratic surface, Decomposition of LU, Least Squares.

Prerequisite: -

Handbook:

1. H. Anton, Elementary Linear Algebra, 9th ed, John Wiley& Sons, 2005.
2. G.Strang, Introduction to Linear Algebra, Wellesley-Cambridge Press, 2007.

SPORTS / ARTS

The Art subject discuss on how to develop the student's participation and appreciation to fully understand, develop awareness, have aesthetic concerns, have imagination, have creativity to create work of art and culture in the form of art works such as: painting, batik, photography, calligraphy, comic or in the form of performance art such as: film appreciation, Bali dance and music, Javanese music, theatre and traditional puppet performance. The Sport subject discuss the general knowledge of sport (history, rules of the games and how to lead a match) and sport skills (physical aspects of movement, technique, tactics and mentality)

MECHANIC AND THERMAL PHYSICS + LAB

Learning Objectives: Students understand the concepts and basic laws of mechanic physics and applied in a systematic and scientifically problem solving that influenced by the force, both moving or not moving objects.

Syllabus: Scale, kinematics of point objects, mechanics of point objects, law of conservation of linear momentum and energy, harmonic motion, gravity, dynamics and kinematics of rigid objects, Introduction and basic concept (pressure, thermodynamic system, state of the system, temperature), expansion, equilibrium energy (thermal state equation), heat transfer, ideal gas, first law of thermodynamics, enthalpy and entropy, The first law of thermodynamics application for open and closed system, Second law of thermodynamics, kinetic theory of ideal gas.

Practical of Mechanics: Measurement, Moment of inertia, Gravity acceleration, Fluid density, Scratch coefficient, Collision, Swing torque, Viscosity of water, Young's modulus, Viscosity of Newtonian fluid, Fluids surface tension, Oscillation, **Practical of Heat:** Coefficient of linear expansion, Heat conductivity, Thermocouple calibration, Calorimeter, Joule Constant, Laplace Constant, Heat Collector, Determining of air Cp/Cv, Expansion of fluids and water anomaly.

Prerequisite: -

Handbook:

1. Halliday.D, R Resnick, Physics I, 4th ed Wiley 1991.
2. Ganijanti AS, Mekanika, Penerbit Salemba Teknik, 2000.
3. Tipler PA, Fisika I, ed III, terjemahan Lea Prasetyo, Penerbit Erlangga, 1998.
4. Giancoli D.C, General Physics, Prentice Hall Inc, 1984.
5. Sears-Salinger, Thermodynamics, Kinetic theory and statistical thermodynamics, Wesley, 1975.
6. Giancoli, D.C, Physics: principles with applications, Prentice Hall Inc, 2000

MPKT A / INTEGRATED CHARACTER BUILDING A

General Intructional Objective: To develop student's participation in raising their awareness towards issues within the society, country, nation, and surrounding environment based on their faith, piety, manners, and academic ethics in order to develop Science and Technology.

Learning Objectives: Students are expected to capable of:

1. Understanding, explaining, and analyzing the philosophy and logical science, attitude, social and culture in Indonesia.
2. Understanding academic and nation values from social and cultural diversity in Indonesia.
3. Understanding the problems by applying step learning actively and using information technology.
4. Using Bahasa Indonesian in discussion and academic writing as well.

Syllabus: Topic which appropriate with target and method learning, problem based learning (PBL), Collaborative Learning (CL) and Computer mediated learning (CML)



Prerequisite: -

Handbook: Appropriated with topic

Engineering Drawing

Learning Objective(s): Course participants are able to transfer geometric component by drawing according to standard draw which is recognized by International Standard Organization (ISO). Students understand the theory and procedure of engineering drawing based on ISO standard. Students are able to read, interpret, and transfer 2D/3D geometric draw from component or construction. Students are able to draw the orthogonal projection based on ISO standard.

Syllabus: Illustration: Function and benefit of Engineering Drawing; SAP; Measurement and Evaluation; Introduction to drawing equipment; Basic definition of geometric, paper format, draw regulation, line, field, line configuration, basic geometric form; Visualization geometric: Skew projection and isometric, function and line types, configuration geometric form; Orthogonal Projection: Projection standard, viewing concept, width display principle; Advanced orthogonal projection: Circle region concept, special region concept, trimming concept, display width, refraction.

Pre-requisite(s): -

Text Book(s):

1. ISO 1101, Technical Drawings, International Organization for Standardization.
2. A.W. Boudy, Engineering Drawing, McGraw-Hill Book Company
3. Colin Simmons & Dennis Maguire, Manual of Engineering Drawing, Edward Arnold
4. Warren J. Luzadder, Fundamentals of Engineering Drawing, Prentice-Hall, Inc.
5. Giesecke-Mitchell-Spencer-Hill-Dygdon-Novak, Technical Drawing, Prentice Hall Inc.

OPTICS, ELECTRICITY, AND WAVE PHYSICS + LAB

Learning Objectives: Students understand the concept and basic law of Magnet and Electricity physics and apply it systematically and scientifically in solving everyday magnet and electricity physics problem, can understand the concepts and basic law of Optical and Wave physics and apply systematic and scientific problem solving in a natural wave phenomenon or wave that arises due to technical, physical properties of light and geometric optics.

Syllabus: Electric charge and Coulomb law, Electric field, Static and Gauss law, Electric potential, Capacitor, Direct electric current and basic circuit analysis, Magnetic field, Induction and electromagnetic, Faraday law and inductance, Material magnetism properties, A series of transient, Alternating current, Waves, Sounds, Polarization, Interference, Diffraction, Optical geometry, Lighting and photometry. Practical of Electricity: Electrolysis, Wheatstone bridge, Kirchhoff law, Earth's magnetic field, Temperature coefficient, Characteristic of series RLC circuit, Ohm law, Transformer. Practical of Optics: Polarimeter, Lens, Photometry, Prisms bias index, Spectrometer, Diffraction grid, Newton's ring.

Prerequisite: -

Handbook:

1. Halliday, D, R. Resnick, Physics II, 5th ed, Wiley, 2001.
2. Ganijanti AS, Gelombang dan Optik, ed III, Jurusan Fisika FMIPA UI, 1981.
3. Tipler P.A, Fisika II, ed III terjemahan Bambang Sugiyono, Penerbit Erlangga, 2001.
4. D.C.Giancoli, General Physics, Prentice Hall

METHODS, STANDARDS AND WORK DESIGN +

LAB Learning Objective(s): Course participants are able to measure, analyze, design and increase the effectiveness and efficiency of human work through methods improvements and work standards.

Syllabus: Introduction of Human Factors, History of Human Factors and Future Trends, Problem Solving Tools, Operation Analysis, Man Machine Chart and Flow Process Chart, Anthropometry, Time Study, Performance Rating & Allowances, Work Sampling. Standard Data, Predetermined Time Study, Wage Design, Training and Learning Curves.

Pre-requisite(s): Statistics and Probability

Text Book(s):

1. Method, Standard and Work Design, 11th edition, Benjamin Niebel & Andris Freivalds, McGraw-Hill International, 2003



2. The Ergonomics Kit for general industry, dan Macleod, Taylor & Francis, 2006
3. Motion and Time Study: Design and Measurement of Work, Barnes, Ralph M., John Wiley and Sons, 1980

COST ACCOUNTING

Learning Objective(s): Course participants understand accounting principles and are able to calculate accounting problems systematically and present them as a financial report. They should also be able to analyze and evaluate the conditions of the company based on those reports.

Syllabus: Accounting Equation. Basic Production Cost of Manufacturing. Cost of Goods Sold (COGS). Profit and Loss Statement. Balance Sheets. Penilaian Persediaan (Perusahaan Dagang). Depresiasi. Working Capital. Profit Planning and Control. Overhead Cost Allocation. Activity Based Costing. Job Order Cost Accounting. Process Cost Accounting.

Pre-requisite(s): Introduction to Economics

Text Book(s):

1. Lawrence H. Hammer, William K. Carter, Milton F Usry, Cost Accounting, ITP Co., Ohio, 2004
2. Weygrandt, Kieso, Kell, Accounting Principles, John Willey and Sons CO., Canada, 2003

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PRODUCTION PROCESS + LAB (3 SKS)

Learning Objective(s): Course participants have the knowledge about technology and process to understanding how a product is made through manufacturing processes.

Syllabus: Casting and Cost Analysis. Heat Forming. Cold Forming. Plastics, Ceramics and Composite Forming. Pressure forming and cost analysis. Extraction & cost analysis. Gas Flame Process and Arc Process. Resistance Welding and Other Welding Process. Joining and Fastening.

Pre-requisite(s): Introduction to Industrial Engineering

Text Book(s):

Kalpakkjian, Serope, Manufacturing Engineering and Technology, 3rd edition, Addison-Wesley, 1995

LINEAR PROGRAMMING

Learning Objective(s): Course participants are able to implement mathematical model in developing solutions for engineering and management problems.

Syllabus: Linear programming model & graphical solutions, Simplex methods, Duality and sensitivity analysis, Transportation models, Assignment model, Integer Programming. Multi-Goal Mathematical Programming, Network.

Pre-requisite(s): -

Text Book(s):

1. Hamdy A. Taha, Operations Research, 7th ed., Prentice-Hall, Inc. 2006
2. Hellier, Lieberman, Introduction to Operations Research, Mc Graw Hill, 2005

Introduction to Mechanics and Electronics Factory

Learning Objective(s): Course participants understand basic concepts from engineering mechanics and also can identify various factory facility based on prime movers and electric power.

Syllabus: Introduction to engineering mechanics; Introduction to prime movers; Gasoline Ignition Engine; Diesel Ignition Engine; Turbine Principle; Basic definition of electric power system; Electric power system element (Transformator, Machine AC, Machine DC); PLC; Pneumatic System.

Pre-requisite(s): Material Sciences

Text Book(s):

1. Timoshenko, Strength of Material, Prentice Hall, 1976
2. Popov, Mechanics of Materials, MIR Publisher, 1979



Human Factor in Engineering & Design + Lab

Learning Objective(s): Course participants are able to analyze and design a human machine interaction and its workplace

Syllabus: Introduction to human factors in engineering design, Interface design, Human controls systems, Work tools and hand tools, Workplace layout and design, Applied anthropometry, Interpersonal aspects in Engineering and Design, Climate and Lights, Human Error, Overview of Occupational Health and Safety.

Pre-requisite(s): -

Text Book(s):

1. Sanders, Mark S. & Ernest J. McCormick. Human Factors in Engineering and Design. McGraw-Hill. New York. 1993
2. Chapanis, Alphonse. Human Factors in Systems Engineering. John Wiley & Sons. New York. 1996
3. Wickens, D Christopher, . An Introduction to Human Factors Engineering, 2nd Edition. Prentice-Hall. 2004

Maintenance Systems

Learning Objective(s): Course participants understand the important aspects in the maintenance system management and the type of approach that is currently used in the industry.

Syllabus: Organizing for Maintenance Operations. Paperwork Control. Maintenance Job Planning and Scheduling. Maintenance Work Measurement and Standards. Preventive Maintenance Measuring and Appraising Maintenance Performance. Total Productive Maintenance. Maintenance Management in Action

Pre-requisite(s): Production Process

Text Book(s):

1. Lawrence Mann, Jr., Maintenance Management, Lexington Books, 1978
2. Seiichi Nakajima, Introduction to Total Productive Maintenance, 1988
3. Antony Corder, di alih bahasa oleh Ir. Kusnul Hadi, Teknik Manajemen Pemeliharaan, Erlangga, 1996.
4. Palmer, Doc Richard., Maintenance Planning and Scheduling Handbook 2nd Edition. McGraw-Hill Professional. 2004.

Industrial Statistics + Lab

Learning Objective(s): Course participants are able to organize the collection, process, and analysis of data using statistics and engineering principles to support decision making process, within DOE - Design of Experiment.

Syllabus: Review of Basic Statistical Concepts. Single Factor Experiment (Fixed Effect Model). Single Factor Experiment (Random Effect Model). Randomized Complete Block Design. Latin Square Design. General Factorial Design. 2k Factorial Design. Blocking in Factorial Design. Factorial Experiments with Random Factors. Fractional Factorial Design. Nested Design. Response Surface Model.

Pre-requisite(s): Statistics and Probability

Text Book(s):

1. Design and Analysis of Experiments, Douglas C. Montgomery. John Wiley & Sons, 2000
2. Design and Analysis of Experiments, Angela Dean and Daniel Voss, Springer-Verlag, 2000
3. Experimental Design with Applications in Management, Engineering, and the Sciences, Paul D. Barger and Robert E. Maurer, Thomson Learning, 2002

Production Planning and Inventory Control + Lab

Learning Objective(s): Course participants are able to analyze, design, implement and evaluate an integrated production planning and control system by controlling information flow, scheduling of production resources and internal processes, resulting a high quality product at the right time and the right cost.

Syllabus: Production planning system, Master Requirement Planning (MRP), Material Requirement Plan, Capacity planning, Inventory control, Lot sizing, Production scheduling, Sequencing and evaluation, TOC/DBR concepts, PPIC game.

Pre-requisite(s): -

Text Book(s):



1. Arnold, J.R. Tony and Chapman, Stephen N.; Prentice Hall; Introduction to Materials Management; 2004
2. Chapman, Stephen N.; The Fundamentals of Production Planning and Control; Pearson - Prentice Hall, 2006

Organization & Industrial Psychology

Learning Objective(s): Course participants are able to analyze the influencing factors of design and organizations management in industry including human capital assets.

Syllabus: Organizational Design. Culture.. Strategic Role of HRM & Effective Management of People. Ability Motivation & Opportunity. Job Analysis & Planning & Recruitment. Testing, Selection & Interview. Training & Development. Appraising & Managing Performance. Managing Careers & Fair Treatment. Establishing Strategic Pay Plans. Pay for Performance & Incentives. Benefits and Services. Labor Relations & Collective Bargaining. Employee Safety & Health. Linking to Organizational Outcomes. Human Resource Capital Management. Human Resource System for TQM.

Pre-requisite(s): -

Text Book(s):

1. Strategic Human Resource. Management, Mike Millmore, Philip Lewis, Prentice Hall 2007
2. Human Resource Management, Gary Dessler, Prentice Hall, 10th edition, 2007
3. Human Resource Strategy, Dreher & Dougherty, Mc Graw Hill, 2001

PLANT LAYOUT DESIGN

Learning Objective(s): Course participants are able to design the layout of a plant based on constraint and optimum goals.

Syllabus: Design function, Design procedure, Process planning, Material flow planning, Analysis technique, Relationship planning between activities, Plant and production support services, Space calculations, Area allocation, Material handling equipment, Plant layout development, Plant location considerations.

Pre-requisite(s): -

Text Book(s):

1. Richard L. F., Facility Layout and Location, Prentice Hall, 1992
2. Plant Layout and Material Handling, John Wiley & Sons, 1977.
3. Meyers, E Fred,. Plant Layout and Material Handling 1st Edition. Prentice-Hall. 1993

PRODUCT DESIGN + LAB

Learning Objective(s): Course participants are able to create new product or service concept ideas according to structural market study based on marketing mix

Syllabus: Idea Generation, Description of Marketing Management, Global Marketing, Consumer Behavior, Marketing Mix, Marketing System, Selling Skill, Blue Ocean Strategy, Strategic Brand Management, Market Research, Consumer Needs Identification, Product Specification Determination, Concept Design, Concept Selection and Testing, Product Architecture, Design for Manufacturing, Design for Assembly, Prototyping, Project Presentation.

Prerequisite(s): Human Factors in Engineering and Design

Text books:

1. Karl. T. Ulrich & Steven D. Epingger. Product Design Development. 3rd Edition. Mc Graw-Hill. 2004
2. Dieter. "Design Engineering", 3rd edition, Mc.Graw Hill 2000
3. James G. Bralla. Design For Excellence. McGrawHill - 1996
4. Milton D. Rosenav, Jr. et. al. The PDMA Handbook of New Product Development, John Willey & Sons. 1996
5. Hamid Noor & Russel Radford. Production & Operation Management. McGrawHill. 1995

INDUSTRIAL FEASIBILITY ANALYSIS

Learning Objective(s): Course participants know the aspects used to analyze industry feasibility and able to identify and analyze investment of facility feasibility



Syllabus: Project feasibility study, scope function, market and marketing aspects, engineering and technology aspects, operation management aspect, environment aspect, law aspect, economics aspect, financial aspect

Prerequisite(s): Cost Accounting, Engineering Economics

Text books:

1. Clifton, Fyffe, Project Feasibility Analysis, John Wiley, 1997
2. Siswanto Sutojo, Studi Kelayakan Proyek, PPM, 1995

QUALITY SYSTEM (3 SKS)

Learning Objective(s): Course participants are able to design a quality improvement system that able to do assurance and improvement of continuous product and process quality based on the fact (number) using mathematical (statistical) method with world's quality standard consideration

Syllabus: 3 quality basics: continuous improvement, customer focus and total participation, PDCA concept, 7 tools and 7 new tools, technique of process mapping, standard role, internal standard (SOP, WI, etc), and external standard (ISO, JIS, etc), Lean Six Sigma

Prerequisite(s): Statistics and Probability

Text books:

1. The Six Sigma Way Team Fieldbook, Peter S Pande et.al. McGraw-Hill, New York, 2002
2. QC Problem Solving Approach: Solving Workplace Problems the Japanese Way, Katsuya Hosotani, 3A Corporation, Tokyo, 1982
3. The Quality Toolbox Taguen Nancy R., ASQ Quality Press. Milwaukee. Wisconsin. 2005

SYSTEM MODELLING + LAB

Learning Objective(s): Course participants are able to design a computerized model based on discrete-event modeling from micro industrial system, simulating that model to do feasibility analysis and generating recommendation from the model (becoming discrete-event model)

Syllabus: Modeling concept, general method of system modeling: conceptualization, development, simulation and analysis, modeling case study, validation and verification of discrete model, user requirement method, technique of report design, and presentation of modeling result

Prerequisite(s): Statistics and Probability

Text books:

1. Mastering the Requirement Process, Suzanne Robertson & James Robertson, 2nd Edition, Addison Wesley Professional, 2006
2. Scenarios, Stories and Use Cases: Through the Systems Development Life-Cycle, Ian Alexander and Neil Maiden, John Wiley & Sons. 2004
3. Excel® Dashboards & Reports, Michael Alexander and John Walkenbach, Wiley Publishing, Inc. 2010
4. Information Dashboard Design, Stephen Few, O'Reilly, 2006.

PRODUCTION SYSTEM + LAB

Learning Objective(s): Course participants are able to analyze, design, implement and improve the performance of an operation system, especially with significant impact to the long term strategic goals of the organization to produce the right product for the customer.

Syllabus: Production Strategy. Product and Process Development. Location Analysis. Product and Process Layout Analysis. Capacity Analysis. Process Design, Analysis and Performance. Distribution Planning. JIT/Lean Production System. Resource planning, scheduling and allocation Kanban production system (kanban game).

Pre-requisite(s): Production planning and inventory control

Text Book(s):

1. Chase and Aquilano; Operations Management; Pearson-Prentice Hall; 11th , Edition, 2006
2. Heizer, Jay and Render, Barry; Operations Management; Pearson-Prentice Hall; 2006
3. Kanban for The Shopfloor, The Productivity Press; 2002

INDUSTRIAL PROJECT MANAGEMENT



Learning Objective(s): Course participants are able to plan, conduct, and control projects in industry

Syllabus: Project management description, system theory, project of PMDA organization, project of human resource, staff organization and project team, time management, special topic of PERT, project graph, cost control

Prerequisite(s): Operational Research

Text books:

1. Kerzner, Harold T., Project Management : A System Approach to Project Planning, scheduling, and Controlling, John Wiley & Sons, 10th edition, 2009

Operation Research

Learning Objective(s): Course participants are able to use mathematical optimization model to solve engineering and management problems that could be converted to deterministic and stochastic quantitative model

Syllabus: Dynamic Programming. Markov Analysis. Decision Tree. Game Theory. Non-Linear Programming. Queuing theory. Optimization Simulation

Pre-requisite(s): Linear Programming

Text Book(s):

1. Hamdy A. Taha, Operations Research, 7th ed., Prentice-Hall, Inc. 2006
2. Hellier, Lieberman, Introduction to Operations Research, McGraw-Hill, 2005

Computation Lab

Learning Objective(s): Course participants are able to use computational language tools, such as flow charts, pseudo codes, and IDEF to make an algorithm. Participants should also be able to solve a problem in the field of Industrial Engineering using computational programs.

Syllabus: Design tools, branching, loop, data structure, sorting, and optimization.

Pre-requisite(s): Linear Programming

Text Book(s):

1. 1 Walkenbach, J. (2007). Excel 2007 Power Programming with VBA.
2. Robert Sedgewick, Kevin Wayne. (2011). Algorithms 4th Edition Algorithms (4th Edition)

Occupational, Health, Safety & Environment

Learning Objective(s): Course participants are able to identify various hazard, characterization, propose suitable method for minimizing and mitigating risks, and also designing management system of safety work. Students is also expected to increase their awareness about health and safety in industry, and understand about framework and safety standard regulation and also environment program.

Syllabus: Introduction to Regulation and Standards; Risk Perception, Assessment and Management; Machinery Hazards; Noise Hazards; Process Safety Hazard; Fire and Explosion Hazard; Electrical Hazard; Toxicology in The Workplace; Environmental Protection; Environmental Protection Control Processes; Hazard Communication to Employees; Personal Protective Equipment (PPE): Types of PPE and Selection of PPE; Safety Audits, Incident and Emergency Planning.

Pre-requisite(s): -

Text Book(s):

1. Charles A. Wentz, Safety, Health and Environmental Protection, MGH, 1998.
2. Asfahl, C.R., Rieske, D.W., Industrial Safety and Health Management, 6th Ed., Pearson Education, Inc. 2010.
3. National Regulations on Safety and Health Management

Supply Chain Management

Learning Objective(s): Course participants are able to understand about concept and application of SCM to analyze and evaluate the role of operators in a whole supply chain

Syllabus: Introduction to SCM, Strategy and Planning, Enterprise Resource Planning, Purchasing, Transportation Method, Shortest Path, Traveling Salesman Problem, Vehicle Routing Problem, warehousing management, reverse logistics, location theory, network planning process, SCM development

Prerequisite: Quality System

Text Book(s):



1. Novack, R.A., Supply Chain Management: A Logistics Perspectives, 2008.

Industrial Simulation + Lab

Learning objective(s): Course participants are able to design a complex computerized model from industrial systems and simulate and conduct a simple feasibility study and design a recommendation from model simulation result (becoming a continuous system modeler)

Syllabus: Concept of continuous modeling, method of continuous modeling, causal loop diagram, stock and flow diagram, comprehending of behavior overtime, model development based on real case study, technique of scenario development, validation and verification of continuous model, introduction of study concept based on simulation game

Prerequisite: System Modeling

Text books:

1. Information Dashboard Design, Stephen Few, O'Reilly, 2006.
2. Charles Harrell, Biman K. Ghosh, and Royce O. Bowden, Jr., Simulation Using Promodel, McGraw-Hill Higher Education, New York. 2003
3. SEMS Courses Module, 2011

Industrial Engineering Design + Lab

Learning objective(s): Course participants are able to conduct product development process by considering the interaction between material, human resources and production process and able to analyze technical and financial aspects of the NPD project for commercialization.

Syllabus: Introduction to NPD Process, Overview of Stage-Gate Model and Concurrent Engineering, Analysis of Material and Technology Utilization, Design Considerations, Financial Analysis of Project, Market and Functionality Testing, Production Capacity Planning, Commercialization, Implementation of NPD Process, Presentation of NPD Project.

Prerequisites: Perancangan Produk, Analisa Kelayakan Industri

Text Book(s):

1. George, E.D., Engineering Design : *A Material and Processing Approach*, McGraw-Hill, New York, 2000.
2. Trott, P. (2008). *Innovation Management and New Product Development*, 4th Edition.
3. Cooper, R.G. (2007), *Winning at New Products*, 3rd Edition.

Information System

Learning Objective(s): Course participants understand the role of information system management and technology in the industry to face the globalization era.

Syllabus: Introduction to information system. Information system as a competitive advantage. IT and Electronic Commerce, Enterprise Information System (ERP), Electronic Commerce. Database dan Relational Database Management System. System Analysis and Design. Business Process, MIS and its relation with RQM dan QS. CBIS. Accounting Information System. Decision Support System. Executive Information System. Marketing, Manufacturing Information System. Financial, Human resource Information System.

Pre-requisite(s): Organization and Industrial Psychology

Text Book(s):

1. McLeod, Management Information System, 10th edition, Prentice Hall, 2006
2. Kenneth C. Laudon, Management Information Systems , Prentice Hall, 2011

SPECIAL TOPICS IN INDUSTRIAL ENGINEERING

Learning Objective(s): Course participants will have a broad description about the current progress in the service and manufacturing industry, and how industrial engineering could contribute to the enhancement of efficiency and effectiveness.

Syllabus: Inviting guest lecturers from various field of expertise

Pre-requisite(s): 7th semester or above students

Text Book(s): -

INTERNSHIP (2 SKS)

Learning Objective(s): Course participants are able to understand about industrial engineering



implementation in industry and implement all the subjects that have been studied in real world

Syllabus:

Prerequisite(s): Notice the SOP of internship

Text books: -

UNDERGRADUATE THESIS

Learning objective(s): Course participants are able to identify problems and opinion in scientific discussion systematically, clearly, and accurately. Capable of sorting ideas/solutions/opinions in a scientific writing based on scientific writing guideline that integrates a whole knowledge.

Syllabus: Industrial Engineering to solve a case in real world

Prerequisite(s): Notice SOP of final project

Text books: Guideline of Undergraduate Thesis in University of Indonesia

Technology Management

Learning objective(s): Course participants are able to identify technology development that have an impact to industry, identify that technology, and translate into technology plan for improving organization competitiveness **Syllabus:** Introduction to technology management, business model concept, innovation and technology, chasm and tornado, competence, introduction to change management, introduction to risk management, patents in Indonesia, sustainability issue in technology, outsourcing, ERP trend

Prerequisite(s): Introduction to Industrial Engineering

Text books:

1. Burgelman, Maidique and Wheelwright, Strategic Management of Technology and Innovation, 5th Edition, 2009
2. Tarek Khalil, Management of Technology: The Key to Competitiveness and Wealth Creation, McGraw-Hill, 2000

Multivariate Analysis

Learning Objective(s): Course participants are able to organize the extraction, process & analysis of multivariate data in a right way to make decisions.

Syllabus: of Basic Statistical Concepts, Multiple Regression. Manova. Principal Component Analysis. Factor Analysis. Cluster Analysis. Discriminant Analysis. Logit Analysis. Canonical Correlation. Multidimensional Scaling. Structural Equation Modeling.

Pre-requisite(s): Statistics and Probability, Industrial Statistics

Text Book(s):

1. Hair, J.F., B. Black, B. Babin, and R.E. Anderson (2005) Multivariate Data Analysis, Sixth Edition, Prentice Hall.
2. Richard Johnson and Winchern (1998) Applied Multivariate Statistical Analysis, Fourth Edition, Prentice Hall.
3. W.R. Dillon and M. Goldstein (1984) Multivariate Analysis: Methods and Applications, John Wiley & Sons.

Interpersonal Skills

Learning Objective(s): Course participants are able to implement the principles of effective communication and behavior standard according to ethics and habits in a professional level of organization.

Syllabus: Basics of Communication Science. Reading and Controlling Body Language. Listening and Inquiring Skill to Facilitate, Development of Presentation Materials, Presentation Preparation, Processing the Question and Answer Session, Formal Writing Skill (Proposal, Report, Letter, Correspondence, Manner), and Effective Reading.

Pre-requisite(s): -

Text Book(s):

1. *Interpersonal Skills in Organizations*, 3rd Edition, De Janasz, Suzanne C, Karen O. Dowd and eth Z. Schneider, McGraw-Hill International Edition. New York. 2009.

Product Life Cycle Management

Learning Objective(s): Course participants are able to understand the product life cycle and its role in creating company's innovation strategy.



Syllabus: Product Life Cycle Concept, Product Life Cycle Phase Management, PLM and Innovation Strategy, Product Development Strategy in Enterprise.

Pre-requisite(s): Product Design

Text Book(s):

1. Stark, J, (2011). *Product Life Cycle Management, 21th Century Paradigm for Product Realisation*, 2nd Edition. Springer.
2. Grieves, M. (2005). *Product Lifecycle Management. Driving the Next Generation of Lean Thinking*, McGrawHill.

Macro Ergonomics

Learning Objective(s): Course participants are able to understand comprehensively about work system design that consists of interacting variables such as hardware and software within internal and external physical environment, organization structure and process in order to make it better. Ability to understand how to implement ergonomic science.

Syllabus: Introduction to macroergonomics, method and tools that are used in work system design and analysis, introduction to organization integration in productivity, safety, health and quality of work life context

Pre-requisite(s): Human Factors in Engineering and Design

Text Book(s):

1. Hendrick, W.H., Kleiner, Brian, (2002). *Macroergonomics: Theory, Methods, and Applications (Human Factors and Ergonomics)*
2. Stanton, N., Hedge, A, (2005). *Handbook of Human Factors and Ergonomics Methods*, CRC Press LLC.

Finance and Investments

Learning Objective(s): Course participants possess the knowledge about industrial finance and investments in general and multinational including international trading and finance.

Syllabus: International Trade Theory, Trade Policies, Monetary and Payment System, Market and Exchange Mechanism, International Investment, Multinational Finance, Foreign Investment Analysis.

Pre-requisite(s):

Text Book(s):

1. Root, Franklin R. 1978. *International Trade Investment*. Cincinnati: South-Western Publishing Co.
2. Grubel, Herbert G. 1981. *International Economics*, Homewood: Richard D. Irwin Co.
3. Shapiro, Alan C. 2003. *Multinational Financial Management*. Hoboken: John Wiley & Sons Inc.

Innovation Management

Learning Objective(s): Course participants are able to understand the concept and steps in developing innovation within organization.

Syllabus: State of the art 'Innovation', Innovation Development Strategy, Country Innovation, Process Innovation, Innovation Development Procedure, Technology Empowerment to Develop Innovation.

Pre-requisite(s): -

Text Book(s):

1. Cooper, R.G. (2007), *Winning at New Products*, 3rd Edition.
2. Schilling, M.A. (2010). *Strategic Management of Technological innovation*, 3rd Edition, McGrawHill.
3. Trott, P. (2008). *Innovation Management and New Product Development*, 4th Edition.
4. Tidd, J., Bessant, J., Pavitt, K. (2001). *Managing Innovation - Integrating Technological, Market and Organisational Change*, Second Edition, John Wiley & Sons Ltd., West Sussex, England.

Customer Relationship Management

Learning Objective(s): Course participants are able to understand the role and function of customer relationship management in improving organization's/company's competitiveness.

Syllabus: Concept and Procedure of CRM Implementation



in Organization, CRM Process Management, Managing Networks for CRM performance CRM Success Measurement, Best Practices of CRM Implementation, Managing supplier partner relationships, IT for CRM

Pre-requisite(s): Information System

Textbooks:

1. Peppers, D. (2011). *Managing Customer Relationships: A Strategic Framework*, John Wiley & Sons.
2. Francis Buttle (2009). *Customer Relationship Management*, Elsevier.

Lean Operations

Learning Objective(s): Course participants are able to understand the concept of effective manufacturing process.

Syllabus: History and Concept of Lean Operations and Manufacturing, Strategy and Procedure of Lean Manufacturing Implementation, Toyota Production System

Pre-requisite(s): Production System

Text Book(s):

1. Wilson, L. (2009). *How to Implement Lean Manufacturing*, McGrawHill.
2. Askin, R.G., (2002). *Design and Analysis of Lean Production System*, John Wiley & Sons.
3. Pascal, D. (2007). *Lean Production Simplified*, Productivity Press.

Reconfigurable Manufacturing System

Learning Objective(s): Course participants are able to understand the concept of manufacturing facility analysis and planning and the differences compared to models of manufacturing system and supported with laboratory work.

Syllabus: General RMS Characteristics, Enabling Technologies and Reconfigurable Characteristics, Reconfigurable Machines.

Pre-requisite(s): Production System

Text Book(s):

1. Meyers, F.E., Stephens, M.P. (2005). *Manufacturing Facilities Design and material Handling*, 3rd Ed. Prentice-Hall.

Linear and Stochastic Programming

Learning objective(s): Course participants could understand the theory and basics of linear and stochastic programming, able to use advance methods in linear and stochastic programming, and could use software to solve problems in linear and stochastic programming.

Syllabus: Introduction, The geometry of Linear Models, The Simplex Method, Duality Theory, The Interior point Method, Modeling Languages, Sensitivity Analysis, Advanced Models and Methods, Two-stage Stochastic Optimization, Chance-Constrained Programming.

Textbooks:

1. D. Bertsimas and J.N. Tsitsiklis, *Introduction to Linear Optimization*, Athena Scientific (1997).
2. John R. Birge and Francois Louveaux. *Introduction to Stochastic Programming* (Springer Verlag, 1997).
3. Alexander Shapiro, Darinka Dentcheva, and Andrzej Ruszczyński. *Lectures on Stochastic Programming - Modeling and Theory* (SIAM, 2009)

Queuing Theory

Learning objective(s): Course participants are able to understand simple, network and cycle queuing models. Participants are also able to understand methods for solving queuing models and translating real-world problems into a queuing model.

Syllabus: Introduction, Simple Markovian model, Advanced Markovian model, Networks, Series, Cyclic Queues, Networks, Series, Cyclic Queues, Fluid Models, Stability and Optimization, Traffic, Dependency.

Textbooks:

1. Leonard Kleinrock, "Queueing Systems Volume I: Theory", New York: Wiley, 1975.
2. Donald Gross, John F. Shortle, James M. Thompson and Carl M. Harris, "Fundamentals of Queueing Theory", New York: Wiley, 2008

Data Mining



Learning Objective(s): Course participants are able to organize the extraction, process, and data analysis in a right way to make decisions.

Syllabus: Concept and Process of Data Mining, Algorithm in Data Mining, Data Mining Application in Organization.

Pre-requisite(s): Statistics and Probability, Industrial Statistics.

Text Book(s):

1. Nisbet, R. (2009). Handbook of Statistical Analysis and Data Mining Applications, Elsevier.

Systems Engineering

Learning Objective(s): Course participants are able to understand the basics of system engineering management in industries to be able to cultivate a design process, installation, management and termination of a complex system.

Syllabus: Concept and methodology of industrial system engineering. System Life-Cycle: Concept - Development - Production - Benefit and Support - End of System. Vee-Model. Processes in System Life Cycle: Technical Process. Project Process. Organization Process and Acquisition Process of Goods and Services. System Value and Life Cycle Costing. The Role of Modeling and Simulation in System Engineering.

Pre-requisite(s): System Modeling

Text Book(s):

1. Cecilia Haskins, CSEP, Kevin Forsberg, CSEP and Michael Krueger, CSEP. *Systems Engineering Handbook: A Guide For System Life Cycle Processes And Activities*, version 3.1, 2007
2. Kossiakoff, Alexander and William N. Sweet. *Systems Engineering Principles and Practice*. John Wiley & Sons. Hoboken - New Jersey, 2003.
3. ISO/IEC 15288 Standard for Systems Engineering. International Organization Standard (ISO).

Enterprise Competitiveness Analysis

Learning Objective(s): Course participants are able to analyze company's internal and external factors for setting up company strategy for achieving competitive advantage through value innovation and strategic position and capabilities development.

Syllabus: Understanding Industry Profitability,

The Vertical Boundaries of the Firm, Strategic Positioning for Competitive Advantage, Leveraging Market Power to Grow, Risk Management, Competitor and Competition, Competitive Intelligence

Pre-requisite(s): Cost Accounting

Text books:

1. Besanko, David. 2007. Economics of Strategy, Wiley, 4th edition.
2. Sharp, S. 2009. How to minimize risk, avoid surprise, and grow your business in a changing world. John Wiley.
3. Porter, M. 2008. The Five Competitive Forces That Shape Strategy. Harvard Business Review
4. Porter, M. 1998. Competitive Strategy: Techniques for Analyzing Industries and Competitors. Free Press.
5. Carbal, Luis. 2000. Introduction to Industrial Organization, MIT Press

Advanced Optimization

Learning Objective(s): Course participants are able to design and implement various heuristic and meta-heuristic optimization algorithms to solve problems in industrial engineering field.

Syllabus: Introduction to Optimization. Complexity Theory. Basics of Heuristic. Hill Climbing Algorithm. Greedy Algorithm, Simulated Annealing, Tabu Search, Genetic Algorithm, Challenge Counter Techniques, Multi-destinations metaheuristic.

Pre-requisite(s): Operation Research

Text Book(s):

1. Zbigniew Michalewicz, David B. Fogel (2004). *How to Solve It: Modern Heuristics*, Springer.
2. Essentials of Metaheuristics, Sean Luke (2009). *Essentials of Metaheuristics*, Lulu, available at <http://cs.gmu.edu/~sean/book/metaheuristics/>
3. Andries P. Engelbrecht (2007) *Computational Intelligence, An introduction*, John Wiley & Sons, England.



Sustainable Manufacturing and Innovation

Learning Objective(s): Course participants are able to understand the environmental and sustainability aspects of manufacturing process and their roles in increasing the competitiveness of enterprise and innovation development.

Syllabus: Concept and Sustainability Process in manufacturing process. Green Manufacturing (Remanufacturing, Reuse, Recycling), Renewables and Resource Utilizations, Green Logistics and SCM, Eco-Innovation, Best Practices in Sustainable Manufacturing.

Pre-requisite(s): Production System

Text Book(s):

1. Seliger, G. (2011). *Advances in Sustainable Manufacturing*, Springer.
2. Jovane, F. (2010). *The Manufuture Road: Towards Competitive and Sustainable High- Adding- Value Manufacturing*, Springer.
3. Allen, D.T. (2012). *Sustainable Engineering: Concepts, Design and Case Studies*, Prentice-Hall.
4. Hermosilla, J.C. (2009). *Eco-Innovation: When Sustainability and Competitiveness Shake Hands*.

Human Digital Modeling and Simulation

Learning objective(s): Course participants are able to model digital human and simulate it to obtain more effective and efficient work design

Syllabus: Anthropometry, Human Factors and Ergonomics in Healthcare, Ergonomics Modelling & Usability Evaluation, Human Factors, Ergonomics and Safety in Manufacturing and Service Industries. Introduction to Jack Software and Motion Capture.

Text books:-

1. Duffy, G V. 2010. *Advances in Applied Digital Human Modelling*. CRC Press.
2. Jack Software Module dari Ergonomic Centre

Decision Uncertainties and Risk

Learning objective(s): Course participants are able to analyze risks and uncertainties based on statistical tools accurately to make decision

Syllabus: Concept and Decision Making Process, Uncertainty Theory, Risks Analysis Prerequisites: Statistics and Probability, Industrial Statistics

Prerequisite(s): Statistics and Probability

Text books:

1. Parmigiani, G. (2009). *Decision Theory: Principles and Approaches* , John Wiley.

Maritime Logistics

Learning objective(s): Course participants are able to design, analyze and decrease workflow of a maritime logistic system, container terminal and scheduled shipping (liner).

Syllabus: Maritime Economy, Containerization, Scheduled Shipping, Berth Allocation Problem, Quay Crane Allocation Problem, Stacking problem, Stowage Planning, Integration phase, Intermodality, Synchomodality, LPG supply chain, Fuel supply chain, Integration phase.

Textbooks:

1. Duinkerken, M., & Günther, H.-O. (2007). *Container Terminals and Cargo Systems*. Berlin: Springer Berlin Heidelberg. <http://doi.org/10.1007/978-3-540-49550-5>
2. Inst, G. (1987). Indonesia ' s Sea Transport System - A Series of Maps, 491-502.
3. Ligteringen, H., & Velsink, H. (2014). *Ports and Terminals*. Delft: Delft Academic Press.
4. Meisel, F. (2009). Seaside Operations Planning in Container Terminals. <http://doi.org/10.1007/978-3-7908-2191-8>
5. Notteboom, T., & Rodrigue, J. P. (2009). The future of containerization: Perspectives from maritime and inland freight distribution. *GeoJournal*, 74(1), 7-22. <http://doi.org/10.1007/s10708-008-9211-3>
6. Stahlbock, R., & Voß, S. (2008). Operations research at container terminals: A literature update. *OR Spectrum*, 30(1), 1-52. <http://doi.org/10.1007/s00291-007-0100-9>

Energy Management

Learning objective(s): Course participants are able to understand the energy management principles, including energy supply and demand, which grows sense of the importance of energy and include it in decision making.



Syllabus: Energy and civilization, sources of energy and sustainability, energy future, economic and life cycle cost analysis, Life cycle analysis, lighting, ventilation and refrigeration systems, system of sustainable transport, effective energy management program, effective program management of energy, Modeling policy and energy planning

Textbooks

1. John Randolph and Gilbert M. Masters, Energy for Sustainability, Technology, Planning, Policy. Island Press, 2008
2. Barney L. Capehard, Wayne C. Turner, and William J. Kennedy, Guide to Energy Management 6th ed. CRC Press, the Fairmont Press, 2008
3. Wayne C. Turner and Steve Doty, Energy Management Handbook 6th ed. CRC Press, the Fairmont Press, 2007
4. Politic of Energy, 2007
5. Papers and related publications

Design Thinking

Learning objective(s): Course participants could understand design and its implementation; also the advantage of using design thinking in the design process, decision process and problem solving activity.

Syllabus: Philosophy of Design Thinking, Steps and Phases in Design Thinking, Design Centric Culture, User Centric Design, , Lean UX, Design Thinking and Problem Solving

Textbooks:

1. Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, Harper Collins Publisher, 2009
2. Thomas Lockwood, Design Thinking: Integrating Innovation, Customer Experience, and Brand Value, Allworth Press, 2009

Numerical Methods and Application

Learning objective(s): Course participants could understand the logic of numerical methods in solving mathematical and physical problems found in the field of engineering, social and economy. Course participants are able to solve difficult problems using dynamic systems which use iteration methods in industrial engineering cases.

Syllabus: simple problems in function theory (average rate, effect of linearization of a multi ranked function, roots and zero point of a function, interpolations and extrapolations); calculating the area and volume of an object without any form using numerical approach based on the formula of integration; Solving multi-variables equation system (including simulations on models of the equation system); multi-variables regression models; Eigenvalue and eigenvector problems; Start Value and End Value probles; Partial differential.

Textbooks:

1. Burden, Richard L. dan J Douglas Faires dan Albert C. Reynolds. 1981. Numerical Analysis. Boston: Prindle, Weber and Schmidt.
2. Hombeck, Robert W. 1975. Numerical Methods. New York: Quantum Publishersd, Inc
3. Chapra, Steven C dan Raymond P. Canale. 2002. Numerical Methods for Engineers. Boston: McGraw Hill Co.
4. McCalla, Thomas Richard. 1967. Introduction to Numerical Methods and Fortran Programming. New York: John Wiley & Sons

Business Process Reengineering

Learning objective(s): Course participants are able to design a system by using business process reengineering which could measure and assure the quality and speed of an organization's operation process based on facts by using mathematical approaches, simulations and information stream compared to worldwide best-practice.

Syllabus: Reengineering: The Path to Change, Rethinking Business Process, Business Process Reengineering, BPR in Service Industry, Manufacturing Industry and Information Technology, BPR methodology, Business Process Simulation, Business Process Management.

Textbooks:

1. Rengineering Corporation , Michael Hammer & James Champy, Harper-London (2006)
2. Business Process Reengineering-Text and Cases, R Radhakrisnan, PHI-New Delhi (2010)
3. The Practical Guide to Business Process Reengineering using IDEF0, Feldmann Clarence.G, (1998), Donet Publishing New York



4. Process Mapping: How to Reengineer your Business Process., Hunt, Daniel.V., (1996), John Wiley and Sons Inc, New York
5. Process Innovation, Reengineering work through information technology, Davenport, Harvard Business School Press 2004.

Algorithm and Programming

Learning objective(s): Course participants know and are able to use computer programming techniques. They are able to design and implement algorithms to solve problems in the field of Industrial Engineering. Course participants could analyse how efficient an algorithm is.

Syllabus: Introduction to programming language and algorithm; Types, variables, operators; Loops and arrays; Objects and classes; Sorting: Insertion Sort and Merge Sort; Asymptotic Notation; Recurrences; Substitution, Master Method; Divide-and-Conquer: Strassen, Fibonacci, Polynomial Multiplication; Quicksort, Random Number, Randomized Algorithms; Tree, Hashing, Hash Functions; Greedy Algorithms, Minimum Spanning Trees; and Shortest Paths: Dijkstra's Algorithm, Breadth-first Search.

Prerequisite(s): Basic Statistics

Text books:

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, "Introduction to Algorithm", The MIT Press, Cambridge, Massachusetts London, England.

Heuristic Methods in Optimization

Learning objective(s): Course participants are able to design heuristic and metaheuristic algorithms to solve optimization problems with single or multiple objectives. Course participants are also able to design parallel and hybrid metaheuristic algorithm. These meta-heuristic algorithms would be implemented in a programming language.

Syllabus: Introduction, Single-Solution Based Metaheuristics, Population-Based Metaheuristics, Population-Based Metaheuristics, Metaheuristics for Multiobjective Optimization, Hybrid Metaheuristics, Parallel Metaheuristics.

Buku Ajar:

1. El-Ghazali Talbi, Metaheuristics: From Design to Implementation, Wiley:2009

Constraint Programming

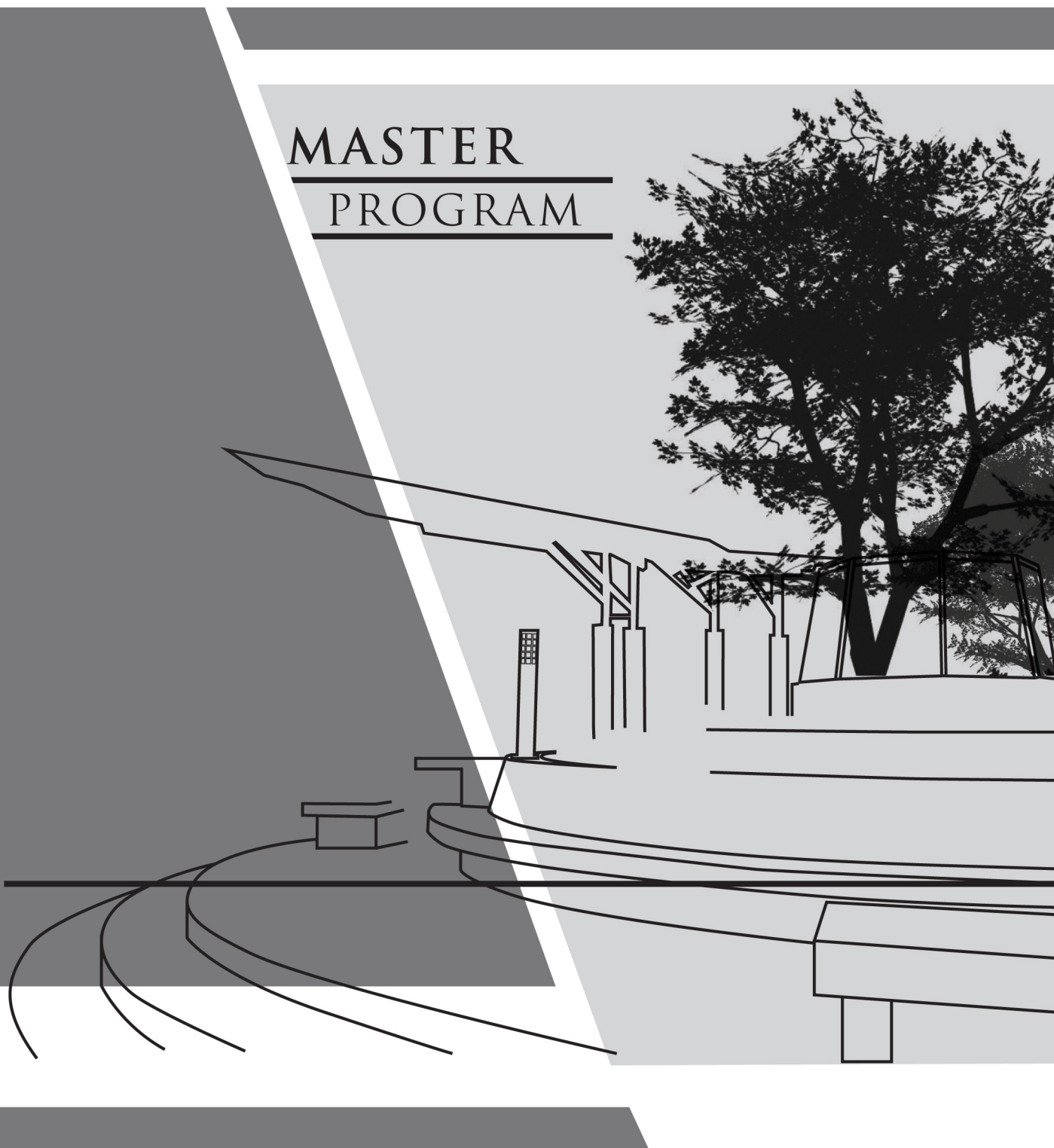
Learning objective(s): Course participants are able to build a constraint programming model, and to understand how solver constraint programming works and its advance methods in increasing efficiency.

Syllabus: Propositional Logic, Modeling problems as SAT, Automated Reasoning: preliminaries, Resolution, Systematic Search, Stochastic Local search, Constraint Satisfaction Problems, Search Algorithms, Constraint type, Advanced technique, Modeling.

Textbooks:

1. Rina Dechter, Constraint Processing, 2003, Morgan Kauffmann.
2. Edward Tsang, Foundations of Constraint Satisfaction. Books On Demand: 2014.

MASTER PROGRAM



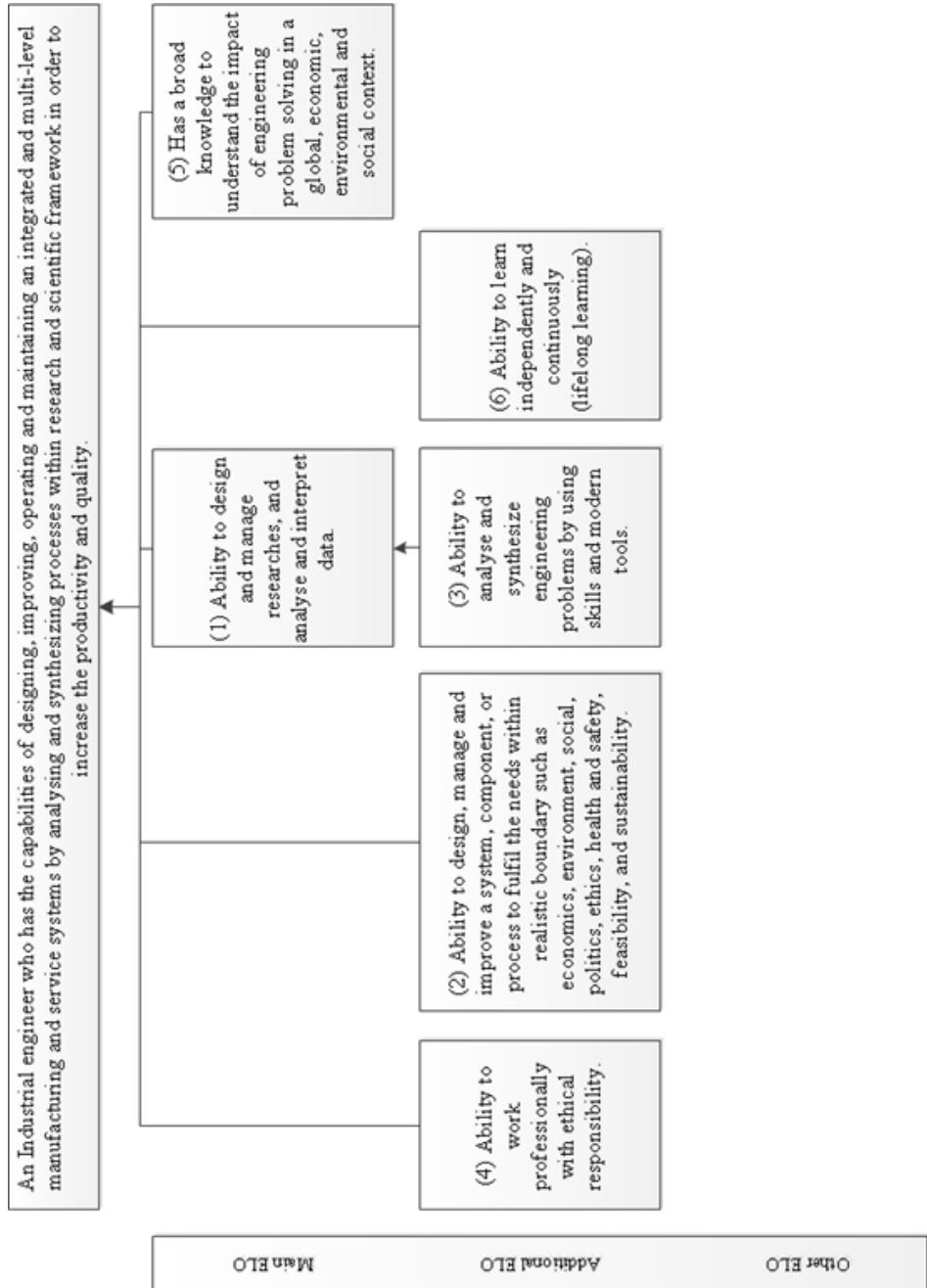
6.7. MASTER PROGRAM IN INDUSTRIAL ENGINEERING

Program Specification

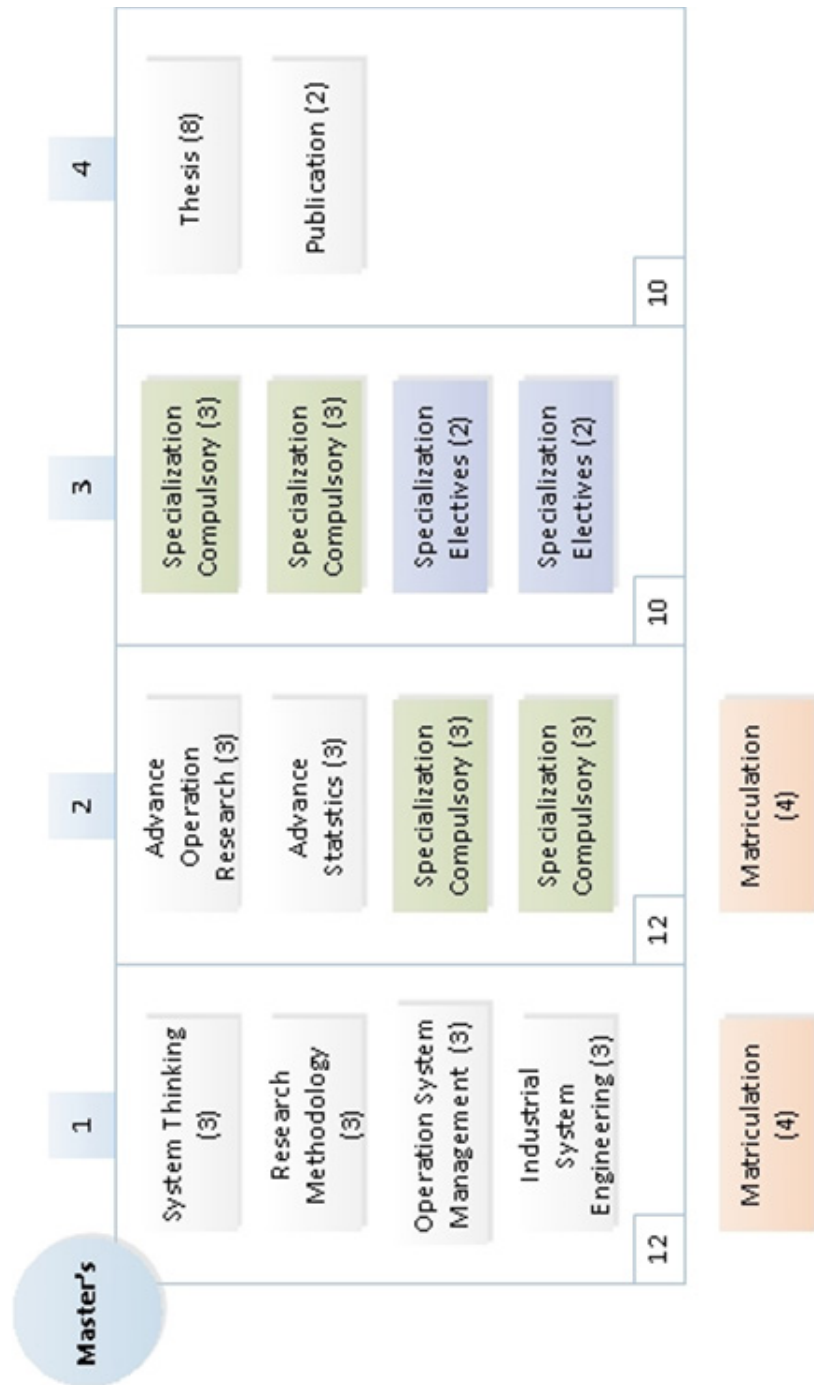
1	Awarding Institution		Universitas Indonesia
2	Teaching Institution		Universitas Indonesia
3	Programme Title		Master Program in Industrial Engineering
4	Class		Regular Depok; Special Salemba
5	Final Award		Magister Teknik (M.T)
6	Accreditation / Recognition		BAN-PT: B - Accredited
7	Language(s) of Instruction		Bahasa Indonesia and English
8	Study Scheme (Full Time / Part Time)		Full Time
9	Entry Requirements		Bachelor (S1) from science and engineering field AND pass the entrance exam
10	Study Duration		Designed for 2 years
	Type of Semester	Number of semester	Number of weeks /semester
	Regular	4	17
	Short (optional)	1	8
11	Graduate Profiles: <i>An Industrial engineer who has the capabilities of designing, improving, operating and maintaining integrated and multi-level manufacturing and service systems by analyzing and synthesizing processes within research and scientific framework in order to increase the productivity and quality.</i>		
	Expected Learning Outcomes: 1. Ability to design and manage researches, and analyse and interpret data. 2. Ability to design, manage and improve a system, component, or process to fulfil the needs within realistic boundary such as economics, environment, social, politics, ethics, health and safety, feasibility, and sustainability. 3. Ability to analyse and synthesize engineering problems by using skills and modern tools. 4. Ability to work professionally with ethical responsibility. 5. Has a broad knowledge to understand the impact of engineering problem solving in a global, economic, environmental and social context. 6. Ability to learn independently and continuously (lifelong learning).		
13	Classification of Subjects		
No	Classification	Credit Hours (SKS)	Percentage
i	Compulsory Subjects	18	41%
ii	Stream Subjects	12	27%
iii	Elective Subjects	4	9%
iv	Seminar, Thesis & Publication	10	23%
	Total	44	100 %
14	Total Credit Hours to Graduate		44 SKS



Flow of Expected Learning Outcomes (ELOs)



Flow of Subjects



COURSE STRUCTURE MASTER PROGRAM INDUSTRIAL ENGINEERING

CODE	SUBJECT	Credits
1st Semester		
ENIE801001	Systems Thinking	3
ENIE801002	Research Methodology	3
ENIE801003	Operations Management	3
ENIE801004	Industrial Systems Design	3
	Sub Total	12
2nd Semester		
ENIE801005	Advanced Operations Research	3
ENIE801006	Advanced Statistics	3
	Specialization Compulsory 1	3
	Specialization Compulsory 2	3
	Sub Total	12
3rd Semester		
	Specialization Compulsory 3	3
	Specialization Compulsory 4	3
	Specialization Electives 1	2
	Specialization Electives 2	2
	Sub Total	12
4th Semester		
ENIE800007	Publication	2
ENIE800008	Thesis	8
	Sub Total	10

Resume

Wajib Program Studi	28
Wajib Peminatan	12
Jumlah	40
Pilihan	4
Total Beban Studi	44

MATA AJAR WAJIB PEMINATAN

INOVASI DAN ERGONOMI (IE)		
CODE	Subject	Credits
ENIE802108	Product and Service Innovation	3
ENIE802109	Safety Engineering and Management	3
ENIE803110	Industrial Technology Management	3
ENIE803111	Macro Ergonomics	3
	Sub Total	12



SISTEM PRODUKSI DAN LOGISTIK (SPL)		
CODE	Subject	Credits
ENIE802216	Manufacturing System	3
ENIE802217	Inventory System	3
ENIE803218	Logistics System	3
ENIE803219	Transportation System	3
	Sub Total	12
MANAJEMEN INDUSTRI (MI)		
CODE	Subject	Credits
ENIE802324	Industrial Economics	3
ENIE802325	Industrial Resource Management	3
ENIE803326	Industrial Project Development	3
ENIE803327	Industrial Strategic Management	3
	Sub Total	12
REKAYASA DATA DAN KUALITAS (RDK)		
CODE	Subject	Credits
ENIE802432	Data Mining	3
ENIE802433	Rekayasa Data	3
ENIE803434	Reliability and Quality	3
ENIE803433	Multivariate Data Analysis	3
	Sub Total	12
REKAYASA SISTEM (RS)		
CODE	Subject	Credits
ENIE802537	Decision and Risk in System Engineering	3
ENIE802538	System Based Analysis	3
ENIE803539	Systems Engineering Management	3
ENIE803540	Performance Modeling and Analysis	3
	Sub Total	12

MATA AJAR PILIHAN PEMINATAN

INOVASI DAN ERGONOMI (IE)		
CODE	Subject	Credits
ENIE803112	Knowledge Management	2
ENIE803113	Knowledge Management	2
ENIE803114	Technopreneurship	2
ENIE803115	Human Performance Engineering	2
SISTEM PRODUKSI DAN LOGISTIK (SPL)		
CODE	Subject	Credits
ENIE803220	Total Quality Management	2
ENIE803221	Lean Manufacturing	2
ENIE803222	Industrial Organization	2
ENIE803223	Maritime Logistics	2

	MANAJEMEN INDUSTRI (MI)	
CODE	Subject	Credits
ENIE803328	Corporate Finance	2
ENIE803329	Enterprise Information System	2
ENIE803330	Maintenance Management	2
ENIE803331	Supply Chain Management	2
	REKAYASA DATA DAN KUALITAS (RDK)	
CODE	Subject	Credits
ENIE803437	Decision Uncertainties and Risk	2
ENIE803435	Consumer Relationship Management	2
ENIE803436	Advanced Optimization	2
	REKAYASA SISTEM (RS)	
CODE	Subject	Credits
ENIE803541	Conceptual System Planning	2
ENIE803542	Logistics& Support for Systems Engineering	2
ENIE803543	Game Theory	2
ENIE803544	Tech.Policy Modeling w. System Dynamics	2





Course Syllabus**SYSTEM THINKING (3 SKS)**

Learning Objective(s) : Course participants are able to implement soft OR concept which is SSM (Soft System Methodology) as a thinking pattern to understand a systemic problem.

Syllabus: System Thinking Concept. Concept of Learning. Organization Hard OR vs Soft OR.

Causal Loop Diagram. System Archetypes. Behavior Overtime Graph (BoT). SSM (Soft System Methodology): Entering the problem situation, Expressing the problem situation, Formulating root definitions of relevant systems, Building Conceptual Models of Human Activity Systems, Comparing the models with the real world, Defining changes that are desirable and feasible and Taking action to improve the real world situation.

Text Book(s):

1. The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization, Peter M. Senge, Crown Business, 1994
2. Soft Systems Methodology in Action, Peter Checkland, Wiley, 1999

RESEARCH METHODOLOGY (3 SKS)

Learning Objective(s): Course participants are able to understand the basic steps necessary for a scientific research and publications and prepare themselves for the upcoming Thesis as part of the pre-requisites on receiving the master degree

Pre-requisite(s): Please Read Thesis SOP

Text Book(s):

1. Manual Penyusunan Tesis Universitas Indonesia dan Departemen Teknik Industri, 2008.

OPERATIONS MANAGEMENT (3 SKS)

Learning Objective(s): Course participants are able to analyze, design, and operate productive systems in order to create competitive products and services.

Syllabus: Introduction: transformation processes. Aggregate planning & optimization. MPS & MRP. Process analysis & performances. Production processes. Little's Law, process & queuing models. Supply chain processes & performances Location. Distribution system & logistics. Inventory policy decision. Theory of constraints (TOC). Service process selection. Case study.

Prerequisite(s): -

Textbooks:

1. Operations & Supply Chain Management; Jacobs, Chase; Irwin McGraw-Hill; 13th Ed., 2011.
2. Operations Management; Nigel Slack, Stuart Chambers, Robert Johnston; Prentice Hall; 2010.
3. Operations Management - Along the Supply Chain; Roberta S. Russel; Bernard W. Taylor; John Wiley & Sons, Inc.; 6th Ed., 2009.

INDUSTRIAL SYSTEM ENGINEERING (3 SKS)

Learning Objective(s): Course participants are able to analyze implementation of NPD Process in an organization and know the approaches, tools and techniques used in each steps of the process according to the needs and characteristics of the organization in order to achieve competitive advantage.

Syllabus: Introduction to NPD Process, Models of NPD Process, Detail Design of of Stage-Gate Model dan Concurrent Engineering, Value Engineering, Spiral NPD Model, Case Studies Implementation NPD.

Textbook(s):

1. Trott, P. (2008). *Innovation Management and New Product Development*, 4th Edition.
2. Cooper, R.G. (2011), *Winning at New Products: Creating Value Through Innovation*, 4th Edition.
3. Park, R.J.(1998), *Value Engineering: A Plan for Invention*, St.LuciePress.
2. Morgan, R.M, Liker,J.K (2006). *The Toyota Product Development System: Integrating People, Process and Technology*

INDUSTRIAL TECHNOLOGY MANAGEMENT (3 SKS)

Learning Objective(s): : Course participants are able to understand the steps of technology management in an organization.



Syllabus: State of the art 'Technology Management', Strategy in Technology Management, Technology Intelligence, Technology assessment, Technology Roadmapping, Usage of Technology in Innovation

Textbook(s):

1. Strategic Management of Technological Innovation: Melissa A. Schilling, 3rd Edition, 2010.
2. Product Innovation and Technology Strategy: Robert G. Cooper and Scott J. Edgett, 2009.
3. Tidd, J., Bessant, J., Pavitt, K. (2001). Managing Innovation - Integrating Technological, Market and Organisational Change, Second Edition, John Wiley & Sons Ltd., West Sussex, England.

ADVANCED OPERATIONS RESEARCH (3 SKS)

Learning Objective(s): Course participants are able to understand and implement mathematical model to optimize problem-solving within industrial management and technical issues, which later can be modeled quantitatively, deterministically and stochastically.

Syllabus: Dynamic Programming. Markov Analysis. Decision Tree. Game Theory. Non Linear Programming. Queue. Simulation.

Pre-requisite(s): -

Text Book(s):

1. Hamdy A. Taha, Operations Research, 7th

MACRO ERGONOMICS (3 SKS)

Learning Objective(s): Course participants are able to understand comprehensively about work system design that consists of interacting variables such as hardware and software within internal and external physical environment, organization structure and process in order to make it better. Ability to understand how to implement ergonomic science.

Syllabus: Introduction to macroergonomics, method and tools that are used in work system design and analysis, introduction to organization integration in productivity, safety, health and quality of work life context

Text Book(s):

1. Hendrick, W.H., Kleiner, Brian, (2002). *Macroergonomics: Theory, Methods, and Applications (Human Factors and Ergonomics)*
2. Stanton, N., Hedge, A, (2005). *Handbook of Human Factors and Ergonomics Methods*, CRC Press LLC.

ADVANCED STATISTICS (3 SKS)

Learning Objective(s): Course participants are able to organize the collection, process, and analysis of data using statistics and engineering principles to support decision making process, within DOE - Design of Experiment.

Syllabus: Review of Basic Statistical Concepts. Single Factor Experiment (Fixed Effect Model). Single Factor Experiment (Random Effect Model). Randomized Complete Block Design. Latin Square Design. General Factorial Design. 2k Factorial Design. Blocking in Factorial Design. Factorial Experiments with Random Factors. Fractional Factorial Design. Nested Design. Response Surface Model.

Pre-requisite(s): -

Text Book(s):

1. Design and Analysis of Experiments, Douglas C. Montgomery. John Wiley & Sons, 2000
2. Design and Analysis of Experiments, Angela Dean and Daniel Voss, Springer-Verlag, 2000
3. Experimental Design with Applications in Management, Engineering, and the Sciences, Paul D. Barger and Robert E. Maurer, Thomson Learning, 2002

SAFETY ENGINEERING AND MANAGEMENT (3 SKS)

Learning Objective(s): Course participants are expected to understand about the importance of work safety in various work fields. Students are also able to do observation, evaluation, and analysis of work safety program to enhance the benefit, in order to achieve effective and efficient work safety program and human-centered focus. Students also are able to understand about management and engineering design concept which is related to occupational safety in an industrial organization through suppression in control of hazardous materials, safety consideration in production facility and maintenance, and operation of effective safety program.



Syllabus: General introduction about work safety in various fields, performance and human error, work safety management program, human reliability assessment, risk management (for human/ worker), work safety management engineering in various work fields. Basic Safety, OSHA Standards, hazard identification and elimination, accident causes and prevention, hazard communication, safe work practice and description, function, and scope of safety engineering and management that are relevant with industry, especially that are related to safe production facility design and operation.

Prerequisite(s): -

Textbook(s):

1. Brauer. (2006). Safety and Health for Engineers, 2nd edition, John Wiley & Sons, Inc.
2. Thompson, Dan Hopwood., Workplace Safety : a Guide for Small and Midsized Companies, John Wiley & Sons, Inc., 2006
3. A. Ian Glendonet. al, Human Safety and Risk Management, CRC Press, 2006
4. George A. Peters, Barbara J. Peters, Human Error Causes and Control, CRC Press, 2006

MACRO ERGONOMICS (3 CREDITS)

Learning Objective(s): Course participants are able to understand comprehensively about work system design that consists of interacting variables such as hardware and software within internal and external physical environment, organization structure and process in order to make it better. Ability to understand how to implement ergonomic science.

Syllabus: Introduction to macroergonomics, method and tools that are used in work system design and analysis, introduction to organization integration in productivity, safety, health and quality of work life context

Pre-requisite(s): -

Text Book(s):

1. Hendrick, W.H., Kleiner, Brian, (2002). Macroergonomics: Theory, Methods, and Applications (Human Factors and Ergonomics)
2. Stanton, N., Hedge, A, (2005). Handbook of Human Factors and Ergonomics Methods, CRC Press LLC.

KNOWLEDGE MANAGEMENT (3 SKS)

Learning Objective(s): Course participants are able to comprehend the concept of knowledge starting from creation, use, transfer, retention and disposal of knowledge to broaden the understanding about the importance of KM for achieving organizations objective.

Syllabus: Introduction to KM, Definition and Concept of KM, SECI Model, Information Management Body of Knowledge (IMBOK), Capitalization of Knowledge, Learning Organization, Implementation of KM in Organization , KM and Innovation, Knowledge Transfer and Open Innovation, Best Practices of KM Implementation.

Pre-requisite(s): -

Textbook(s):

1. Nonaka I., Takeuchi H. The Knowledge Creating Company: How Japanese Companies Create The Dynamics of Innovation, 1995.
2. Ackermann, M.S. etal. Sharing Expertise: Beyond Knowledge Management, MIT Press, 2003
3. Amrit Tiwana, The Knowledge Management Toolkit: Practical Techniques for Building A Knowledge Management System, Prentice-Hall, New Jersey, 2000.
4. Madanmohan Rao, Knowledge Management Tools and Techniques: Practitioners and Experts Evaluate KM Solutions, Elsevier Inc. Oxford - UK. 2005.
5. Murray Jennex, Case Studies in Knowledge Management, Idea Group Publishing, 2005.

COGNITIVE ERGONOMICS (2 SKS)

Learning Objective(s): Course participants are able to understand about basic principles of ergonomics and human factors in cognitive perspective. Students are expected to implement knowledge of cognitive ergonomics in workplace, and also be expected to measure, evaluate, and analyze performance and behavior of various fields and the relation to technology development and engineering. Students are also are expected to design Hierarchical Task Analysis (HTA) as a part of task design based on cognitive.

Syllabus: General introduction to ergonomics and human factors, cognitive aspect in uman-machine/



machine-environment interaction, cognitive aspect in industry, cognitive aspect in transportation, information technology and cognitive performance, behavior aspect and human cognitive performance in designing Hierarchical Task Analysis (HTA).

Text book(s):

1. Harris, Engineering Psychology and Cognitive Ergonomics, Springer, 2011
2. Erik Hollnagel, Handbook of Cognitive Task Design, Lawrence Erlbaum Associates Publisher, 2003, New Jersey London
3. Candida Castro, Human factors of visual and cognitive performance in driving, CRC Press, 2009

TECHNOPRENEURSHIP (2SKS)

Learning Objective(s): Course participants are able to understand concept, method and application of technopreneurship.

Syllabus: Basic Principles of Entrepreneurship, Technology for Entrepreneur, Entrepreneurship and Innovation

Text book(s):

1. Trott, P. Managing Technology Entrepreneurship and Innovation, Routledge, Uk, 2014

HUMAN PERFORMANCE ENGINEERING (2SKS)

Learning Objective(s): Course participants are able to understand basic concept and implement the knowledge of human performance engineering. Participants should be able to calculate, evaluate and analyse performance and behaviour in real cases which also includes the advancement in technology and engineering,

Syllabus: Introduction to human performance engineering, tools and methods used in human performance engineering, human performance in usability engineering and product design.

Text book(s):

1. Bailey, R.W. Human Performance Engineering, Prentice Hall, 1982.
2. Jurnal dan artikel terkait HPE.

MANUFACTURING SYSTEM (3 SKS)

Learning Objective(s): Course participants are able to understand manufacturing system concept that converts raw material into valuable products and its implementation, including product design activities, process and facilities, and technology used to create competitive products.

Syllabus: Introduction to Manufacturing System. Processes. Manufacturing Facility & Technology. Product Design & Development. Green Manufacturing. Resource planning & ERP. Simulation. Introduction to Plant Simulation for Manufacturing System. JIT & Lean Production. Value Stream Mapping. Optimization Model and its application in production. Case study.

Prerequisite(s): -

Textbooks:

1. Operations Management-An Asian Perspective; William J. Stevenson, and Sum Chee Chuong ; McGraw-Hill; 2010
2. Manufacturing Planning and Control for Supply Chain Management; F. Robert Jacobs, William Berry, D. Clay Whybark, and Thomas Vollmann; McGraw-Hill; 2011.
3. The Fundamentals of Production Planning and Control; Stephen N. Chapman; Pearson - Prentice Hall, 2006.

TOTAL QUALITY MANAGEMENT (2 SKS)

Learning Objective(s): Course participants are able to use concepts and application of TQM as the basis for analysis and evaluation of quality improvement system.

Syllabus: TQM Studies vs Principles. MBNQA. Statistical QC. Cost of Quality. Organizing for Quality. QFD. Capability Process. Six Sigma.

Text Book(s):

1. Rao, et al. TQM : A Cross Functional Perspective, Prentice Hall.
2. Quality Management; Goetsch & Davis, 2000, Prentice Hall

SUPPLY CHAIN MANAGEMENT (2SKS)

Learning Objective(s): Course participants are able to understand about concept and application of SCM to analyze and evaluate the role of operators in a whole supply chain

Syllabus: Introduction to SCM, Strategy and Planning, Enterprise Resource Planning, Purchasing,



Transportation Method, Shortest Path, Traveling Salesman Problem, Vehicle Routing Problem, warehousing management, reverse logistics, location theory, network planning process, SCM development

Prerequisite:-

Text Book(s):

1. Novack, R.A., Supply Chain Management: A Logistics Perspectives, 2008.

DATA MINING (3SKS)

Learning Objective(s): Course participants are able to organize the extraction, process, and data analysis in a right way to make decisions.

Syllabus: Concept and Process of Data Mining, Algorithm in Data Mining, Data Mining Application in Organization.

Pre-requisite(s): -

Text Book(s):

1. Nisbet, R. (2009). Handbook of Statistical Analysis and Data Mining Applications, Elsevier.

MULTIVARIATE ANALYSIS (3SKS)

Learning Objective(s): Course participants are able to organize the extraction, process & analysis of multivariate data in a right way to make decisions.

Syllabus: of Basic Statistical Concepts, Multiple Regression. Manova. Principal Component Analysis. Factor Analysis. Cluster Analysis. Discriminant Analysis. Logit Analysis. Canonical Correlation. Multidimensional Scaling. Structural Equation Modeling.

Pre-requisite(s): -

Text Book(s):

1. Hair, J.F., B. Black, B. Babin, and R.E. Anderson (2005) Multivariate Data Analysis, Sixth Edition, Prentice Hall.
2. Richard Johnson and Winchern (1998) Applied Multivariate Statistical Analysis, Fourth Edition, Prentice Hall.
3. W.R. Dillon and M. Goldstein (1984) Multivariate Analysis: Methods and Applications, John Wiley & Sons.

DECISION UNCERTAINTIES AND RISK (2SKS)

Learning objective(s): Course participants are able to analyze risks and uncertainties based on statistical tools accurately to make decision

Syllabus: Concept and Decision Making Process, Uncertainty Theory, Risks Analysis Prerequisites: Statistics and Probability, Industrial Statistics

Prerequisite(s): -

Text books:

1. Parmigiani, G. (2009). Decision Theory: Principles and Approaches, John Wiley.

CUSTOMER RELATIONSHIP MANAGEMENT (2SKS)

Learning Objective(s): Course participants are able to understand the role and function of customer relationship management in improving organization's/company's competitiveness.

Syllabus: Concept and Procedure of CRM Implementation in Organization, CRM Process Management, Managing Networks for CRM performance CRM Success Measurement, Best Practices of CRM Implementation, Managing supplier partner relationships, IT for CRM

Pre-requisite(s): -

Textbooks:

1. Peppers, D. (2011). Managing Customer Relationships: A Strategic Framework, John Wiley & Sons.
2. Francis Buttle (2009). Customer Relationship Management, Elsevier.

ADVANCED OPTIMIZATION (2SKS)

Learning Objective(s): Course participants are able to design and implement various heuristic and meta-heuristic optimization algorithms to solve problems in industrial engineering field.

Syllabus: Introduction to Optimization. Complexity Theory. Basics of Heuristic. Hill Climbing



Algorithm. Greedy Algorithm, Simulated Annealing, Tabu Search, Genetic Algorithm, Challenge Counter Techniques , Multi-destinations metaheuristic.

Pre-requisite(s): -

Text Book(s):

1. Zbigniew Michalewicz, . David B. Fogel (2004). How to Solve It: Modern Heuristics, Springer.
2. Essentials of Metaheuristics, Sean Luke (2009). Essentials of Metaheuristics, Lulu, available at <http://cs.gmu.edu/~sean/book/metaheuristics/>
3. Andries P. Engelbrecht (2007) Computational Intelligence, An introduction, John Wiley & Sons, England.

SYSTEM ENGINEERING MANAGEMENT (3SKS)

Learning Objective(s): Course participants understand the basics of system engineering management in the industry so they would be able to manage a process of design, installation, management and termination of a system

Syllabus: The concept and methodology of systems engineering, Life Cycle Systems: Concepts, Development, Production, Use and Support, and End Systems. Processes in Life Cycle System: Technical Process, Projects Process, Organization Processes and Acquisition Process of Goods or Services. SEMP- Systems Engineering Management Plan, Systems Engineering Organization, Systems Engineering Evaluation Program. CMMI-Capability Maturity Model Integration. Outsourcing Concept.

Text Book(s):

1. System Engineering Management, 3rd Edition, Benjamin S. Blanchard, John Wiley & Sons. Hoboken - New Jersey. 2004
2. Cecilia Haskins, CSEP, Kevin Forsberg, CSEP and Michael Krueger, CSEP. SYSTEMS ENGINEERING HANDBOOK: A GUIDE FOR SYSTEM LIFE CYCLE PROCESSES AND ACTIVITIES, version 3.1, 2007
3. ISO/IEC 15288 Standard for Systems Engineering. International Organization Standard (ISO).

SYSTEM PERFORMANCE ANALYSIS AND MODELLING (3SKS)

Learning Objective(s): Course participants are able to specify, predict and evaluate the performance of the system designed by different system modeling

Syllabus: Micro-level performance modelling (Financial Modelling). Business Process Modelling, Macro-level performance modelling with dynamic systems approach.

Text Book(s):

1. Cecilia Haskins, CSEP, Kevin Forsberg, CSEP and Michael Krueger, CSEP. SYSTEMS ENGINEERING HANDBOOK: A GUIDE FOR SYSTEM LIFE CYCLE PROCESSES AND ACTIVITIES, version 3.1, 2007
2. ISO/IEC 15288 Standard for Systems Engineering. International Organization Standard (ISO).

TECHNOLOGY POLICY MODELING USING SYSTEM DYNAMICS (2SKS)

Learning Objective(s): Course participants understand the concepts, methods and tools for systems dynamics modelling to specify, predict and evaluate the impact of a policy so a better policy decision could be formulated.

Syllabus: Introduction to Policy and Technology Policy, Technology aspects of policy, Introduction to system dynamics, basic models of policy analysis using system dynamics, policy modelling case studies.

Text Book(s):



1. Model Pengenalan Pemodelan Sistem Dinamis SEMS
2. ISO/IEC 15288 Standard for Systems Engineering. International Organization Standard (ISO).

CONCEPTUAL SYSTEM DESIGN (2SKS)

Learning Objective(s): Course participants understand the concepts, methods and tools to develop a complete system based on the needs of multiple stakeholders, which could be transformed into a system with complete specifications.

Syllabus: Volere User Requirements Methodology, Design for Manufacturing, Design for Six Sigma, Design for Reliability, Maintainability, and Supportability, Use Case Modelling, Systems Architecting, Systems Specification, Design Structure Matrix (DSM)

Text Book(s):

1. ISO/IEC 15288 Standard for Systems Engineering. International Organization Standard (ISO).

GAME THEORY (2SKS)

Learning Objective(s): Course participants are able to know how to make decisions in a condition that involves multi-actor. Course participants are able to calculate the effects of strategic decisions or policy taken in an environment and take into account the response of that decision.

Syllabus: Types of strategic games, Nash equilibrium, Continuous and Discontinuous Games, Evaluation and Learning in the game, Games with a non-perfect information, Nash bargaining action, repeated games, mechanism design, social choice and voting theory

Text Book(s):

1. Gibbons, R., Game Theory for Applied Economists, Princeton University Press, 1992. (Hereafter G)
2. Binmore, K., Game Theory: A Very short Introduction, Oxford University Press, 2007
3. Auman, R.J., Handbook of Game Theory with Economics Application, North-Holland Press, 2002

RESOURCE AND LOGISTIC SUPPORT FOR SYSTEM ENGINEERING (2SKS)

Learning Objective(s): Course participants understand the tools and methods of planning and managing of resources and logistical support in systems engineering process.

Syllabus: Outsourcing Principles and Methods, Acquisition and Supply, Logistics Planning, Principles of Supply Chain Management System, Scheduling and Sourcing for System Engineering.

Text Book(s):

1. ISO/IEC 15288 Standard for Systems Engineering. International Organization Standard (ISO).

THESIS (8 SKS)

Learning Objective(s): Course participants are able to systematically present his/her problems and idea during scientific forum with concise and correct.

Pre-requisite(s): Please Read Thesis SOP

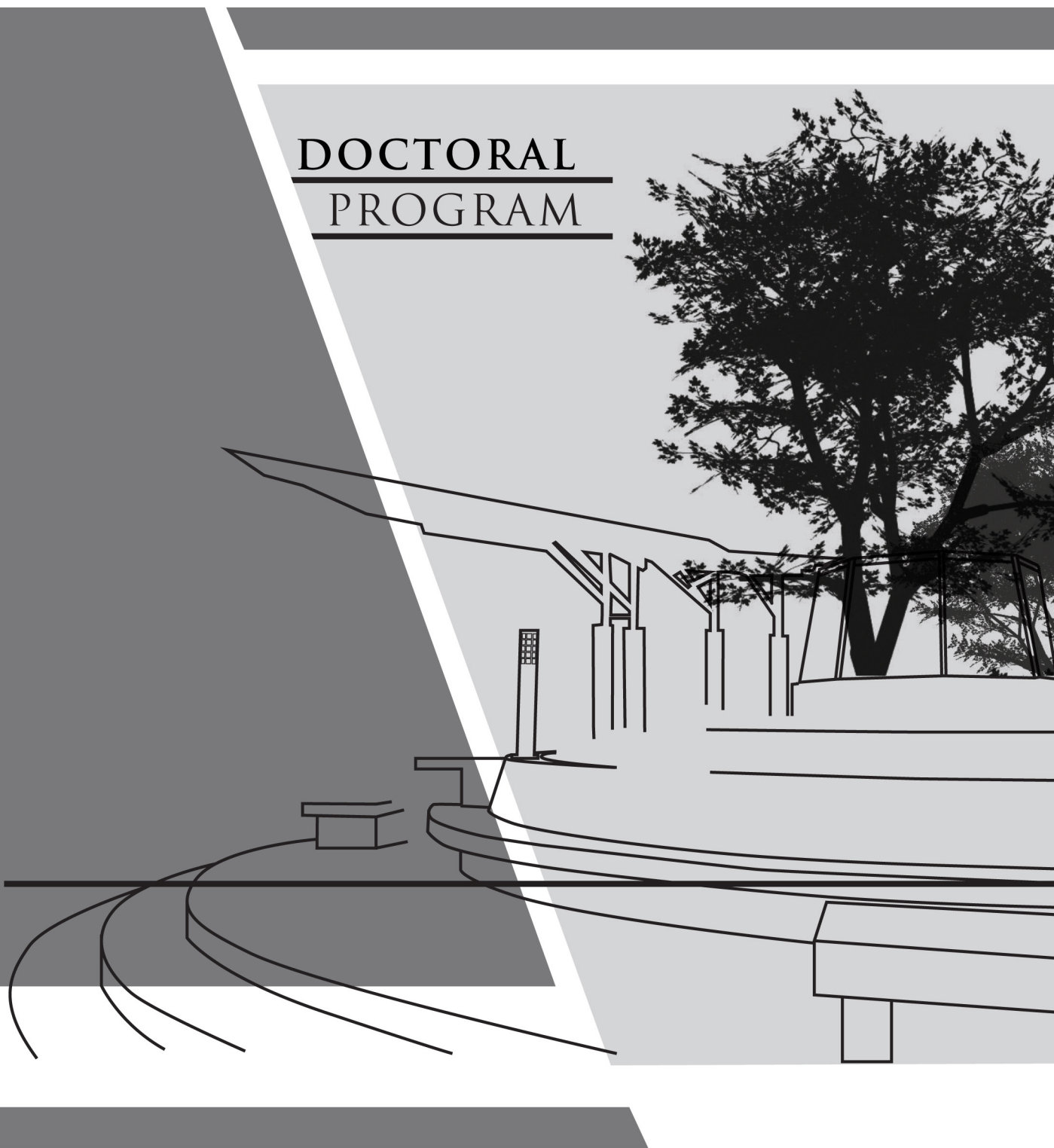
Text Book(s):

1. Manual Penyusunan Tesis Universitas Indonesia dan Departemen Teknik Industri, 2008.





DOCTORAL PROGRAM



7. DOCTORAL PROGRAM

FTUI holds Doctoral Program for the six 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 messenger 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 Specification

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 Chemical Engineering Engineering Doctoral Program in Architecture 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: A 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 B from BAN-PT Industrial Engineering Doctoral Program: On Accreditation Process
7	Language(s) of Instruction		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		Designed for 3 years
	Type of Semester	Number of semester	Number of weeks /semester
	Regular	6	14 - 17
	Short (optional)	none	none

11	Streams: <i>The Civil Engineering Doctoral Program has six streams as follow:</i> • Structure • Construction Management • Transportation • Water Resource Management • Project Management • Geotechnique <i>The Mechanical Engineering Doctoral Program has four streams as follow:</i> • Energy Conversion • Engineering Design and Product Development • Manufacture Engineering • Fire Safety Engineering and Management <i>The Electrical Engineering Doctoral Program has eight streams as follow:</i> • 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 <i>The Metallurgy & Material Engineering Doctoral Program has two streams as follow:</i> • Corrosion and Protection • Material Engineering and Manufacture Process <i>The Chemical Engineering Doctoral Program has five streams as follow:</i> • Industry Catalist • Gas Management • Product Design and Chemical Process • Environmental Protection and Work Safety • Gas Technology <i>The Industrial Engineering Doctoral Program has two streams as follow:</i> • Rekayasa Kualitas Manufaktur • Rekayasa Sistem Jasa
12	Graduate Profiles: FTUI Doctoral Program Graduates have 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 possess 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.



13	Graduates Competence: 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.		
14	Classification of Subjects. (Course & Research)		
No	Classification	Credit Hours	Percentage
i	Course Component	18	34 %
ii	Research Component	34	66 %
	Total	52	100 %
14	Classification of Subjects. (Research)		
No	Classification	Credit Hours	Percentage
i	Course Component	0	0 %
ii	Research Component	52	100 %
	Total	52	100 %
15	Total Credit Hours to Graduate		52 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.

The FTUI Doctoral Program is held in two program: Course and Research and Research.

1.1. 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

KODE/CODE	MATA AJARAN	SUBJECT	SKS
	Semester 1	1st Semester	
ENGE900001	Metode Penelitian Lanjut	Advanced Research Method	6
ENIE900001	Kekhususan 1	Special Subject 1	4
		Sub Total	10
	Semester 2	2nd Semester	
ENGE900002	Analisis Kualitatif & Kuantitatif	Qualitative & Quantitative Analysis	4
ENIE900002	Kekhususan 2	Special Subject 2	4
ENIE900004	Proposal Riset	Research Proposal	6
		Sub Total	14
	Semester 3	3rd Semester	
ENIE900006	Publikasi - Konferensi Internasional	Publication - International Conference	4
		Sub Total	4
	Semester 4	4th Semester	
ENIE900007	Ujian Hasil Riset	Research Result Examination	10
		Sub Total	10
	Semester 5	5th Semester	
ENIE900008	Publikasi II - Jurnal Internasional	Publication II - International Journal	8
		Sub Total	8
	Semester 6	6th Semester	
ENIE900010	Sidang Promosi	Sidang Promosi	6
		Sub Total	6
Total			52

The Lecture Component includes four subjects:

- Advanced Research Method, 6 sks
- Qualitative and Quantitative Analysis, 4 sks
- Special Subject I, 4 SKS.
- Special Subject II, 4 SKS.

The Research Component includes:

- Research Proposal, 6 SKS
- Publication - International Conference, 4 SKS



DOCTORAL PROGRAM

3. Research Result Examination, 10 SKS
4. Publication - International Journal, 8 SKS
5. Promotion Exam, 6 SKS

1.2. 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

KODE/CODE	MATA AJARAN	SUBJECT	SKS
	Semester 1	1st Semester	
ENIE900003	Seminar Berkala Kelompok Ilmu	Research Group Periodic Seminar	8
		Sub Total	8
	Semester 2	2nd Semester	
ENIE900004	Proposal Riset	Research Proposal	6
		Sub Total	6
	Semester 3	3rd Semester	
ENIE900005	Publikasi I - Konferensi Internasional	Publication I - International Conference	4
		Sub Total	4
	Semester 4	4th Semester	
ENIE900007	Ujian Hasil Riset	Research Result Examination	10
		Sub Total	10
	Semester 5	5th Semester	
ENIE900008	Publikasi II - Jurnal Internasional	Publication II - International Journal	8
		Sub Total	8
	Semester 6	6th Semester	
ENIE900009	Publikasi III - Jurnal Internasional	Publication III - International Conference	8
ENIE900010	Sidang Promosi	Sidang Promosi	6
		Sub Total	14
Total			52



Description of Subjects

ENGE900001

ADVANCED RESEARCH METHOD

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) Epistemology 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:

Haryono Imam R dan C. Verhaak, *Filsafat Ilmu Pengetahuan*, Gramedia, Jakarta, 1995

Willie Tan, "Practical Research Methods", Prentice Hall, 2002.

R. Kumar, *Research Methodology, A Step-by-step Guide for Beginner*, 3rd ed., Sage Pub, 2012

ENGE900002

QUALITATIVE AND QUANTITATIVE ANALYSIS

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:

Miles M & Huberman M, *Qualitative Data Analysis*, London Sage Publications, (1994)

Montgomery, D.C., & Runger, G.C, *Applied Statistics and Probability for Engineers* 3rd Ed., John Wiley and Sons, Inc., New York, (2003)

Kirkup, L, *Experimental Method: An Introduction to the Analysis and Presentation*, John Wiley and Sons, Australia, Ltd., Queensland, (1994)

Montgomery, D.C, *Design and Analysis of Experiments* 6th Ed., John Wiley and Sons, Inc., New York, (2005)

Hair, J.F., B.Black, B.Babin and R.E Anderson, *Multivariate Data Analysis* 6th Ed., Pearson Education Inc., New Jersey, (2006)

ENIE900001

Special Subject 1

4 SKS

ENIE900002

Special Subject 2

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:



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.

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.

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

In the event where neither conditions is viable for the students, the Academic Advisor is allowed to conduct a class of said course.

ENIE900003**Research Group Periodic Seminar****8 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.

ENIE900004**Research Proposal****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 formulate 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.

ENIE900007**Research Output Examination****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.

ENIE900006**Publication - International Conference****4 SKS****ENIE900005****Publication I - International Conference****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.

ENIE900008**Publication II - International Journal****8 SKS****ENIE900009****Publication III - International Journal****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.

ENIE900008**Promotion Examination****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 authenticity 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: programdokterft@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.





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