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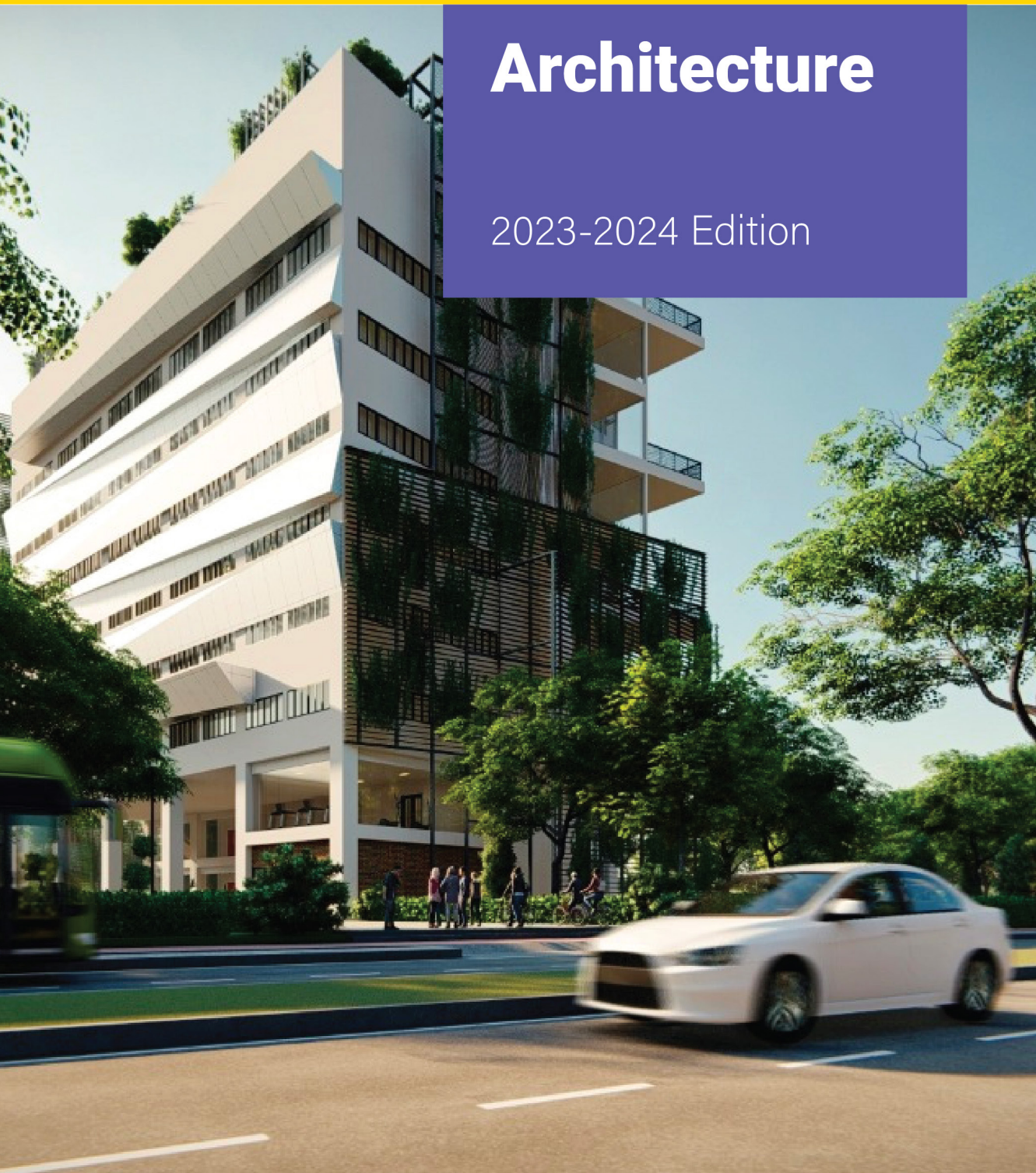

FACULTY OF ENGINEERING

UNIVERSITAS INDONESIA

ACADEMIC GUIDEBOOK

2020 - 2024

2023 EDITION

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ARCHITECTURE ENGINEERING GUIDEBOOK

2020 - 2024

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PREFACE

Welcome to FTUI !

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

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

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

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

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

Depok, November 2023
Faculty of Engineering Universitas Indonesia

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

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CHAPTER 1

PROFILE OF DEPARTMENT

Profile of Departments

Department of Architecture Engineering

General

Department of Architecture at the Universitas Indonesia (formerly known as Architectural Engineering Major) was established in 1965 under the UI Faculty of Engineering (FTUI) in Jakarta (established a year earlier through Presidential Decree No. 76 dated July 17, 1964). In the early days, education at the FTUI Architectural Engineering was done through a system of per-level or per- year full professional education. The average completion time was 7 years with an Engineer (Ir.) degree. Then in 1978, the Semester Credit System (SKS) went into effect with a minimum number of acquired semester credit units of 160 credits. The average duration of the study was five years, and the title was still Engineer (professional education). Since 1996, a four-year bachelor's education program was implemented with a total of 144 credits, producing an academic degree Bachelor of Engineering (ST). In the same year, after 31 years of existence, Architecture Program of Study at UI received its decree by the Directorate General for Higher Education No. 215/DIKTI/ KEP/1996 dated July 11, 1996.

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

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

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

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

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

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

Department of Architecture has also commenced an International Class (KKI) of undergraduate degree in architecture, with single degree program (only one semester abroad), or a double degree program (4 semesters in UI and the rest abroad). This program is in collaboration with leading universities in the world such as the Queensland University of Technology (QUT), Curtin University (Australia) and University of Florida. In addition, undergraduate students

who have excellent academic achievements are able to attain a Fast-Track program (4 years bachelor + 1 year master), a total of 5 years, to accomplish a Master Degree in Architecture.

The Department of Architecture UI has an A accreditation from the Higher Education BAN, Indonesian Ministry of Research and Higher Education The Undergraduate Program Department of Architecture and Interior Architecture program has been also assessed by the ASEAN University Network (AUN). Both Master and PhD program of Department of Architecture also has an A accreditation from the Higher Education BAN, Indonesian Ministry of Research and Higher Education. For more profiles of FTUI Department of Architecture can be viewed at the website: http://architecture.ui.ac.id.

Vision

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

Mission

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

Department of Architecture Staffs

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

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

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

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

Head of Laboratory

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

Dr. Ferro Yudistira S.T., M.Ars.
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Professor

1. **Prof. Ir. Antony Sihombing, MPD., Ph.D**
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2. **Prof. Ir. Evawani Ellisa, M.Eng, Ph.D.**
(Ir., Architecture, Universitas Gadjah Mada; M.Eng., Environmental Engineering, Osaka University, Japan; Ph.D, Architecture, Osaka University, Japan) Urban Design; Urban Architecture

3. **Prof. Kemas Ridwan Kurniawan, M.Sc., Ph.D**
(S.T., Architecture, Universitas Indonesia; M.Sc., Architectural History, University of College London, UK; Ph.D, Architectural History, University of College London, UK) Architectural Theory and History; Heritage in Architecture

4. **Prof. Paramita Atmodiwirjo, ST., M.Arch., M.A.(Ed.), Ph.D.**
(ST. Architecture Universitas Indonesia; M.Arch. Univ. of Sheffield, UK, Ph.D Architecture, Univ. of Sheffield) Architectural Design, Architecture and well-being; Interior Architecture.

5. **Prof. Yandi Andri Yatmo, M.Arch., Ph.D**
(S.T., Architecture, Universitas Indonesia; Dip. Arch., Architecture Univ.Of Sheffield; M.Arch, Architecture, Univ. of Sheffield; Ph.D, Architecture,Univ. of Sheffield) Architectural Design; Design Theory and Method.

Board Of Emeritus Faculty

1. **Prof. Dr. Ir. Abimanyu T. Alamsyah, M.Si.**
(Ir., Architecture Universitas Indonesia; M.Si, Perencanaan Pengembangan Wilayah dan Perdesaan, Institut Pertanian Bogor; Dr., Environmental Sciences, Universitas Indonesia) Urban and Regional Planning; Coastal Architecture

2. **Prof. Dr. Ir. Emirhadi Suganda, M.Sc.**
(Ir., Architecture, Universitas Indonesia; M.Sc., Asian Institute of Technology (AIT) Bangkok, Thailand; Dr., Ilmu Lingkungan, Universitas

Indonesia, 2007) Project Management; Building Technology

3. **Prof. Ir. Gunawan Tjahjono, Ph.D., M.Arch,** (Ir. Architecture Universitas Indonesia; M.Arch., Architecture, University of California Los Angeles, USA; Ph.D., Architecture, University of California Berkeley, USA, 1989); Theory and Methods in Architecture; Architecture and Urban Design

Full-Time Faculty

1. **Dr. Ir. Achmad Hery Fuad, M.Eng,** (Ir., Architecture, Universitas Indonesia; M.Eng., Architecture Urban Design, Waseda University, Japan; Dr., Perancangan Architecture, Universitas Indonesia) Urban Design; Urban Architecture.
2. **Ahmad Gamal, S.Ars., M.U.P., Ph.D.** (S.Ars., Architecture, Universitas Indonesia; MSc, London School of Public Relation; M.U.P, Urban & Regional Planning, University of Illinois Urbana Champaign, USA; Ph.D., Urban & Regional Planning, University of Illinois Urbana Champaign, USA) Urban dan Regional Planning; Property in Architecture
3. **Arif Rahman Wahid, S.Ars., M.A.** (S.Ars., Architecture Interior, Universitas Indonesia; M.A., Narrative Environments, University of the Arst London, UK) Interior Architecture; Narrative Environment
4. **Coriesta Dian Sulistiani, S.Ars., M.Ars.** (S.Ars., Architecture, Universitas Indonesia; M.Ars, Perancangan Architecture, Universitas Indonesia) Interior Architecture; Building Technology
5. **Dr.-Ing. Ir. Dalhar Susanto** (Ir., Architecture, Universitas Diponegoro, Semarang; Dr.-Ing., Urban Housing, University of Stuttgart, Germany) Building Technology; Urban Housing and Settlements.
6. **Diandra Pandu Saginatari, S.Ars., M.Ars.** (S.Ars., Architecture, Universitas Indonesia; M.A., Art Space and Nature, The University of Edinburgh, UK) Architectural Design; Architecture and Ecology.
7. **Dita Trisnawan, S.T., M.Arch., STD.** (S.T., Architecture, Universitas Gajah Mada, Yogjakarta; M.Arch, Suburb and Town Design, University of Miami, USA) Urban Architecture; Urban Design.
8. **Elita Nuraeny, S.Ars., M.A.** (S.Ars., Architecture Interior, Universitas Indonesia; M.A., Architectural History, The Bartlett School of Architecture, UCL) History and Theory of Architecture; Interior Architecture.
9. **Enira Arvanda, S.T., M.Dipl. Ph.D.** (ST, Architecture Universitas Indonesia; Master, Instituto Europeo di Disain, Milan, Italy; Ph.D., Monash Art, Design & Architecture) Interior Architecture, Urban Interior
10. **Dr. Ferro Yudhistira, S.Ars., M.Ars.** (S.T., Teknik Architecture, Universitas Sriwijaya, Palembang; M.Ars, Architecture, Universitas Indonesia; Dr., Perancangan Architecture, Universitas Indonesia) Architectural Design; Computational Design.
11. **Ir. Finarya S.Legoh, M.Sc., Ph.D.** (Ir, Architecture, Universitas Indonesia; M.Sc., Room Acoustics Architecture, University of Salford, United Kingdom; Ph.D, Room Acoustics, University of Salford, United Kingdom) Building Physics; Building Technology
12. **Ir. Hendrajaya Isnaeni, M.Sc., Ph.D.** (Ir., Architecture, Universitas Indonesia; M.Sc., Environmental Psychology, University of Surrey, UK; Ph.D, Architecture, University of Melbourne, Australia) Architectural Design
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14. **Joko Adianto, S.T., M.Ars., Ph.D.** (ST, Architecture Universitas Trisakti; M.Ars, Architecture Universitas Indonesia), Urban Housing and Settlements; Urban Studies.
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17. **Dr. Miktha Farid Alkadri, S.Ars., M.Ars.** (S.Ars, Architecture, Universitas Indonesia; M.Ars., Perancangan Architecture, Design Informatics, TU Delft, Netherlands) Building Technogoly; Building Performance.

18. **Mochammad Mirza Yusuf Harahap, S.Ars., M.Des.**
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19. **M. Nanda Widyarta, B.Arch., M.Arch.**
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20. **Nevine Rafa, S.Ars., M.A.**
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21. **Dr.-Ing. Ova Candra Dewi, S.T., M.Sc.**
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22. **Dr. Rini Suryantini, S.T., M.Sc.**
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Rossa Turpuk Gabe Simatupang, S.Ars., M.Ars.
(S.Ars, Architecture, Universitas Indonesia; M.Ars, Permukiman dan Perumahan Kota, Universitas Indonesia).Urban Housing and Settlements.

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

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

Part-Time Faculty

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

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

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

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

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

6. **Ir. Endy Subijono, MPP., Ar.**
(Ir., Architecture, Bandung Institute of Technology; MPP, Planning and Public Policy, Rutger University, USA) Architectural Design.

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8. **Joice Sandrasari, S.T., M.Arch.**
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10. **Dra. Ratna Djuwita Chaidir, Dipl. Pschy.**
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11. **Rizki Dwika Aprilian, S.Ars., M.Ars.**
(S.Ars., Interior Architecture, Universitas Indonesia; M.Ars., Architectural History Theory and Criticism, Institut Teknologi Bandung). History and Theory in Architecture.

12. **Ruth Kartika Purnasasmita, S.Ars., M.Ars.**
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13. **Ir. Siti Utamini**
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14. **Ir. Sukisno, MS.**
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16. **Vania Dwi Amanda Surya, S.Ars., M.Ds.**
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CHAPTER 2

ACADEMICS SYSTEM AND REGULATION

Academic System and Regulation

General

Teaching and Learning Activities

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

Semester Credits Units (SKS)

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

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

Subjects

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

Grade Point Average

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

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

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

Semester Grade Point Average (SGPA)

Grade Point Average (GPA/IPK)

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

Academic Performance Evaluation

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

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

Grades

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

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

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

Table 2.1. Grade Value and Point

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

Length of Study and Academic Load

Undergraduate Program

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

As for the second semester, these following rules apply:

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

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

Master Program

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

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

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

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

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

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

Matriculation for Master

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

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

Fast Track (Master – Doctoral Program)

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

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

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

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

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

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

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

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

Doctoral Program

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

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

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

Undergraduate Final Project (Skripsi)

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

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

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

Thesis (Master Program)

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

Requirements for a student to start writing a Thesis are:

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

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

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

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

Dissertation

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

Internship for Undergraduate Student

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

Supplementary Exam

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

Credit Transfer

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

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

Credit Transfer for Non Reguler Class Students of Diploma Graduates

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

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

Study Abroad

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

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

Fast Track (Undergraduate – Master Program)

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

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

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

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

Requirements and Procedure for Fast Track Registration

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

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

Procedure for Fast Track Program:

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

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

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

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

Fast Track (Undergraduate – Doctoral Program)

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

Merdeka Belajar Kampus Merdeka Program

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

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

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

The student may apply for the following elective courses scheme:

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

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

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

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

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

Administrative and Academic Registration

Academic Calendar

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

Term 1

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

Term 2

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

Short Semester

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

Note:

*) Schedules are subject to change

Note:

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

Registration and Course Guidelines

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

Administrative Registration

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

Academic Registration

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

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

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

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

Sanctions

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

Exception Administrative Registration

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

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

Prerequisite Courses

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

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

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

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

required.

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

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

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

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

English Language Requirements for Undergraduate International Program Single Degree

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

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

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

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

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

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

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

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

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

7. Student sends their application documents to Partnery University.

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

9. Student makes payment and signed the Letter of Offer

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

11. Departure to Partner University

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

Graduate Predicate

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

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

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

Academic Performance Evaluation and Dropout Criteria

Undergraduate Program

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

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

Or:

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

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

Master's Program

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

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

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

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

Doctoral Program

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

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

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

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

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

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

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

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

Academic Leave

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

Procedures of Academic Leave

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

Faculty and Department Judiciums

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

Semester Grade Transcript, Diploma and Academic Transcripts

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

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

the academic administration official in the Faculty level.

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

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

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

Offenses and Sanctions

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

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

Academic Sanction for Perpetrators of Academic Cheating In Exams

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

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

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

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

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

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

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

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

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

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

Academic Regulation Of The Universitas Indonesia

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

General:

1. Decree of the Board of Trustees Universitas Indonesia Number: 008/SK/MWA-UI/2004 on the Amendment of Board of Trustees' Decree Number: 005/SK/ MWA-UI/2004 on the Code of

conduct on Campus Life in Universitas Indonesia

Education

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

Research

1. Decree of the Board of Trustees Universitas Indonesia Number 002/SK/MWA-UI/2008 on University's Research Norms
2. Decree of the Board of Trustees Universitas Indonesia Number 003/SK/MWA-UI/2008 on Research Policy at Universitas Indonesia
3. Decree of the Board of Trustees Universitas Indonesia Number 009/SK/MWA-UI/2008 on amendment of the Decree of the Board of Trustees of Universitas Indonesia Number 003/MWA-UI/2008 on Research Policy in Universitas Indonesia

CHAPTER 3

LABORATORY FACILITIES

FTUI EDUCATION LABORATORY DATA

1.	**Program**	ARCHITECTURE
2.	**Laboratorium**	Digital Fabrication
3.	**Head of Laboratory**	Dr. Ferro Yudistira S.T., M.Ars.
4.	**Laboratory Assistant/ Technician**	1. Yosep Andika Putra 2. dst
5.	**Practical modules / supported courses** **(Example: Asphalt Practicum / Material Properties)**	1. Digital Fabrication 2. Architectural Studio 3 3. Architectural Studio 4 4. Architectural Studio 5 5. Final Project 6. Thesis
6 .	**Facilities/equipment/ measuring instruments available along with quantities**	1. CNC CO2 Laser (3 Units) 2. 3D Print (9 Units) 3. Plotter T830 A0 (1 Unit) 4. Cutting Plotter (1 Unit) 5. CNC Router/ Milling (2 Units) 6. Robotic Arm (Unit) 7. 3D Laser Scanner (1 Unit) 8. Vacuum Cleaner (1 Unit)
7.	**Available software**	1. CorelDRAW 2. Creality Slicer 3. SmartCarve 4. SketchUp 5. AutoCAD
8.	**Is safety training carried out for lab users?**	Yes / No (*) cross out one
9.	**Is there a POB for lab management, including: use of the lab by students, borrowing equipment, etc.**	1. POB Use of Laboratories for Education and Research 2. POB Borrowing Laboratory Facilities
10.	**Is the lab also used for research purposes including student final assignments?**	Yes / No (*) cross out one
11.	**Is the lab also used for service purposes?**	Yes / No (*) cross out one

12.	**Lab modernization development plan**	1. Development of the laboratory area from a teaching lab to a research lab 2. Making space dividers for CNC Router/Milling, CNC Laser C02, and 3D Printing 3. Addition of Exhaust to the CNC Router/Milling work area 4. Expansion of the laboratory area to include lounge space 5. Renewal of the electricity network 6. Addition of alarms, and replacement of Chemical Powder APARs with CO2 APARs 7. Purchase of tools
13.	Notes	

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FTUI EDUCATION LABORATORY DATA

1.	**Program**	ARCHITECTURE	
2.	**Laboratorium**	Dwi Matra	
3.	**Head of Laboratory**	Widyarko, S.Ars., M.Ars	
4.	**Laboratory Assistant/ Technician**	1. Yosep Andika Putra 2. dst	
5.	**Practical modules / supported courses** **(Example: Asphalt Practicum / Material Properties)**	1. Furniture Design 2. Architectural Studio 3 3. Architectural Studio 4 4. Architectural Studio 5 5. Final Project 6. Thesis 7. Advanced Furniture 8. Spatial Objects 9. Tectonics Workshop	
6 .	**Facilities/equipment/ measuring instruments available along with quantities**	Power Tools 1. Orbital Sander (5 Unit) 2. Circular Saw (3 Unit) 3. Jigsaw (3 Unit) 4. Disc Grinder (5 Unit) 5. Planer (2 Unit) 6. Sharpener (Unit) 7. Palm Router (1 Unit) 8. Vacuum Cleaner (1 Unit) 9. Electrical Drill (3 Unit) 10. Sliding Miter Saw (1 Unit) 11. Cut Off Saw (1 Unit) 12. Band Saw (1 Unit) 13. Table Saw (1 Unit) 14. Bench Planer (1 Unit) 15. Wood Jointer (1 Unit) 16. Bench Drilling (1 Unit) 17. Bench Grinder (1 Unit) 18. Bench Sander (2 Unit) 19. Compressor (2 Unit) 20. Mini Compressor (1 Unit) 21. Welding Machine (2 Unit) 22. Nailer Gun (2 Unit) 23. Spray Gun (2 Unit) 24. Belt Sander (2 Unit)	Manual Tools 1. Planer (3 Unit) 2. Handsaw (8 Unit) 3. Clamp (27 Unit) 4. Hammer (4 Unit) 5. Chisel (2 Set) 6. Wood File (1 Set) 7. Angle Square (7 Unit) 8. Zinc Cutter (7 Unit) 9. Calipers (7 Unit)

7.	**Available software**	
8.	**Is safety training carried out for lab users?**	Yes / No (*) cross out one
9.	**Is there a POB for lab management, including: use of the lab by students, borrowing equipment, etc.**	1. POB Use of Laboratories for Education and Research 2. POB Borrowing Laboratory Facilities
10.	**Is the lab also used for research purposes including student final assignments?**	Yes / No (*) cross out one
11.	**Is the lab also used for service purposes?**	Yes / No (*) cross out one
12.	**Lab modernization development plan**	1. Development of the laboratory area from a teaching lab to a research lab 2. Making floor markings in the standing tools machine area 3. Expansion of the laboratory area to include the outside area and make it a closed space 4. Renewal of the electricity network 5. Addition of alarms, and replacement of Chemical Powder APARs with CO2 APARs 6. Purchase of tools
13.	Notes	

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CHAPTER 4

UNDERGRADUATE PROGRAM

Undergraduate Program in Architecture

Program Specification

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

14. Graduate Profiles:

Bachelor Architecture is a graduate who has the ability to design architecture with respect to context and local needs and is based on the application of basic knowledge of architecture. Graduate of this program are expected to have the ability as:

- **The Initiator** – able to provide solutions to spatial problems critically and creatively with respect to local context and needs
- **The Designer** – have the skill in assembling architectural elements and materials, have an understanding of built aspects, and have a sensibility in creating meaningful architectural design
- **The Communicator** – able to communicate ideas through words, writings, drawings, modeling and other media.
- **The Collaborator** – able to work together with various stakehoders to propose creative solutions for real problems.

15. Graduates Competencies:

Bachelor Architecture will have graduate competencies as follow:

1. Able to create architectural design by integrating basic architectural knowledge, applying design and communication skill, applying ability for imagination, creative thinking, innovation and three-dimensional thinking.
2. Able to synthesize the knowledge of architectural history and theories, including knowledge on art, culture and humanities that could influences the quality of architectural design.
3. Able to integrate analysis of the context into architectural design.
4. Able to analyses the needs and characteristic of the users and integrate them as the basis to define contextual and functional requirement on different types of space.
5. Able to construct the basic knowledge of architectural design methods.
6. Able to integrate the basic knowledge of structure, material, construction and building technology into architectural design.
7. Able to integrate the basic knowledge of natural and environmental system into a sustainable architecture design.
8. Aware of various roles of architects in the society.
9. Able to gather information, formulate, analyses and synthesize problems that are related to architecture.
10. Able to apply mathematics, science, and basic engineering into the solution of complex technical problems.
11. Have integrity, able to demonstrate critical, creative, and innovative thinking, and have intellectual curiosity in solving the problems both at individual and group levels.
12. Able to offer alternative solutions towards various problems in the society, the community, and the nation.
13. Able to utilize information and communication technology.
14. Able to use verbal and written language in Bahasa Indonesia and English fluently in academic and non-academic activities.
15. Able to identify various innovative and independent entrepreneurial endeavors with respect to ethics.

16. Course Composition

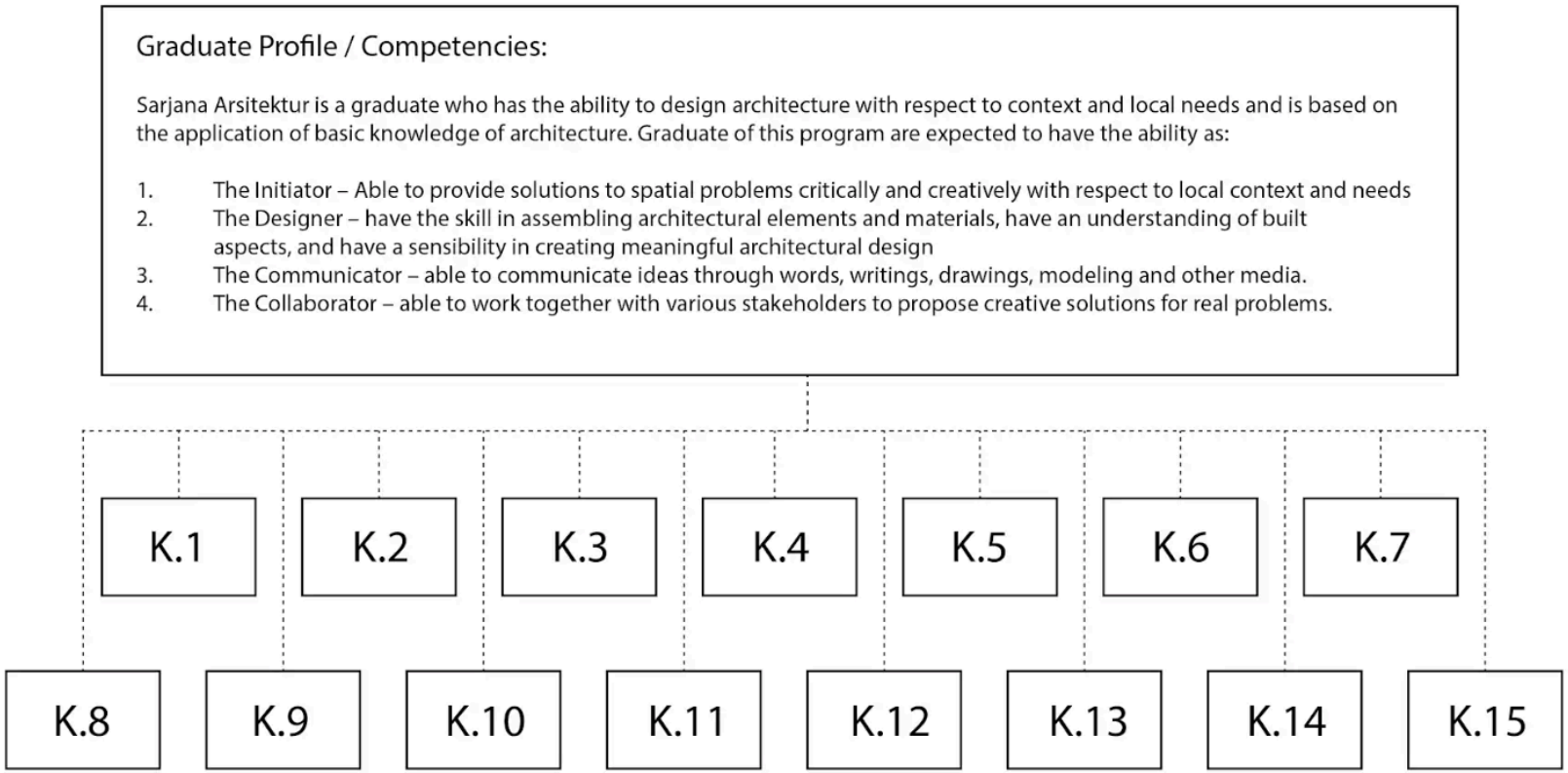
No.	Type of Courses	Credits	Percentage
I	University General Subjects	10	6.25 %
II	Basic Engineering Subjects	10	6.94 %
III	Architecture Core Course	81	56.25 %
IV	Specialization Course	-	-
V	Electives	38	26.39 %
VI	Undergraduate Thesis or Final Project	6	4.17 %
	Total	145	100 %
	Total Credits for Graduation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

Job Opportunity

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

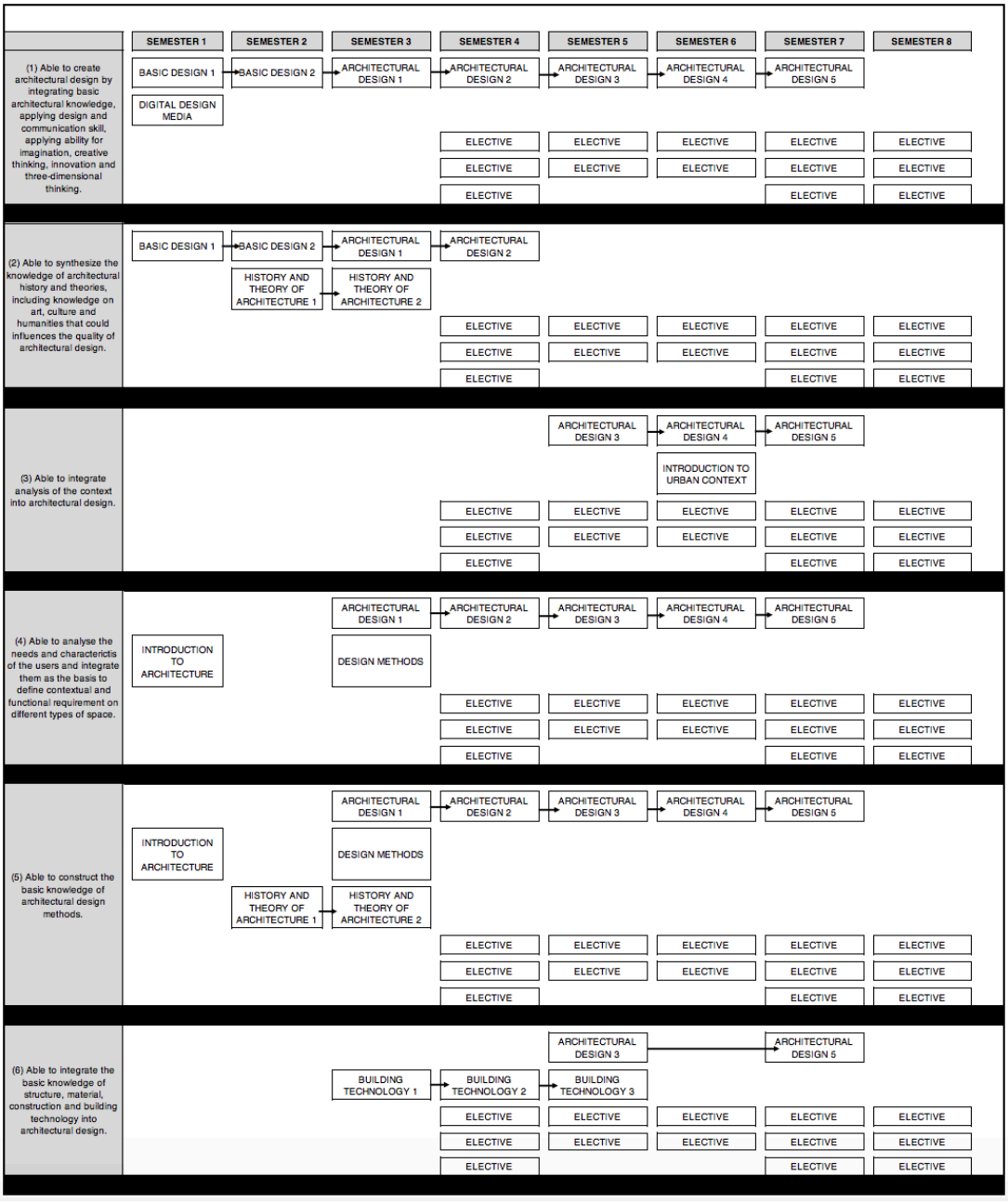
A graduate holding a Sarjana Arsitektur UI can work in various fields of the construction industry such as architecture, interior design or construction supervision. In addition to pursuing a career in the architectural field, graduates are able to develop a career as an assessor for project feasibility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

Diagram of Graduate Compentencies



Course Diagram in Achieving Compentencies

Undergraduate Program in Architecture



S1 Arsitektur

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

S1 Architecture KKI (single degree)

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

Curriculum Structure Undergraduate Program in Architecture

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

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

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

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

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

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

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

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

ELECTIVE COURSES			
KODE	**MATA AJAR**	**SUBJECT**	**CREDIT**
ENAR600018	Akustik	Acoustics	3
ENAR600019	Arsitektur dan Spasial Etnografi	Architecture and Spatial Ethnography	3
ENAR600020	Arsitektur dan Teks	Architecture and Text	3
ENAR600021	Arsitektur di Kawasan Pesisir	Coastal Architecture	3
ENAR600022	Arsitektur Etnik	Ethnic Architecture	3
ENAR600023	Arsitektur, Kota dan Kuasa	Architecture, City, and Power	3
ENAR600024	Arsitektur, Media dan Konteks	Architecture, Media and Context	3
ENAR600025	BIM: Dokumentasi Proyek Dasar	BIM: Project Documentation - Basic	3
ENAR600026	Diagram dan Arsitektur	Diagram and Architecture	3
ENAR600027	Ekologi Perkotaan	Urban Ecology	3
ENAR600028	Fabrikasi Digital	Digital Fabrication	3
ENAR600029	Fasad Bangunan Tinggi	High Rise Building Facades	3
ENAR600030	Fotografi	Photography	3
ENAR600031	Geometri dan Arsitektur	Geometry Architecture	3
ENAR600032	Kajian Lapangan	Field Study	3
ENAR600033	Kajian Mandiri	Independent Study	3
ENAR600034	Kajian Perancangan***	Design Study***	3
ENAR600035	Kapita Selekta	Capita Selecta	3
ENAR600036	Kerja Praktek/KKN	Internship/Community Outreach	3

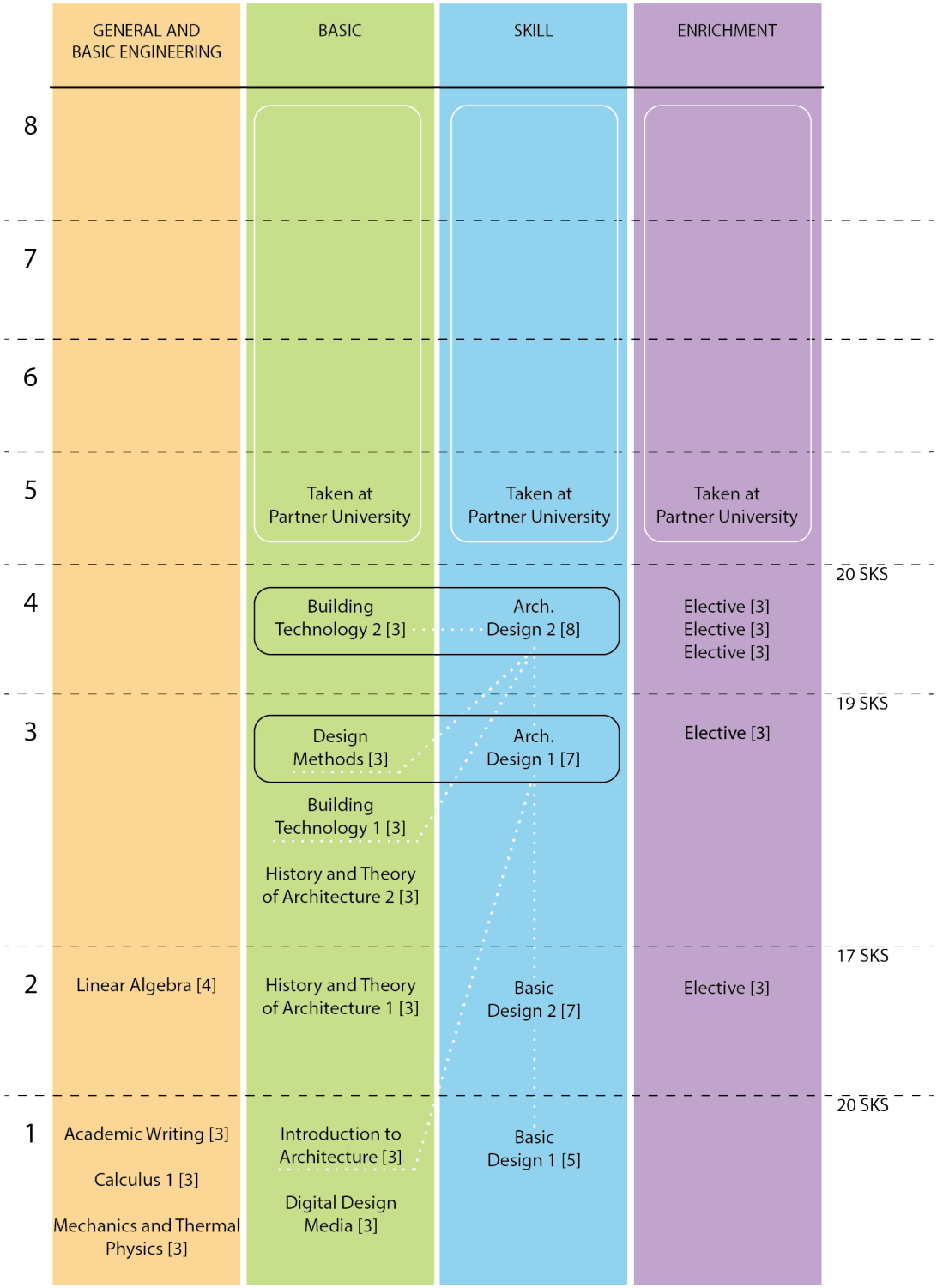
ENAR600038	Komunikasi Desain Digital 2D	2D Digital Design Communication	3
ENAR600039	Komunikasi Desain Digital 3D	3D Digital Design Communication	3
ENAR600040	Lingkungan Daur Hidup	Lifecycle Environment	3
ENAR600041	Pengantar Analisis Spasial	Introduction to Spatial Analysis	3
ENAR600042	Perancangan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

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

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

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

S1 Architecture KKI (double degree)



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

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

5th SEMESTER **			6th SEMESTER **		
CODE	**COURSE SUBJECT**	**CREDIT**	**CODE**	**COURSE SUBJECT**	**CREDIT**
CORE			**CORE**		
UIGE610004	MPK Religion	2	UIGE610007	Integrated Character Building	6
ENAR610005	Architectural Design 3	9	ENGE610006	Architectural Design 4	9
ENAR610016	Building Technology 3	3	ENAR610017	Introduction to Urban Context	3
	Total	14		Total	18
ELECTIVE	Elective *	3	**ELECTIVE**	Elective *	3
	Elective *	2			

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

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

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

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

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

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

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

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

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

Course Structure at Curtin University

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

Course Structure at Queensland University of Technology (QUT)

QUT Study Plan – February Entry

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

QUT Study Plan – July ntry

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

Course Syllabus : Syllabus of Basic Engineering Subject

CALCULUS 1

ENAR600001/ENAR610001
3 CREDITS
Learning Objective:

This subject gives the opportunity for students to understand the basic concept of calculus and to be able to solve applied calculus problems. Students are also given the opportunity to understand the basic concept the function of two variables, or variables, total derivative and integral of the function of two or more variables and application. In addition, students can understand the basic concepts of sequence and series.

Syllabus:

Introduction, Functions and Limits, Derivatives, Derivatives Applications, Integrals, Integral Applications, etc.

Prerequisites: -

References:

1. D. Varberg, E. J. Purcell, S.E. Rigdon, *Calculus, 9th ed.*, Pearson, Prentice Hall, 2007.
2. George B. Thomas Jr., *Thomas' Calculus Early Transcendental*, 12th ed., Addison–Wesley Pearson, 2009.
3. Howard Anton, *Calculus*, 10th ed., John Wiley and Sons, 2012.

LINEAR ALGEBRA

ENAR600004/ENAR610004

3 CREDITS
Learning Objective:

This subject gives the opportunity for students to master the basic techniques of Linear Algebra and gain knowledge on how to implement said techniques in solving System of linear equationss, determining the bases and dimension of vector space, as well as calculating eigen values and eigen vectors. This subject also gives students the opportunity to work with other objects, especially vectors and matrices.

Syllabus:

Systems of linear and Matrix equations, Determinants, Euclid vector spaces, General vector spaces, Eigenvalues and eigenvectors, Inner product spaces, Diagonalization and General Linear Transformation.

Prerequisites: -

References:

1. Elementary Linear Algebra, Howard Anton & Chris Rorres, 11th edition, 2014
2. Gilbert Strang, Introduction to linear algebra 3rd edition Wellesley Cambridge Press, 2003

PHYSICS (MECHANICS AND THERMAL)

ENAR600005/ENAR610005

3 CREDITS
Learning Objective:

Physics (Mechanics and Thermal) subject includes the topics of mechanics and thermodynamics. Calculus is use as a mathematic helping tool in the learning process. Students are given the opportunity to learn how to unite their understanding of the basic concept of the analytical capability, their numeracy in learning mechanics and thermodynamics. During the course of this subject, students are not only aim to increase the students' knowledge of the basic physics concepts but also to increase their capability in using information technology and computer and to train their skills, such as: independent and group work and their communication skill. Students will also be train on how to explain and analyse the nature phenomenon and the result of human engineering exist in their everyday lives by using the basic physics concept and applied them in their daily lives. Students are also taught to develop their synthesis ability and evaluating both quantitative and qualitative natural phenomenon and the result of human engineering in their surrounding environment by using basic physics concept. This subject will give students the opportunity to develop their ability to develop their presentation ability analyse the nature phenomenon and the result of human engineering from the mathematics and natural science point of view integrative and comprehensively.

Syllabus:

Units, Magnitudes and Vectors, Motion Along Straight Lines, Motion in Two and Three Dimensions, Newton's Laws of Motion, Applications of Newton's Laws, Work and Kinetic Energy, Potential Energy and Conservation of Energy, Center of Mass, Linear Momentum, Rotation, Rolling Motion, Torque, Angular Momentum, Oscillation, Mechanical and Sound Waves, Gravity, Statics and Elasticity, Fluid Mechanics, Temperature, Heat, Law I Thermodynamics, Ideal Gas and Kinetic Theory of Gas, Heat Engine, Entropy, and Law II Thermodynamics.

Prerequisites: -

References:

1. Halliday, Resnick, dan Walker, *Principles of Physics 10th Edition*, Wiley, 2014.
2. Serway Jewett, *Physics for Scientists and Engi-*

neers 9th Edition, Thomson Brooks/Cole, 2013.
3. Giancoli, *Physics for Scientists and Engineers 4th Edition*, Pearson, 2008.

Courses

INTRODUCTION TO ARCHITECTURE

ENAR600009/ENAR610009

3 CREDITS

Learning Objective:

Students are able to scientifically explain the theory, philosophy, and position of architecture and interior architecture; Students are able to explain the relationship between architecture and the surrounding context, including the natural, built environment, and the role of humans and bodily experiences in it; Students are able to explain the role of architects and architecture and interior architecture in society and the environment; Students are able to express the results of basic understanding and exploration of theories, principles, and professionalism of architecture and interior architecture.

Syllabus:

What is architecture? (Introduction: Architecture as discourse, career in architecture, arkhe + tekton; tekhne; Laugier primitive hut and the idea of shelter) Aesthetic (proportion; rhythm; scale; golden rules; aesthetic trinity of classic Greek; Mandala and Maya; Taoism and nature, mathematical pattern in geometry)

Form and Space (Plato and form; type and how Quatrèmere de Quincy mimic nature; form and function; various views on space and the different meaning of raum and spatium) Materiality and Materialization (re-investigating tekhne; the importance of understanding the characteristic and potential of material, tectonic which does not limit to construction)

Context (understanding of natural environment, artificial environment, and built environment; our existence and place according to Heidegger; material and context) Human and relationship with others I (the importance of understanding human for designer; under- standing of human being; body, senses and space; personal space according to Hall)

Human and relationship with others II (space, the presence and the remoteness of people, the meaning of place for human) Architects as profession

Prerequisites: -

References:

1. James O'Gorman, *ABC of Architecture*, University of Pennsylvania Press, 1998
2. Marcus Vitruvius Pollio, *Decem Libri de Architectura*, BiblioBazaar, 2008
3. Adrian Forty, *Words and Buildings: a Vocabulary of Modern Architecture*, Thames and Hudson, 2004
4. Yusuf B. Mangunwijaya, *Wastu Citra*, Gramedia Pustaka Utama, 1988
5. Martin Heidegger, *Building Dwelling Thinking, in Poetry, Language, Thought*, HarperPerennial, 1975
6. M. Merleau-Ponty, *Phenomenologie de la Perception Chapter II*, Routledge & Kegan Paul Ltd, 1962
7. Edward T. Hall, *The Hidden Dimension*, Doubleday, 1966

HISTORY AND THEORY OF ARCHITECTURE 1

ENAR600010/ENAR610010

3 CREDITS

Learning Objective:

Student should be able to understand the history of modern architecture up to the contemporary era.

Syllabus:

This course is a survey of modern architecture history from 1750s to present, with main focus on the development of modern architecture. This course also discusses the relationship between the development of architecture and its socio-cultural, political, and technological contexts. This course also investigates principles in architecture and design. It emphasizes on several important moments in the development of modern architecture, and provide knowledge on the theories that are relevant to modern architecture.

Prerequisites: -

References:

1. Kenneth Frampton, *Modern Architecture: A Critical History 3rd Ed,* Thames & Hudson, 1997
2. Leonardo Benevolo, *History of Modern Architecture, Volume I & II*, MIT Press, 1979
3. Iain Borden, *Architecture and the Sites of History, Interpretations of Buildings and Cities*, Butterworth Architecture, 1995
4. William J.R. Curtis, *Modern Architecture since 1900, Third Edition*, Phaidon Press, 2002
5. Diane Ghirardo, *Architecture After Modernism,* Thames & Hudson, 1996
6. Spiro Kostof, *A History of Architecture, Settings & Rituals, 2nd Edition*, Oxford University Press, 1994
7. Bernd Evers & Christof Thoenes (eds.), *Architectural Theory: from the Renaissance to the Present,* Taschen, 2003

DESIGN METHODS

ENAR600011/ENAR610011
3 CREDITS
Learning Objective:

Student should be able to understand the basic thinking and methods of designing built environment; student should be able to explain the basic thinking and apply one of the design methods through writings and drawings.

Syllabus:

Theory and method of thinking; phenomenology, semiotic; theory and method of identifying problems; architectural observation, design knowledge, factual, deontic, instrumental, black box, clear box; theory and method of understanding problems, analysis and synthesis; Theory and methods of problem solving.

Prerequisites:
Student has taken Introduction to Architecture

References:

1. Christoper Alexander, *Notes on The Synthesis of Form*, Harvard University Press,1994
2. Don Koberg & Tim Bagnall, *The Universal Traveller: a Soft System Guide to Creativity, Problem Solving, & the Process of Reaching Goals*, Crisp Learning, 1991.
3. Gunawan Tjahjono, *Metode Perancangan: Suatu Pengantar untuk Arsitek dan Perancang*, 1998
4. Jean-Pierre Protzen & David J. Harris, *The Universe of Design: Horst Rittel's Theories of Design and Planning*, Routledge, 2010

HISTORY AND THEORY OF ARCHITECTURE 2

ENAR600013/ENAR610013
3 CREDITS
Learning Objective:

Student should be able to demonstrate knowledge of history of architecture in Indonesia from the end of 19th century to 20th century

Syllabus:

This course is a survey of history of architecture in Indonesia from the end of 19th century to 20th century. Various influences from overseas–India, China, Middle East and Western –take part in the development of architecture in Indonesia. Therefore it is important to understand Indonesian architecture and its relation with Non-Western and Western architecture, and architecture of vari- ous ethnic groups in Indonesia. Through discussion and analysis of buildings, drawings, photos and written materials, this course emphasizes on the interdependence among architecture, human, tropical climate, socio-culture background, politics and the development of technology in Indonesia.

Prerequisites: -

References:

1. Adolf Heuken SJ, *Tempat-Tempat Bersejarah di Jakarta*, Yayasan Cipta Loka Caraka, 1997
2. Helen Jessup, *Dutch Architectural Visions of the Indonesian Tradition*, Muqarnas v. 3, 1985, pp: 138-61.
3. Kemas Ridwan Kurniawan, *Postcolonial History of Architecture and Urbanism of Indonesian Tin Mining in Muntok Bangka*, VDM, 2011
4. Abidin Kusno, *Behind the Postcolonial: Architecture, Urban Space and Political Cultures in Indonesia,* Routledge, 2000
5. Scott Mirelles, *Historical Photographs of Batavia*
6. Rudolph Mrazek, *Engineers of Happy Land: Technology and Nationalism in a Colony*, Princeton University Press, 2002
7. Peter J.M Nas (ed.), *The past in the Present: Architecture in Indonesia*, NAi Publishers, 2006
8. Pauline Rosmaline, *Designing Colonial Cities: the Making of Modern Town Planning in the Dutch East Indies and Indonesia 1905-1950,* International Institute for Asian Studies the Newsletter 57, 2011
9. Iwan Sudradjat, *A Study of Indonesian Architectural History*, Ph.D Thesis at the Department of Architecture, University of Sydney, 1991
10. Yulianto Sumalyo, *Arsitek Kolonial Belanda dan Karya-karyanya*, Gama Press, 1992
11. Gunawan Tjahjono (ed), *The Indonesian Heritage Series*, Archipelago Press, 1998.
12. M. Nanda Widyarta, *Mencari Arsitektur Sebuah Bangsa; Sebuah Kisah Indonesia*, Wastu Laras Grafika, 2007
13. Yulia Nurliani Lukito, *Exhibiting Modernity and Indonesian Vernacular Architecture*, Springer VS, 2016

DIGITAL DESIGN MEDIA

ENAR600015/ENAR610015
3 CREDITS
Learning Objective:

Student should be able to express, explore, investigate and communicate architectural ideas by using digital media.

Syllabus:

Introduction to techniques and variety of digital media which can be applied to represent architectural ideas, investigate the basic abilities of various digital tools, choosing the appropriate digital tools and techniques to express, explore or investigate certain architectural ideas, studying the workflow of digital and analog media as a part of the

architectural design process.

Prerequisites: -

References:

1. L Farrelly, *Basic Architecture: Representation Techniques*. London, Thames&Hudson, 2008
2. B Kolarevic, (Ed), *Architecture in the Digital Age: Design and Manufacturing*, Spon Press, 2003
3. P Laseau, *Architectural Representation Handbook: Traditional and Digital Techniques for Graphic Communication*, McGraw-Hill Companies, 2000

BASIC DESIGN 1

ENAR600001/ENAR610001
5 CREDITS
Learning Objective:

Student should be able to produce 2D and 3D works as creative responses towards contexts by appplying basic knowledge of visual art and design; Student should be able to acquire and apply basic 2D and 3D representational techniques.

Syllabus:

Basic knowledge of visual art and design, basic knowledge of aesthetic; basic knowledge of space; visual elements: shape, color, texture, etc; basic principles of composition; introduction to art history and its role in the making of art; basic drawing techniques: expression drawing; shape drawing (natural and manmade objects); basic modeling and assembling techniques; understanding characteristics of media and materials; perceiving visually and communicating what is perceived; display and layout techniques.

Prerequisites: -

References:

1. Louis Fisher Rathus, *Understanding Art*, Prentice Hall, 1994
2. Claire Holt, *Art in Indonesia, Continuity and Changes*, Cornel University,Ithaca and London, 1967
3. Johannes Itten, *The Elements of Color*, John Wiley & Sons, 1970
4. Harvard Anarson, *History of Modern Art: Painting, Sculpture, Architecture & Photography*, Prentice Hall, 1998
5. Kimberly Elam, *Geometry of Design: Studies in Proportion and Composition*, Princeton, 1998
6. Gyorgy Kepes, *Structure in Art and in Science,* George Braziller, 1965
7. Frank D. K. Ching, *Architecture: Form, Space & Order*, John Wiley & Son, 1997
8. John Heskett. *Design: A Very Short Introduction*. Oxford: Oxford University Press, 2002.

BASIC DESIGN 2

ENAR600002/ENAR610002
7 CREDITS
Learning Objective:

Student should be able to produce spatial works as creative responses towards contexts by applying knowledge of visual art and design and employed various 2D and 3D representation techniques; Student should be able to communicate architectural ideas by using appropriate techniques and media.

Syllabus:

Basic knowledge of relationship among space, human and time; Exploration of visual elements, non-visual elements (audio, kinesthetic) and moving elements (kinetics); creating spatial ideas as response to contexts; principles of architectural communication, basic architectural communica- tion techniques: projection drawing, orthographic drawing, perspective drawing; modeling and assembling techniques; model making; understanding characteristics of media and materials; communicating object and space for various purpose and audiences; communicate human activity space.

Prerequisites:
Student has taken Basic Design 1

References:

1. Francis D.K. Ching, *Drawing & Perceiving: A Visual Dictionary of Architecture*, John Wiley & Sons, 1996
2. Francis D.K. Ching, *Architectural Graphics, 2nd Ed*, John Wiley & Sons, 2002
3. Francis DK Ching, *Drawing: A Creative Process*, Wiley, 1989
4. Paul Laseau and Norman Crewe, *Visual Notes for Architects and Designers*, Wiley, 1986
5. Jeffrey Balmer, Michael T. Swisher, *Diagramming the Big Idea: Methods for Architectural Composition*, Routledge, 2012
6. Mark Basinger, *Drawing Ideas*, Random House, 2013
7. Don Norman, *The Design of Everyday Things*, Basic Books, 2013
8. Atelier Bow Wow, *Graphic Anatomy,* Toto, 2007
9. Joy Monice Malnar, *Sensory Design,* University of Minnesota Press, 2004
10. Peter Zumthor, *Atmospheres: Architectural Elements, Surrounding Objects,* Birkhauser, 2006

ARCHITECTURAL DESIGN

Architectural design courses are the studio courses at the Department of Architecture. The studios denote learning locations as well as learning methods. At the end of studio-based learning process, students should be able to demonstrate their ability to think

critically and creatively, which can be assessed from their ability to explain and present his/her design ideas. Architectural Design learning process is implemented through Design Projects, which are direct manifestations of integration of knowledge, consisting of:

- Factual knowledge: understanding and formulating design problems which are abstract, qualitative, and related to socio-cultural aspects of human/space activities.
- The context and the environment of living space, ranging from micro/local/personal space, family, community, to urban/rural environment.
- Technical aspects such as structure (statics), tectonics (including building materials), building physics, and building systems.
- Design Methods
- Communication Techniques

In practice, Design Projects accommodate learning materials from several courses: Architectural Design, Building Technology, and Introduction to Urban Context, within the following order:

- Design Project 1 integrates Architectural Design 1 and Building Technology 1
- Design Project 2 integrates Architectural Design 2 and Building Technology 2
- Design Project 3 integrates Architectural Design 3 and Building Technology 3
- Design Project 4 integrates Architectural Design 4 and Introduction to Urban Context

Gradual acquitison of knowledge and ability is structured within each stage of learning in Architectural Design in each semester.

DESIGN PROJECT 1

Design Project 1 focuses on the design of space for human self. Design Project 1 is an integration of knowledge on spatial design, based on the understanding of the relationship between human and space, basic structural logic, and basic principles of environmental comfort within spatial design. Design Project 1 consist of learning activities performed in two courses which complement each other, Architectural Design 1 and Building Technology 1.

ARCHITECTURAL DESIGN 1

ENAR600003/ENAR610003
7 CREDITS
Learning Objective:

Student should be able to design a space for a single person, through understanding the relationship between human and space.

Syllabus:

Architectural Design 1 is an early and critical stage to introduce students to architecture through imaginative, creative, and innovative spatial design. Architectural knowledge encompasses basic comprehension about the personal spatial meaning and experience, interaction between human body and spatial quality, understanding of site and surrounding context as experienced by human body. Design activities consists of information gathering, formulation of design problem, analysis, and making critical decisions to formulate an active strategy toward human space, ability to think three-dimensionally through spatial design exploration, and communicating design ideas.

Design exercises consist of: Designing a simple space for a single person that is materialized through 1:1 scaled model; Designing a space for an episode of human life.

Prerequisites:
Students have taken Basic Design 2
Students have taken or are taking Building Technology 1

References:

1. Bruno Zevi, *Architecture as Space: How to Look at Architecture,* 1993.
2. Donlyn Lyndon and Charles W. Moore, *Chambers For A Memory Palace,* MIT Press, 1994
3. Edward T. Hall, *The Hidden Dimension*, Peter Smith Publications, 1992
4. Francis DK Ching, *Architecture: Form, Space and Order,* Wiley, 1996.
5. Karen Franck & Bianca Lepori, *Architecture Inside Out*, Academy Press, 2000.
6. Michael Pollan, *A Place of My Own*. Penguin Press, 2008.
7. Steen Eiler Rasmussen, *Experiencing Architecture*, MIT Press, 1959.
8. Yi-Fu Tuan, *Space and Place: The Perspective of Experience*, University of Minnesota Press, 1981

BUILDING TECHNOLOGY 1

ENAR600012/ENAR610012
3 CREDITS
Learning Objective:

Students should be able to understand basic technical aspects of structure, material, construction, and building comfort; should be able to formulate technical design process and integration of structure and construction technologies into a functionally effective whole; should be able to produce a report of analysis and synthesis of all aspects of building

technology.

Syllabus:

Structure in nature; Basic principle sof structure and construction (logic of structure, basic mechanics); Site context (natural elements that influence building); Building material (material use and position in building, material property values that influence comfort); Basic building physics (building orientation, environmental influence to comfort); Introduction to basic structure and construction principles of simple building; Introduction to working drawing.

Prerequisites: -

References:

1. Mario Salvadori, *Why Building Stands Up*, W.W. Norton & Company, 2002
2. W. O. Kilmer, *Construction Drawings and Details for Interiors: Basic Skills*, John Wiley and Sons, 2003
3. Bjorn N Sandaker, Arne P Eggen, and Mark R Cruvellier, *The Structural Basis of Architecture: Second Edition*, Routledge, 2011
4. Forest Wilson, *Structure: The Essence of Architecture*, Van Nostrand Reinhold Company, 1971
5. Mark Dekay and G. Z. Sun Brown, *Wind & Light: Architectural Design Strategies: 3rd Edition,* John Wiley & Sons, 2014
6. Francis DK Ching, *Building Construction Illustrated,* Wiley, 2014
7. Edward Allen and Joseph Iano, *The Architect Studio Companion: Rules of Thumb for Preliminary Design,* Wiley and Sons, 2002
8. Ken Parsons, *Humn Thermal Environments: The effects of Hot, Moderate, and Cold Environments on Human Health, Comfort, and Performance*, CRC, 2014
9. Pete Silver and Will McLean, *Introduction to Architectural Technology.* Laurence King, 2013

DESIGN PROJECT 2

Design Project 2 is about designing space for core social unit (family, a couple, etc). Design Project 2 integrates knowledge on spatial design based on the idea dwelling, the analysis of family life cycle and daily activities, application of basic structural principles and constructions of low rise building, building systems, and principle of building physics. Design Project 2 integrates the learning activities performed in two courses that complement each other, Architectural Design 2 and Building Technology 2.

ARCHITECTURAL DESIGN 2

ENAR600004/ENAR610004
8 CREDITS
Learning Objective:

Students should be able to design a dwelling as a living space for core social unit through tectonic approach and by thorough consideration of the life cycle and daily activities of the core social unit.

Syllabus:

Architectural Design 2 proposes critical issues of human living space in urban community context, through the design of a dwelling. Design knowledge herewith includes the understanding concept of dwelling, observation and analysis of core social unit, formulating spatial program based on understanding of the needs of core social unit, development of spatial idea through tectonic exploration as *the art of joining* and exploration of spatial composition as an integration of *part-whole* that appropriately accommodate the programs, which are implemented into an integrated spatial design and communicated by complying with standard principles of architectural communication.

Design exercises consist of: Comprehensive precedent analysis of good dwelling; designing dwelling space for core social unit.

Prerequisites:

Students have taken Architectural Design 1
Students have taken or are taking Building Technology 2

References:

1. Martin Heidegger, *Building Dwelling Thinking, in Poetry, Language, Thought*, HarperPerennial, 1975
2. Adam Sharr with Simon Unwin, *Heidegger's Hut, in ARQ (Architectural Research Quarterly) Vol.5 No.1*, 2001
3. J Macgregor Wise, *Home: Territory and Identity pp. 391-396, in INTIMUS Interior Design Theory Reader,* 2006
4. Norberg Schulz, *The Concept of Dwelling – Introduction*, Rizzoli International Publications,1985
5. Hannah Arendt, *The Human Condition - Chapter I & II*, University of Chicago Press, 1958
6. A. Rapoport, *House Form and Culture - Chapter II Alternative Theories of House Form & Chapter III Socio-cultural Factors and House Form, pp. 18-82*, Prentice Hall Inc, 1969
7. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction – Chapter I Introduction: Reflections on the Scope of the Tectonic*, MIT Press, 2001

8. Charles Moore, Gerrad Allen, Donlyn Lyndon, *Assembling A Room, in The Place of Houses*, University of California Press, 2000
9. Francis D. K. Ching, *Architecture: Form, Space and Order*, Wiley, 2014
10. Erik H. Erikson, *Life Cycle Completed – Chapter 3 Major Stages in Psychosocial Development*, W. W. Norton & Company, 1998
11. Jonathan Hill, *Immaterial Architecture – House and Home,* Routledge, 2006
12. Peter Zumthor, *Atmospheres: Architectural Environments, Surrounding Objects*, Birkhäuser Architecture, 2006

BUILDING TECHNOLOGY 2

ENAR600014/ENAR610014
3 CREDITS
Learning Objective:

Students should be able to understand technical aspects of structure, material, construction, and building comfort for low rise building; should be able to formulate technical design process and integration of structure, construction technologies and building systems into a functionally effective whole; should be able to produce a report of analysis and synthesis of all aspects of building technology.

Syllabus:

Identification of all aspects of building technology in a simple low rise building that include: structural logic, buildability, and comfort; Introduction to in-depth knowledge on the materiality of material, construction techniques and details; Dimension and configuration of materials and their relation to structure and construction of simple building; Elements of air conditioning and lighting in a building; Introduction to basic knowledge of building utility; Creating technical documentations (working drawing).

Prerequisites:

Students have taken Building Technology 1
Students have taken or are taking Architectural Design 2

References:

1. Francis DK Ching, *Building Construction Illustrated,* Wiley, 2014
2. Arthurs Lyons, *Materials for Architect & Builders*, Butterworth-Heinemann, 2008
3. Graham Bizley, *Architecture in Details*, Architectural Press, 2008
4. Andrea Deplazes, *Constructing Architecture: Materials Processes Structures, A Handbook*, Birkhauser, 2008
5. Gail Peter Borden, *Material The Typology of Modern Tectonics*, Wiley, 2010
6. Thomas Schropfer, *Material Design*, Birkhauser Architecture, 2010
7. Norbert Lechner, *Heating, Cooling, Lighting: The Sustainable Design Methods for Architect*, Wiley, 2013
8. Charlie Wing, *How Your House Works: a Visual Guide to Understanding and Maintaining Your Home, Updated and Expanded,* RSMeans, 2012
9. Corky Binggeli, *CorkyBuilding Systems for Interior Designers*, John Wiley & Sons, 2003

DESIGN PROJECT 3

Design Project 3 is studio that focuses on aspects of buildability and building performances. Design Project 3 is an integration of design knowledge through technological approach, implementation of structural principles, construction and material, building supporting system and the use of technology in the design process. Design Project 3 integrates the learning activities performed in two courses that support each other, Architectural Design 3 and Building Technology 3.

ARCHITECTURAL DESIGN 3

ENAR600005/ENAR610005
9 CREDITS
Learning Objective:

Students should be able to design a building based on the development of technological ideas.

Syllabus:

Architectural Design 3 proposes the critical issues on the aspects of buildability and building performance. Design knowledge includes the development of advanced tectonic ideas, encompassing exploration of material, detail and construction, and the development of architectural ideas based on building performance and system. Knowledge of site and environment includes the contextual explanation of design through the understanding of the site physical condition and consideration of sustainability. Knowledge on the role of technology in architectural design process in terms of representation, modeling and simulation.

Prerequisites:

Students have taken Architectural Design 2
Students have taken or are taking Building Technology 3

References:

1. Chris Abel, *Architecture, Technology and Process*, Architectural Press, 2004.
2. Ed van Hinte et al, *Smart Architecture,* 101 Publishers, 2003.
3. Robert Kronenburg & Filiz Klassen, *Theory, Context, Design and Technology – Trasnportable*

Environments 3, Taylor & Francis, 2006.
4. Pete Silver and Will McLean, *Introduction to Architectural Technology*, Laurence King Publishing, 2013.
5. Bjorn Sandaker, *On Span and Space: Exploring Structures in Architecture,* Routledge, 2008
6. Branko Kolarevic and Ali Malkawi, *Performative Architecture : Beyond Instrumentality*, Spon Press, 2005

BUILDING TECHNOLOGY 3

ENAR600016/ENAR610016
3 CREDITS
Learning Objective:

Students should be able to understand technical aspect of structure, material, construction, and building comfort for advanced building (high rise/ wide span building); should be able to formulate technical design process and integration of structure, construction technology and utility system as a functionally effective whole; should be able to formulate utility system, transportation and communication system, building maintenance and safety; should be able to perform technical documentation and to create analysis/synthesis report from all aspect of building technology; should be able to understand energy conservation issues and ecological sustainability.

Syllabus:

Advanced building structure (wide span and/ or high rise); Building system, advanced utility system (comfort, transportation, communication, maintenance, and building safety); Sustainable building energy conservation; Basic knowledge of ecological sustainability issues.

Prerequisites:
Students have taken Building Technology 2
Students have taken or are taking Architectural Design 3

References:

1. Yonca Hurol, *The Tectonic sof Structural Systems: An Architectural Approach*, Routledge, 2015
2. D Schodek, *Structures, 7th Edition*, Prentice Hall, 2013
3. Chris Lefteri, *Materials for Design*, Laurance King Publishing, 2014
4. Bjarke Ingels, *Big, Hot To Cold: an Oddsey of Architectural Adaptation,* Taschen, 2015
5. Farshid Moussavi, *The Function of Form*, Harvard Graduate School of Design, 2009
6. William McDonough and Michael Braungart, *The Upcycle: Beyond Sustainability: Design for Abundance*, North Point Press, 2013
7. Rob Thompson, *Sustainable Materials, Processes and Production*, Thames and Hudson, 2013
8. Wolfgang Schueller, *Highrise Building Structures*, John Wiley and Sons, 1977
9. Thomas Hootman, *Net Zero Energy Design: A Guide for Commercial Architecture*, Wiley, 2012
10. Pete Silver and Will McLean, *Structural Engineering for Architect: A Handbook*, Laurence King, 2014
11. Esther Rivas Adrover, *Deployable Structures*, Laurance King, 2015
12. Dwi Tangoro, *Utilitas Bangunan*, UI Press, 2004

DESIGN PROJECT 4

Design Project 4 focuses on the design of public space. It integrates architectural typology-based design method, issue-based design and basic knowledge of urban context. Design Project 4 integrates the learning activities performed in two courses that support each other, Architectural Design 4 and Introduction to Urban Context.

ARCHITECTURAL DESIGN 4

ENAR600006/ENGE600006
9 CREDITS
Learning Objective:

Students should be able to design public space through architectural typology-based design approach, issue-based design approach and creative exploration of architectural form and spatial quality.

Syllabus:

Architectural Design 4 proposes the critical issues of human living space with socio-cultural complexities as found in urban/suburban context, through two approaches: a) top-down approach through the exploration of design ideas based on typology, and b) bottom-up approach through exploration of issue-based design ideas. Design knowledge herewith consist of the understanding of the concept of *public*, analysis of functional types, spatial programming, the concept of institution and how it is elaborated into spatial design, the formulation of initial statement based on issues, development of architectural programs and how they are elaborated into spatial design. Knowledge of site and environment includes the contextual explanation of the design through the understanding toward site physical condition, urban socio-cultural context, and consideration of sustainability.

Design assignments consist of: Designing space within social environment context with a close kinship; Designing space in more complex urban environmental context.

Prerequisites:

Students have taken Architectural Design 3
Students have taken or are taking Introduction to Urban Context

References:

1. Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture, Chapter 'Space', hal. 256-275*, Thames & Hudson, 2000
2. Yi-Fu Tuan, *Space and Place: The Perspective of Experience,* University of Minnesota Press, 1981
3. Henri Lefebvre, *The Production of Space*, Blackwell, 1991
4. Jeremy Till, *Architecture Depends*, MIT Press, 2009
5. Karen Franck & Bianca Lepori, *Architecture Inside Out*, Academy Press, 2000
6. Giulio Carlo Argan, *On the Typology of Architecture, in Nesbitt, Theorizing a New Agenda for Architecture hal. 240-246*, Princeton Architectural Press, 1996
7. Jonathan D. Sime, *Creating Places or Designing Spaces*, Journal of Environmental Psychology, Vol 6, hal. 49-63, 1986
8. Andrew Ballantyne, *What is Architecture?,* Routledge, 2002
9. Aaron Betsky & Erik Adigard, *Architecture Must Burn: Manifestos for the Future of Architecture*, Gingko Press, 2001
10. Robert Venturi & Denise Brown, *Learning from Las Vegas*, MIT Press, 1977
11. Jane Jacobs, *The Death and Life of Great American Cities*, Random House, 1961
12. Bernard Tschumi, *Architecture and Limits I-III, in Nesbitt, Theorizing a New Agenda for Architecture hal. 150-167,* Princeton Architectural Press, 1996
13. Bauman Lyons Architects, *How to be a Happy Architect*, Black Dog Publishing, 2008

INTRODUCTION TO URBAN CONTEXT

ENAR600017/ENAR610017
3 CREDITS
Learning Objective:

Student should be able to know and understand basic knowledge about physical urban forms, and able to implement and apply building rules and codes in design building in urban context.

Syllabus:

Basic principles and issues on urban physical forms: Cities, growth and development, urban physical form and urban physical development, planned and unplanned urban development, site planning and design.

Prerequisites: Students have taken or are taking Architectural Design 4

References:

1. *Journal of the American Planning Association* (sesuai topik bahasan)
2. Jane Jacobs, *The Death and Life of Great American Cities*, Random House, 1961
3. Spiro Kostof, *The City Assembled: The Elements of Urban Form Through History*, Thames and Hudson, 1992
4. Richard T LeGates and Frederic Stout (eds.), *The City Reader*, Routledge, 2003
5. Lewis Mumford, *The Urban Prospect*, Harvest Book, 1968

ARCHITECTURAL DESIGN 5

ENAR600007/ENAR610007
9 CREDITS
Learning Objective:

Students should be able to create architectural design based on particular design method; should be able to produce design ideas that demonstrate buildability and compliance to general building codes; should be able to demonstrate the application of advanced knowledge of structural principles, tectonic principles of construction detail and building utility system.

Syllabus:

Designing with particular approach or method within design units. Design units offered may include but not limited to: typology-based design; evidence-based design; architectural design as part of urban context; architectural design with technology, computation, or parametric approach. Knowledge and implementation of building codes that include safety, security, health, comfort, and accessibility. Design communication that comply with standard drawing convention. Awareness and understanding of role of various disciplines of design, construction, mechanical and electrical in architectural design process.

Prerequisites:
Students have taken Architectural Design 4

References:

1. Bryan Lawson, *How Designers Think*, Architectural Press, 2005.
2. Michael Hensel, *Performance-Oriented Architecture: Rethinking Architectural Design and the Built Environment*, Wiley, 2013.
3. Bernard Leupen, *Time-Based Architecture*, 101 Publishers, 2005.
4. Herman Hertzberger, *Space and the Architects*, 101 Publishers, 2000
5. Referensi lain yang relevan dengan masing-masing unit perancangan.

UNDERGRADUATE THESIS

ENAR600008/ENAR610008
6 CREDITS
Learning Objective:

Student should be able to identify, study and communicate issues within specific area of study related to architecture; able to develop basic skills in scientific reading, researching and writing; able to develop understanding of research as an activity that requires systematic and logical thinking; able to develop critical understanding of various architectural issues.

Syllabus:

The thesis begins with an inquiry into what the student wishes to study in depth. It involves the understanding of issues and explanation of the understanding with limited depth level. At this level, the student is neither required to solve a problem nor create or invent something new that would contribute to the discipline architecture. Simple investigation is performed through literature search and/or case studies. Originality. Modes of writing: descriptive, narrative, explanatory

Prerequisites:
Students have earned 114 credits and have taken Architectural Design 4

References:

1. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
2. David Evans & Paul Gruba, *How To Write A Better Thesis Dissertation*, Springer, 2014
3. F. Crews. *The Random House Handbook, ed, pgs 10-114*, McGraw-Hill Higher Education,1992
4. I. Border and K. Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
5. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005

FINAL PROJECT

ENAR600008/ENAR610008
6 CREDITS
Learning Objective:

Student should be able to identify, study and communicate issues within specific area of study related to architecture; able to develop basic skill in analyzing and synthetizing theory and demonstrate it through design; able to develop understanding of research as an activity that requires systematic and logical thinking; able to develop critical understanding of various architectural issues.

Syllabus:

The thesis begins with an inquiry into what the student wishes to study in depth. It involves the understanding of issues and explanation of the understanding with limited depth level, which is demonstrated through architectural design.

Prerequisites: Students have earned 114 credits and have taken Architectural Design 5

References:

1. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
2. I. Border and K. Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
3. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
4. Iain Border and Katarina Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
5. Murray Fraser*, Design Research in Architecture*, Ashgate Publishing, 2013

Course Description: Elective Courses

ACOUSTICS

ENAR600018/ENAR610020
3 CREDITS
Learning Objective:

Student should be able to understand basic principles of acoustic in space and environment; able to conduct analysis in order to create good acoustic design.

Syllabus:

Basic acoustics, characteristics of sounds, acoustic criteria in space, sound intensification and sound isolation, environmental noise.

Prerequisites: -

References:

1. Leslie L. Doelle & Lea Prasetio, *Akustik Lingkungan*, Erlangga,1993
2. PH Parkin & HR Humpreys, *Acoustics Noise and Buildings*, Faber and Faber Ltd, 1984
3. Finarya Legoh & Siti Hajarinto, *References AKUSTIK*, 2002

ARCHITECTURE AND SPATIAL ETHNOGRAPHY

ENAR600019
3 CREDITS
Learning Objective:
This course will equip students with ethnographic theories and methods to understand 'space', 'place', 'spatial practices' and 'production of space'

in architectural and urban contexts. Ethnographic approaches to 'space' and 'place' are very important for understanding the practice and production of the space in which people live, work, create and socially live.

Syllabus:

The syllabus of this course follows a 4-part chronology: (1) what is ethnography; (2) space and spatial practice; (3) production space; (4) conducting spatial ethnography.

Alternatively, the syllabus chronological order can also be interrupted and arranged like a survey class which arranges the material into key themes related to the latest spatial ethnographic theory, methods and practice, keeping up with the latest developments in related fields and methods.

Prerequisites:

Enjoys reading and experiencing urban space by participating in the spatial practice of its citizens. Studenthave taken the compulsory courses in Architectural Design Theory and Methods.

References:

1. Duneier, M, The Urban Ethnography Reader, Oxford University Press, 2014
2. Dovey, Kim, Mapping Urbanities, Morphologies, Flows, Possibilities, Routledge, 2017
3. Dovey, Kim, "Mapping Urban Assemblages: The Production of Spatial Knowledge," Journal of Urbanism, Vol 10(1) Routledge, 2017
4. Krase, Jerome, "The Multitude Approach to Urban Ethnography: Blessing or Curse?" In Prado & Palto (eds) The Palgrave Handbook of Urban Ethnography, Palgrave Macmillan, 2018
5. Nabeel Hamdi, The Spacemaker's Guide to Big Change: Design and Improvisation in Development Practices, Routledge, 2014
6. O'Reilly, Karen. Key Concepts in Ethnography. SAGE, 2008
7. Setha Low, Spatializing Culture: The Ethnography of Space and Place, Taylor Franchise, 2017

ARCHITECTURE AND TEXTS

ENAR600020

3 CREDITS

Learning Objective:

Introducing architecture as text that can be read and interpreted based on the relationship between the text and its context, as well as providing tools (methods) for reading architecture as text.

Syllabus:

"Il n'y a pas de hors-texte" (nothing outside the text). This is a sentence stated by the philosopher Jacques Derrida. Text is often unserstood as a written communication. However, in the context of this course, the text is not limited to written words. For example, facial expressions, advertisements, traffic signs, painting are also texts. The word "text", the word which has connection with the word "texture" and "context", comes from the Latin word texere, which means knit. This course is an introduction to architecture as a text. This course give us knowledge, how to read architecture as text, How do we read architecture as a knitting between architectural works and architects, including society condition and so on.

Prerequisites: -

References:

1. Roland Barthes, Mythologies, Vintage Classics, 2000
2. John D Caputo (ed.), Deconstruction in a Nutshell: a Conversation with Jacques Derrida, Fordham University Press, 1997
3. Umberto Eco, A Theory of Semiotics, Indiana University Press, 1976
4. Joel Gilberthorpe, What is a Text?: on the Limits of a Text as an Object of Knowledge (http://www.arts.mq.edu.au/documents/NEO_Article_5_2009_Joel_Gilberthorpe.pdf)

COASTAL ARCHITECTURE

ENAR600021

3 CREDITS

Learning Objective:

Student should be able to understand the relationship between spatial temporal, cultural, and eco-athropomorphic systems changes in coastal areas. Such understanding would contribute to awareness to integrate eco-anthroposystem ideas into architectural design in coastal areas; Student should be able to systematically express their own understanding and awarenees of design issues in coastal context.

Syllabus:

Water and architecture, basic understanding and knowledge of coastal area, continental area, sea, archipelago, spatial-temporal-cultural aspects, coastal eco-anthroposystem, the effect of island-sea interactions to coastal living-livelihood, spatial planning, facilities and architecture of coastal areas, the dynamics of dwelling and dwelling form in Indonesian coastal areas, climate change and disaster risk in Indonesian coastal area, spatial-temporal-cultural changes and eco-anthroposystem in certain Indonesian coastal area, the role of architects in coastal spatial planning and the future of coastal architecture.

Prerequisites:

Student have taken Design Methods.

References:

1. Abimanyu Takdir Alamsyah, *Regionisme dalam Penataan Permukiman di Gugus Pulau Mikro*, unpublished doctoral dissertation, PSIL Universitas Indonesia, 2006
2. Abimanyu Takdir Alamsyah, *Menata Permukiman Pulau-Laut, Mempertahankan Keberlanjutan Bertanahair Kepulauan*, Pidato pengukuhan Guru Besar Universitas Indonesia. Depok, 2009
3. Michael R. Bloomberg and Amanda M. Burden, *Urban Waterfront Adaptive Strategies in Waterfront Vision & Enhancement Strategy,* NYC Planning, 2013
4. Subandono Diposaptono and Budiman, *Tsunami*, Penerbit Buku Ilmiah Populer, 2006
5. Charles Moore and Jane Lidz, *Water + Architecture*, Thames and Hudson Ltd, 1994
6. Malcolm Newson, *Land, Water and Development: River Basin Systems and their Sustainable Development*, Routledge,1992
7. Koen Olthuis and David Keuning, *Float!. Building on Water to Combat Urban Congestion and Climate Change*, Frame Publishers, 2010
8. Djoko Pramono, *Budaya Bahari*, Gramedia Pustaka Utama, 2005
9. Alan P. Trujillo and Harold V. Thurman, *Essentials of Oceanography, Ninth Edition*, Pearson Education *Ltd, 2008*
10. Heather Vies and Tom Spencer, *Coastal Problems: Geomorphology, Ecology and Society at the Coast*, Edward Arnold, 1995
11. Ary Wahyono, AR Patji, SS Laksono, R. Indrawasih, Sudiyono dan Surmiati Ali, *Hak Ulayat Laut di Kawasan Indonesia Timur*, Media Presindo Yogjakarta, 2000

ETHNIC ARCHITECTURE

ENAR600022/ENAR610024
3 CREDITS
Learning Objective:

Student should be able to understand various aspects of architecture which arise from ethnic groups' traditions in order to explain and analyse elements and principles of architecture from particular ethnic group; able to comprehend the phenomena of ethnic architecture in general and to analyze architecture tradition of particular ethnic group.

Syllabus:

Understanding of principles and elements of ethnic architecture, forming factors, symbolic classification, cosmological view and worldview, space, place, time, meaning, anthropomorphic.

Prerequisites: -

References:

1. Amos Rapoport, *House Form and Culture*, Englewood Cliffs, 1960
2. N. Egenter, *Architectural Anthropology,* Structura Mundi, 1996
3. John Hutchinson (ed.), Anthony D. Smith (ed.), *Ethnicity*, Oxford University Press, 1996
4. Roxanna Waterson, *The Living House: An Anthropology of Architecture in Southeast Asia*, Oxford University Press, 1990
5. Rodney Needham , *Symbolic Classification*, Scott Foresman Trade, 1979
6. J. Fox (ed.), *Inside Austronesian House*, The Australian National Uni- versity, 1993
7. Bourdier & N.AlSayyad (eds), *Tradition, Dwellings and Settlements: Cross-cultural Perspectives*. University Press of America, 1989

ARCHITECTURE, CITY AND POWER

ENAR600023/ENAR610021
3 CREDITS
Learning Objective:

Student should be able to understand the role of architecture, planning and design within and between urban contexts; should be able to improve their understanding on the relationship between built environmental design and power; should be able to increase awareness of the intertwining relationship between architecture, social aspects, political aspects, economy, and culture; should be able to understand that built environment is conceived out of, and would yield particular power relation amongst the users in a specific context.

Syllabus:

The role of architecture and planning in the broader context. The relationship between design and power. Syllabus is prepared according to the themes related to the aforementioned relationship, which includes the following themes: Architecture and consumption, poverty and inequality; informality, disasters, theme parks/leisure, space of colonial/ post-colonial/nation/globalization/ neoliberalism; spatial enclaves/zone/segregation based on gender, race and ethnicity, social class, religion, spatial justice; housing and infrastructure.

Prerequisites: -

References:

1. Benedict Anderson, *Language and Power: Exploring Political Culture in Indonesia*, Ithaca: Cornell University Press, 1990 (esp. chapter "The Idea of Power in Javanese Culture")
2. James D Faubion, *Michel Foucoult: Power, Essential Works of Foucault 1954-1984, New York: The New Press, 1997*

3. Kim Dovey, *Framing Spaces: Mediating Power in Built Form*, New York: Routledge, 1999
4. Lawrence Vale, *Architecture, Power and National Identity*, Routledge, 2002 (2nd ed)
5. Abidin Kusno, *Behind the Postcolonial: Architecture, Urban Space and Political Culture in Indonesia,* Routledge, 2000
6. *Abidin Kusno, After the New Order: Space, Politics and Jakarta,* University of Hawaii Press, 2013
7. Brenda S.A Yeoh, *Contesting Space in Colonial Singapore: Power Relations and the Urban Built Environment*, Singapore University Press, 2003
8. Nezar AlSayyad (ed), *Forms of Dominance: On the Architecture and Urbanism of Colonial Enterprise*, Avebury, 1992
9. Gwendolyn Wright, *The Politics of Design in French Colonial Urbanism*, Chicago: The University of Chicago Press, 1991
10. David Harvey, *Spaces of Hope*, University of California Press, 2000
11. James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, Yale University Press, 1998
12. James Holston, *The Modernist City: an Anthropological Critique of Brasilia*, The University of Chicago Press, 1989
13. Janice E. Perlman*, Favela: Four Decades of Living on the Edge in Rio de Janeiro,* Oxford University Press, 2010
14. Mike Davis, *Evil Paradise: Dreamworlds of Neoliberalism*, The New Press, New York, 2007
15. Nezar AlSayyad & Ananya Roy, *Urban Informality: Transnational Perspectives from the Middle East, Latin America and South Asia*, New York: Lexington Book, 2004
16. Rafi Segal and Eval Weizman, *Civilian Occupation: the Politics of Israeli Architecture*, Babel and Verso, 2003
17. Teresa Caldeira, *City of Wall*, University of California Press, 2000
18. Don Mitchell, *The Right to the City: Social Justice and the Fight for Public Space*, The Guildford Press, 2003
19. Edward S. Popko, *Transition: A Photographic Documentation of a Squatter Settlement*, McGraw-Hill, 1978
20. Justin Mc Guirk, *Radical Cities: Across Latin America in Search of New Architecture,* London: Verso, 2014
21. David Harvey, *Rebel Cities: From The Right to The City to The Urban Revolution,* London: Verso, 2012
22. Marshall Berman, *All That is Solid Melt into Air: The Experience of Modernity*, New York: Penguin Books, 1982
23. Leopold Lambert, *Weaponized Architecture: The Impossibility of Innocence,* DPR-Barcelona, 2013
24. Andy Merrifield, *Metromarxism: A Marxist Tale of the City*, New York: Routledge, 2001
25. Nezar AlSayyad & Mejgan Massoumi (eds), *Fundamentalist City? Religiousity and the Remaking of Urban Space*, London: Routledge, 2011
26. Edward W. Soja, *Seeking Spatial Justice,* University of Minnesota Press, 2010
27. Faranak Mirahtab & Neema Kudva (eds), *Cities of the Global South Reader,* Routledge, 2015
28. Etienne Turpin, et.al, *Jakarta: Architecture & Adaptation*, Jakarta: Universitas Indonesia Press, 2013 (esp. chapters Introduction and sections on interviews)
29. AbdouMaliq Simone, *Jakarta Drawing the City Near*, University of Minnesota Press, 2014
30. and various movies related to themes and learning objectives

ARCHITECTURE, MEDIA AND CONTEXT

ENAR600024
3 CREDITS
Learning Objective:

The course is concerned with how media operates in architecture and bring forward various scales and contexts of architectural projects. We consider scale as both a physical attribute of objects and spaces and as ideology – as an operative idea – about relationships, which are both internal and external to the architectural object and/or field. Scale in architecture always implies context, whether the context is implied in objects, landscapes or urban fabrics. Therefore, this course also examines the dynamic and complex relationship between media, scale and architecture. We will look at architecture as media and embodiments of particular ideas and values—and at the impact that communication media have had on the practice of architecture and the way we experience our built environments.

Understanding architecture as an embodiment of ideas and there is a deep connection between the communication media used such as pictures, photos and films of architectural practices and the way we understand space. Students explore how understanding media in architecture and related contexts helps us to understand architecture and is able to transfer theoretical knowledge into architectural applications and criticism.

Syllabus:

This lecture deals with how media operate in architecture and is used in various contexts and scales. There is an introduction to history and theory about media and architecture and traces the use

of media in architecture as well as understanding the relationship between architectural theory and practice and the meaning of space. In general, the discussion includes the use of media in architecture and art, media in the Renaissance & Classicism era, several observational techniques and new views on space, Collage & Montage in architecture, photography and representation in Architecture, film and architecture, reading media contexts and scales such as miniature and Megastructure, signs and semiotics in architecture, and society of spectacle.

Prerequisites: -

References:

1. Moore, Charles and Allen, Gerald. *Dimensions. Space, shape & scale in architecture*, (McGraw-Hill, 1977)
2. Colomina, Beatriz. "The Media House." *Assemblage*, no. 27 (1995)
3. Jonathan Crary, Techniques of the observer: on vision and modernity in the nineteenth century, the MIT Press, 1992
4. Sergei M. Eisenstein, Yve-Alain Bois, and Michael Glenny. "Montage and Architecture." *Assemblage*, no. 10 (1989).
5. Colin Rowe and Fred Koetter, "Collage city and the reconquest of time," in *Collage City* (MIT Press, 1978), 118-149; "Excursis" (images): 151-177.
6. James Ackerman, "On the Origins of Architectural Photography" In Kester Rattenbury, Ed., *This is Not Architecture: Media Constructions* (New York: Routledge, 2002): 26-35.
7. Giuliana Bruno, "Site-seeing: Architecture and the Moving Image" Wide Angle 19:4 (1997): 8-24.
8. Benjamin, Walter. 1969. 'The Work of Art in the Age of Mechanical Reproduction,' *Illuminations.* Ed. H. Arendt. (New York: Schocken) pp. 217–251.
9. Susan Steward, " Miniature," in On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection (John Hopkins U.P., 1984).
10. Rem Koolhaas, *Delirious New York* (New York: Monaceli Press, 1978).
11. Debord, Guy. 1994. *The society of the spectacle*. New York: Zone Books.
12. Baudrillard, Jean. 1994. *Simulacra and Simulation*, Ed. Sheila Faria Glaser, Michigan: University of Michigan Press.
13. Venturi, Denise Scott Brown, Steven Izenour, *Learning From Las Vegas*
14. Roland Barthes, "Semiology and Urbanism," in Joan Ockman (ed), *Architecture Culture 1943-1968* (New York: Rizzoli, 1993), pp. 412-418.
15. Henri Lefebvre, *The Production of Space*, Blackwell, 1991.

BIM: BASIC PROJECT DOCUMENTATION

ENAR600025

3 CREDITS

Learning Objective::

Student should be able to use *Building Information Modeling* software in designing, developing and documenting basic architectural design.

Syllabus:

Introduction to BIM in architecture; model development, information and database handling*e*, basic analysis and documentation.

Prerequisites: -

References:

1. Eastman, C., Eastman, C.M., Teicholz, P. and Sacks, R., *BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors*. John Wiley & Sons, 2011
2. Kensek, K, and Noble, D., *Building Information Modeling: BIM in Current and Future Practice*, John Wiley & Sons, 2014
3. Holzer, D, *The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering and Construction*, John Wiley & Sons

DIAGRAM AND ARCHITECTURE

ENAR600026

3 CREDITS

Learning Objective:

Students are introduced with the advanced theory of diagram in architecture, providing the understanding on the role of diagram as part of design process, both as representation or as part of design thinking. Students were given insights on the different phases and complexity in constructing a diagram based on relevant information within a design process. Students are introduced to various forms of diagram, depending on the different aims and contexts of design.

Syllabus:

Diagrams as design thinking, diagramming as observational or active responses, organising informations for diagram-making, diagramming practices, diagramming systems, diagram as performative, diagram as design proposition and/or design activism.

Prerequisites:

Student has taken Architectural Design 2.

References:

1. Alison and Peter Smithson, *The Charged Void: Architecture*, New York: The Monacelli Press, 2001
2. Bernard Tschumi, *Notations: Diagrams and Sequences*. London: Artifice Press, 2014
3. Denis Wood, *Everything Sings: Maps for a Narrative Atlas,* Los Angeles: Siglio, 2011

4. Doina Petrescu, 'The Indeterminate Mapping of the Common', *Field Journal* 1 (1), 2007
5. Edward R Tufte, *Envisioning Information*, Cheshire, Connecticut: Graphics Pr, 1990
6. Judith Wasserman, 'A World in Motion: The Creative Synergy of Lawrence and Anna Halprin', *Landscape Journal* 31 (1/2): 33–52, 2012
7. Julienne Hanson, *Decoding Homes and Houses,* Cambridge: Cambridge University Press, 2003
8. Katie Lloyd Thomas, 'Building While Being in It: Notes on Drawing "Otherhow"'. In *Altering Practices: Feminist Politics and Poetics of Space*, edited by Doina Petrescu, London ; New York: Routledge, 2007
9. Mark Garcia, *The Diagrams of Architecture: AD Reader,* Chichester: Wiley, 2010
10. Michael T Swisher, *Diagramming the Big Idea: Methods for Architectural Composition*, New York: Routledge, 2012
11. Peter Eisenman, *Diagram Diaries,* London: Thames & Hudson, 1999
12. Petra Kempf, *You Are the City: Observation, Organization and Transformation of Urban Settings,* Baden: Lars Muller Publishers, 2009
13. Roger H Clark and Michael Pause, *Precedents in Architecture: Analytic Diagrams, Formative Ideas, and Partis,* Hoboken, N.J: Wiley, 2004
14. Sadler, Simon. 1999. *The Situationist City.* New Ed edition. Cambridge, Mass.: MIT Press.
15. Stan Allen, *Points+lines: Diagrams and Projects for the City,* New York: Princeton Architectural Press, 1999

HERITAGE ARCHITECTURE

ENAR610026
3 CREDITS
Learning Objective:

Student should be able to understand the definition and issues in heritage and conservation of architecture from the past, in particular heritage building and heritage site.

Syllabus:

Introduction to heritage architecture, including tangible and intangible aspects, Outstanding Universal Value from heritage building and heritage site. Discussion on critical issues related to heritage in architecture and city. Introduction to conservation strategies including data collection, documentation, planning, protection, development and reuse of heritage building and heritage site. Discussion on precedents of conservation in Indonesia.

Prerequisites: -

References:

1. Bernard M Feilden, *Conservation of Historic Building*, Butterworth-Heinemann Ltd, 1994
2. *Pengantar Panduan Konservasi Bangunan Bersejarah Masa Kolonial*, Pusat Dokumentasi Arsitektur dan Badan Pelestarian Pusaka Indonesia, 2011
3. Undang-undang Republik Indonesia Nomor 11 Tahun 2010 tentang Cagar Budaya
4. Peraturan Daerah Daerah Khusus Ibukota Jakarta Nomor 9 Tahun 1999 Tentang Pelestarian dan Pemanfaatan Lingkungan dan Bangunan Cagar Budaya
5. Amorim, Luiz et. Al. 'Preserving Space'. *Proceedings 6th International Space Syntax Symposium, Istanbul*, 2007 pp. 032-01 – 032-14.
6. Jean-Paul Corten et.al, *Heritage As An Asset for Inner-City Development: An Urban Manager's Guide Book*, Ammersfoort: Cultural Heritage Agency, nai010 Publishers, 2015
7. Fernando Diez, 'Heritage', dalam Cairns, Stephen, Crysler, Greig C., Heyne, Hilde. *The SAGE Handbook of Architectural Theory*. SAGE Publications, 2012, pp 274 – 86.
8. Peter J. Larkham, 'Conflict and Conservation' in *Conservation and the City*, Routledge, 1996, pp 3 – 30.
9. Adolf SJ Heuken, *Tempat-tempat Bersejarah di Jakarta*, Cipta Loka Caraka, 1997

URBAN ECOLOGY

ENAR600027
3 CREDITS
Learning Objective:

Student should be able to understand principles of ecological architecture, architectural works which consider socio-cultural values, environmental sustainability, and holistic mode of thought in designing a building or an area.

Syllabus:

Ecological functions that are able to 'provides' for the primary needs of city inhabitants, including clean water, waste disposal management, air pollution, transportation, and green spaces.

Prerequisites: -
References:

1. Amos Rapoport, *Human Aspects of Urban Form: Towards a Man Environment Approach to Urban Form and Design*, Pergamon Press, 1997
2. Amos Rapoport, *The Meaning of The Built Environment: A Non Verbal Communication Approach*, Sage Publication, 1982
3. Graham Haughton et al, *Sustainable Cities*, Cromwell Press, 1994
4. Iftikar Ahmed, ed, *Beyond Rio: The Environmental Crisis and Sustainable Livelihoods in the third world*, MacMilan Press, 1995.

5. Moh. Soeryani, ed, *Lingkungan: Sumberdaya Alam dan Kependudukan dalam Pembangunan*, UI Press, 1987

DIGITAL FABRICATION

ENAR600028
3 CREDITS
Learning Objective:

Student should be able to use digital fabrication equipment as a part of design process using various modeling approaches and tools.

Syllabus:

Introduction to fabrication process in architectural design, modeling technique, parametric approach.

Prerequisites:

Student have taken Design and Digital Media; Have basic skill in using architectural modeling software (Rhinoceros, CAD, SketchUp)

References:

1. L. Iwamoto, *Digital Fabrication: Architectural and Material Techniques*, Princenton Architectural Press, 2009
2. B. Kolarevic ed, *Architecture in The Digital Age: Design and Manufacturing*. Spon Press, 2003
3. Mode Lab, n.d. *Foundations: Grasshopper Primer* Third Edition.
4. B. Peters and P. Terri, *Inside Smart Geometry: Expanding the Architectural Possibilities of Computational Design*, Wiley & Sons Ltd, 2013

HIGH RISE BUILDING FAÇADE

ENAR600029
3 CREDITS
Learning Objective:

Student should be able to master the principles of high rise building façade including aesthetics, technical, and environmental aspects.

Syllabus:

The essence of building façade of high rise building (resistance to earth quakes, lateral force/wind and water resistance); Façade design; Material and technology for façade detailing; Green façade.

Prerequisites: -

References:

1. Wolfgang Schueller, *Struktur Bangunan Bertingkat Tinggi*, PT Eresco, 1989
2. Mario Camp, *Skycrapers: An Architectural Type of Modern Urbanism*, Birkhauser, 2000
3. Hart, Henn, and Sontag, Multi-*Storey Buildings in Steel*, Granada Publishing, 1978
4. *Details in Architecture*
5. The Images Publishing Group*, Creative Detailing by Some of The World's Leading Architects*, The Images Publishing Group Pty Ltd, 2004

INTRODUCTION TO SUSTAINABILITY (Required for International Program)

ENAR610029
3 CREDITS
Learning Objective:

To introduce students to sustainable development related to architecture: an awareness and understanding of the ecology of our globe that consists of human survival as social beings and their intervention over nature (equity & economy) and nature's laws; students are to understand inconsiderate massive human activities exploiting nature that causes both man-made as well as natural disasters.

Syllabus:

Global warming, green architecture, conflicting and competing ideas on sustainability, sustainable environments (living creatures, place & stuff), human life cycle space, social aspects of the built environment, cradle-to-cradle and upcycle.

Prerequisites: -

References:

1. Abraham, John, (2017). "An Inconvenient Sequel" – The Science, History, and Politics of Climate Change" *In* the Guardian 15 November 2017 uploaded 27 January 2018.
2. Meyer, Robinson, (2017). An Inconvenient Time for *An Inconvenient Sequel. In: The Atlantic Monthly, July 26, 2017*
3. Nijhius, Michelle, (2017) "What's Missing from an Inconvenient Sequel," Al Gore's New Climate Change Documentary?" in The New Yorker, July 29, 2017, uploaded 27 January 2018.
4. Al Gore on Inconvenient Truth, Ten Years Later. Climate State Oct 28, 2017*, 27 minutes* https://www.youtube.com/watch?v=tr1vp23guOE
5. Al Gore on "An Inconvenient Sequel" Climate change "ends with a victory for humanity". Jul 24, 2017, 14:13 minutes https://www.youtube.com/watch?v=tx2l2du7Tdg
6. Al Gore: The innovation community's role in solving the Climate Crisis July 25, 2018, 34:56 minutes https://www.youtube.com/watch?v=Vcjk_X8S5WY
7. McDonough, William, and Michael Braungart, *Cradle to Cradle: 'Remaking the Way We Make Things*. (New York: North Point Press, 2002).
8. William McDonough: "Design as Optimism" Talks at Google. May 8, 2017, 56:39 minutes https://www.youtube.com/watch?v=6pg6OxQ7vOg
9. Global Shared Prosperity | William McDonough at the CGI 2016 Annual Meeting. September 21, 2016 8:50 minutes https://www.youtube.com/watch?v=Qloqi_N36LY

10. Resource Abundance by Design, Wiliam McDonough at WEF, October 17, 2014, 21.44 minutes https://www.youtube.com/watch?v=OcO1O99UoUs
11. William McDonough explains steel's place in his 'Cradle to Cradle' concept June 26, 2018, 30:54 min https://www.youtube.com/watch?v=OLPyADxFudM
12. Schumacher, E.F. (1973). Small is Beautiful: Economics as if People Mattered." Chapter 5, "A Question of Size." London: Blond and Briggs, Ltd. http://sciencepolicy.colorado.edu/students/envs_5110/small_is_beautiful.pdf

PHOTOGRAPHY

ENAR600030/ENAR610032
3 CREDITS
Learning Objective:

Students are able to produce photography works with artistic elements and architectural photography communication through photographic process and photo-essays.

Syllabus:

Understanding visual communication principles throughtwo-dimensional medium, lighting, principles of zone system, principles of visual graphics, exposure management, and photo image perfection.

Prerequisites: -

References:

1. Michael Freeman, *The Photographer's Eyes*, Focal Press, 2007
2. Michael Freeman, Perfect Exposure, Focal Press, 2009
3. Michael Freeman, *The Photographer's Story*, Focal Press, 2012
4. Graham Clarke, *The Photograph*, Oxford University Press, 1997
5. Marita Sturken & Lisa Carthwright, Practice of Looking". Oxford University Press, 2nd edition, 2009
6. Soeprapto Soedjono, *Pot-Poutrri Fotografi*, Universitas Trisakti, 2007

GEOMETRY AND ARCHITECTURE

ENAR600031
3 CREDITS
Learning Objective:

Student should be able to understand the role of geometry as a basis of architectural form; should be able to explore various possible uses of geometry as the critical tools of analysis of existing architectural works and in the process of generating architectural design works.

Syllabus:

Development of knowledge on geometry and its implication for the development of architectural ideas and creativity; geometry and classical aesthetics of architecture; Euclidean and non-Euclidean geometry in architecture; geometry and the concept of ideal city; geometry, music, and architecture; geometry and perception; topology in architecture; geometry in nature; exploration of the mechanism of geometry in shaping a design work and its potential for further development.

Prerequisites: -

References:

1. Vitruvius, *Ten Books on Architecture*, Dover Publications, 1960
2. Colin Rowe, *Mathematics of an Ideal Villa*, MIT Press, 1976
3. Peter Davidson & Donald L. Bates, *Architecture after Geometry,* Architectural Design, 1999
4. Irenee Scalbert, Archis, *Towards a Formless Architecture: The House of the Future by A+P Smithson*, Archis, 1999
5. D'Arcy Thompson, *On Growth and Form*, Dover Publications, 1992
6. Jane Jacobs, *The Death and Life of Great American Cities*, RandomHouse, 1961
7. Elizabeth Martin, *Architecture as a Translation of Music in Pamphlet Architecture 16*, Princeton Architectural Press, 1994

FIELD STUDY

ENAR600032/ENAR610025
3 CREDITS
Learning Outcomes:
Students are able to analyze architectural phenomena and / or practices in a context of both natural and socio-cultural environments that are obtained through experience or field observations. Students are able to demonstrate this knowledge in the form of reports and documentation.
Syllabus:
Introduction to the field context, both the natural environment and the socio-cultural system; architectural observation approaches and their context; measurement, documentation and representation methods; planning activities and compiling the results of field observations.
Precondition: -

Textbooks: Relevant references to the topic offered.

INDEPENDENT STUDY

ENAR600033/ENAR610027
3 CREDITS
Learning Objective:
Students should be able to demonstrate advanced architectural knowledge on particular topic and to implement the knowledge into the development of

ideas of architectural intervention.

Syllabus:

Advanced studies on architectural knowledge in particular context; development of architectural intervention ideas based on thorough inquiry of contexts and theoretical inquiry on related topic.

Prerequisites: -

References: Relevant references to the topic offered.

DESIGN STUDY

ENAR600034/ENAR610023

3 CREDITS

Learning Objective:

Students should able to develop basic skills on reading, inquiry and writing a scientific writing related to design activities.

Syllabus:

Communicating design process through a writing that complies with scientific writing requirements; Communicating systematically literature review, development of design methods and design process through in writing.

Prerequisites: Student has passed Architectural Design 4 and is taking Final Project.

References:

1. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
2. David Evans & Paul Gruba, *How To Write A Better Thesis Dissertation*, Springer, 2014
3. F. Crews. *The Random House Handbook, ed, pgs 10-114*, McGraw-Hill Higher Education,1992
4. Borden and K. Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
5. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005

CAPITA SELECTA

ENAR600035/ENAR610022

3 CREDITS

Learning Objective:

Students should be able to expand their knowledge on various topics that support acquisition of architectural knowledge and design skills.

Syllabus:

Selected topics that are relevant to architectural knowledge, design skills and their recent development.

Prerequisites: -

References: Relevant references to the topic offered.

INTERNSHIP

ENAR600048/ENAR610048

3 CREDITS

Learning Objective:

Students should be able to understand the processes of planning, implementation and evaluation of engineering activities; to demonstrate knowledge on teamwork of relevant disciplines in professional practice; to demonstrate knowledge on the processes of planning, design and implementation of a built environment; to get involved as assistant designer/planner, assistant field project officer, assistant field supervisor, or community architect.

Syllabus:

Real project management process in a company, architecture consultant or organization. Techniques of writing simple proposal and reporting field work. Techniques of presentation, Method of managing material, data, equipment, human resources and coordination among stakeholders in engineering planning and implementation activities.

Prerequisites: -

References: -

EVERYDAY AND ARCHITECTURE

ENAR600037

3 CREDITS

Learning Objective:

Student should be able to understnd the existence of everyday phenomena as an approach to architecture; should be able to define the position of architecture discipline in responsing to various phenomena of everyday living space.

Syllabus:

Understanding and historical background of the concept of the 'everyday' in architecture; domestic space; aesthetic in architecture and the 'everyday', the concept of an ideal city and its relation to the 'everyday'; cyber space and virtual space; the phenomenon of the 'everyday' in urban space: a participatory approach in architecture.

Prerequisites: -

References:

1. Steven Harris & Deborah Berke (eds.), *Architecture of the Everyday*, Princeton Architectural Press, 1997
2. Sarah Wigglesworth & Jeremy Till (eds.), *The Everyday and Architecture*, Architectural Design, 1998
3. Michel de Certeau, *The Practice of Everyday Life*, University of California Press, 1998
4. Malcolm Miles, *The Uses of Decoration: Essays in the Architectural Everyday*, Wiley, 2000
5. Arnstein, *Ladder of Citizen Participation*, 1969

2D DIGITAL DESIGN COMMUNICATION

ENAR600038/ENAR610018
3 CREDITS
Learning Objective:

Student should be able to use 2D digital drawing media in architectural design process; should be able to choose and use various way and technique in drawing for particular purpose.

Syllabus:

Drawings in CAD and NURBS, pixel base drawing, vector base drawing, architectural representation and diagram.

Prerequisites: Student have taken Basic Design 2

References:

1. Hamad M.M, *Autocad 2010 Essentials,* Jones and Bartlett, 2010
2. Robert McNeel & Associates, *Rhinoceros: NURBS Modelling for Windows*, USA, 1998
3. H Sondermann, *Photoshop in Architectural Graphics*, SpringerWienNewYork, 2009

3D DIGITAL DESIGN COMMUNICATION

ENAR600039/ENAR610019
3 CREDITS
Learning Objective:

Student should be able to understand the concept of rendering/visualization in architecture and interior, including framing, lighting and material. Student should be able to use 3D Digital Environment to produce drawing in developing and communicating design idea.

Syllabus:

Introduction to framing, using vRay for exterior and interior framing, using naturang light, artificial light, material and texture, post-production

Prerequisites: -

References:

1. ChaosGroup Youtube Channel: https://www.youtube.com/user/ChaosGroupTV/playlists
2. Alex Hogrefe's Architectural Graphic Tutorials: https://visualizingarchitecture.com

LIFE CYCLE ENVIRONMENT

ENAR600040/ENAR610030
3 CREDITS
Learning Objective:

Student should be able to evaluate environmental feasibility for the users, based on their life cycles: birth, infancy, early childhood, childhood, adolescence, adulthood, old age, death, in terms of places and rites.

Syllabus:

Introduction, overview and definition to life-cycle environment in urban and rural/traditional environment; psychology of pregnant mother, birth environment, house, hospital, and maternity hospital, rites of birth, infant and his/her parent environment; sensory development of infant, psychological development of a child; playing environment and unwritten rules of playing, home environment, vicinity, and pre-school; parent and childecare; adolescence and rites, adolescence space; adult production space and marital rites; working environment; elderly; death space and rites.

Prerequisites: -

References:

1. Koentjaraningrat, *Ritus-Ritus Peralihan di Indonesia*, Balai Pustaka, 1979
2. A.Van Gennep, *The Rites of Passage*, (Terjemahan M. Viadon dan G), University of Chicago Press, 1960
3. Erik H Erickson, *Life Cycle Completed*, WW Norton & Company, 1997
4. Howard E. Gruber and J Jacques Voneche, *The Essential Piaget*, Gruber, NY: Basic Book, 1977
5. Saya S Shiraishi, *Young Heroes*, Cornell University Press, 1997.
6. Film: *Not One Less*, 1999; *Freedom Writers*, 2007*;The Human Body: The Incredible Journey from Birth to Death* (BBC, The Original BBC TV Series Plus: The Making of The Human Body), *Human Instinct* (BBC, The Complete Series)

INTRODUCTION TO SPATIAL ANALISIS

ENAR600041
3 CREDITS
Learning Objective:

This course trains students with spatial and quantitative data analysis to answer simple and basic urban planning problems. This course uses active, case-based learning with a focus on spatial data analysis using geographic information systems (GIS). Students will be required to attend classes, complete exercises and independent assignments in the first half of the semester. On the second half, students will have to propose a planning issue to be solved using GIS.

Syllabus:

Students will be taught to use of GIS to obtain, store, manage, present and analyse spatial and quantitative data to help urban architects and planners. This course uses computer aids with ESRI ArcGIS software and internet networks to connect students with the UI distance learning system, namely EMAS. This course will use Indonesian for regular classes and English for International Special Classes (KKI).

References:

1. Allen, D. W. (2013). GIS Tutorial 2: Spatial Analysis Workbook. Third Edition. Redlands, CA: ESRI Press.
2. Banai-Kashani, R. (1989). A New Method for Site Suitability Analysis: The Analytic Hierarchy Process. Environmental Management, 13(6), 685-693.
3. Gorr, W. L., & Kurland, K. S. (2013). GIS Tutorial 1: Basic Workbook, 10.1 Edition. Fifth Edition. Redlands, CA: ESRI Press.
4. Lu, D., Mausel, P., Brondízio, E., & Moran, E. (2004). Change Detection Techniques. International Journal of Remote Sensing, 25(12), 2365-2401.
5. Malczewski, J. (2004). GIS-based Land-Use Suitability Analysis: A Critical Overview. Progress in Planning, 62(1), 3-65.
6. McLafferty, S. L. (2003). GIS and Health Care. Annual Review of Public Health, 24(1), 25-42. Mitchell, A. (1999). The ESRI Guide to GIS Analysis: Geographic Patterns & Relationships
7. (Vol. 1). Redlands, CA: ESRI.
8. Mitchell, A. (2005). The ESRI Guide to GIS Analysis: Spatial Measurements & Statistics (Vol. 2). Redlands, CA: ESRI.
9. Setha Low, Spatializing Culture: The Ethnography of Space and Place, Taylor Franchise, 2017

INTERIOR DESIGN

ENAR600042
3 CREDITS
Learning Objective:

Student should be able to have knowledge about concept, principles, elements, and systems in interior space that support human comfort, safety, and well-being, with consideration of human factors in the design process.

Syllabus:

Principles and issues in interior design, elements of interior space, atmosphere and spatial perception, material and interior construction, spatial comfort factors, human factors and universal design, interior space typology.

Prerequisites: -

References:

1. Binggeli,Corky, *Building Systems for Interior Designer*, Wiley, 3rd edition, 2016
2. Caan, Sashi. *Rethinking Design and Interiors: Human Beings in the Built Environment*. Laurence King Publishing, 2011.
3. Dodsworth, Simon. *Fundamental of Interior Design*, Ava Publishing, 2009
4. Farrelly, Lorraine. *Construction+Materiality*. Ava Publishing, 2009
5. Leydecker, Sylvia. *Designing Interior Architecture: Concept, Typology, Material, Construction*. Basel. Birkhauser, 2013
6. Mesher, Lynne. *Basic Interior Design: Retail Design*. Ava Publishing, 2009

CITY PLANNING

ENAR600043
3 CREDITS
Learning Objective:

Student should be able to understand history and theory of urban planning though historical survey and/or through key themes; should be able to understand (1) how urban space works (based on historical context) based on spatial planning research; (2) key paradigms in urban planning think- ing. This subject is arranged around principle that history of urban planning is a theory of urban planning that is bounded by planning ethics.

Syllabus:

Syllabus is arranged following a chronological order that is divided by 5 sections: (1) reflection towards design ideas, origin and design practice; industrial city and housing question; spatial or- der exploration; (2) Modernist City; Colonial and Post-Colonial experiments; (3) Sub-urban dream (legacy of American city planning); from ghetto to city role model (racial and ethnic control); (4) City and citizenship in different historical moments; spatial rules and arrangements (basic rules of design); urban crisis, urban management, and business city; building a world class city in global south; (5) compatible theories in design and justice; see design over neo-liberalism: paradigm occurs in planning.

As an alternative, syllabus could also interrupt this chronological order and arrange as a survey class that arrange these materials in key themes, such as: Empire; Colonial/Post-colonial; Modernity and Alternatives; Pacific Rim Capitalism Transnational Urbanism; Race/Ethnic, Planning and Real Estate; City and Village; Marginality; Re-building A City; Entrepreneur City; Dystopia Planning and Post-city.

Prerequisites: -

References:

1. Selected articles from *Journal of Planning Theory & Practices*; *Cities, Space & Polity*, *International Journal on Urban Regional Research*; *Journal of Planning Education and Research*; *Journal of Urban Studies*; *Journal of Urban Forum*; *Journal of Urban History, Environment and Urbanization*; *Antipode*; *Journal of Planning Literature*
2. Paul H. Gleye, "City Planning versus Urban Planning: Resolving Profession's Bifurcated

Heritage," in *Journal of Planning Literature*, 2015, Vol 30(1), 3-17.
3. John Friedmann. *Planning in the Public Domain: From Knowledge to Action,* 1987
4. Peter Hall, *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*, Blackwell Publishing, 2002 (3rd ed)
5. Friedrich Engels*, The Housing Question,* Lawrence and Wishart, Ltd, 1942
6. Mike Davis, *Planet of Slum,* Verso*, 2007*
7. Dolores Hayden, *Redesigning the American Dream: The Future of Housing, Work, and Family Life,* W.W Norton & Company, 2007 (2nd ed)
8. Christine Boyer, *Dreaming the Rational City: The Myth of American City Planning,* MIT Press, 1986
9. Kermit C Parsons & David Schuyler (eds), *From Garden City to Green City: The Legacy of Ebenezer Howard,* Baltimore: The John Hopkins University Press, 2002
10. The Congress for the New Urbanism. 2001. Charter.
11. Robert Caro, *The Power Broker: Robert Moses and the Fall of New York*, Vintage, 1975
12. Marshall Berman, *All That is Solid Melts into Air,* Penguin Book, 1988
13. James Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, Yale University Press, 1999
14. Nezar AlSayyad (ed), *Forms of Dominance: On the Architecture and Urbanism of the Colonial Enterprise,* Avebury, 1992
15. Lisa Peattie, *Planning: Rethinking Ciudad Guayana,* University of Michigan Press, 1987
16. James Holston, *The Modernist City: An Anthropological Critique of Brasilia,* University of Chicago Press, 1989
17. June Manning Thomas and Marsha Ritzdorf (eds), *Urban Planning and the African American Community: In the Shadows,* SAGE Publication, Inc, 1996
18. Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States*, Oxford University Press, 1987
19. St Clare Drake & Horace R. Cayton, *Black Metropolis: A Study of Negro Life in a Northern City*, University of Chicago Press, 1993.
20. Edward Banfield, *Unheavenly City Revisited*, Waveland Press, 1990
21. Susan S Fainstein & Scott Campbell, *Reading in Planning Theory*, Wiley-Blackwell, 2011
22. Lewis Mumford, *The City in History: Its Origin, Its Transformation and Its Prospects*, A Harvest/HBJ Books, 1961
23. Stephen Graham & Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities, and the Urban Condition*, 2001
24. Aihwa Ong & Ananya Roy (eds), *Worlding Cities and the Art of Being Global*, Wiley-Blackwell, 2011
25. Patsy Haley, E.A Silva, et.al, "*Routledge Handbook on Planning Research Methods*" Routledge, 2015.
26. Faranak Mirahtab, *Cities in the Global South Reader*, Routledge, 2014.

URBAN DESIGN PRINCIPLES

ENAR600044
3 CREDITS
Learning Objective:

Student should be able to understand urban spatial design theory and its application into urban physical design; able to understand urban design method, inquiry, and design research, know various perspectives and approaches in urban design; able to understand basic principles of urban spatial design and able to interpret it into certain case of urban area.

Syllabus:

Principles of ordering system in two and three-dimension (vista, type, scale, precedent). Urban spatial condition and spaces between buildings, theory of urban spatial and urban typology, elements of urban design, conceptual exploration and basic research method through urban design enquiry and design research, environmental and spatial planning study. Component of urban design as control of process in forming the physical environment of urban space (land use, building intensity, setbacks, building coverage, building coefficient, building envelope, open green spaces, circulation, parking, infrastructure, conservation and visual/townscape corridor).

Prerequisites: -

References:

1. Hamid Shirvani, *Urban Design Process*, Van Nostrand Reinhold Co, 1987
2. Ali Madanipour, *Design of Urban Space: an Inquiry into a Socio-Spatial Process*, John Wiley and Sons, 1996
3. Gideon S. Golany, *Ethics and Urban Design: Culture, Form and Environment*, Wiley, 1995
4. Matthew Carmona, et al, *Public Places - Urban Spaces*, Architectural Press, 2003
5. Ray Gindroz, *The Urban Design Handbook: Techniques and Working Methods*, W.W. Norton and Company, 2003
6. Geoffrey Broadbent, *Emerging Concepts in Urban Space Design*, Taylor and Francis, 1995

7. Congress for the New Urbanism, *Charter of the New Urbanism*, McGraw-Hill Professional, 1999
8. Allan B. Jacobs, *The Great Streets*, The MIT Press, 1995
9. Roger Trancik, *Finding Lost Space Theories of Urban Design*, Van Nostrand Reinhold Company, New York, 1986
10. Christopher Alexander, *The Oregon Experiment*, Oxford University Press, 1975
11. Yoshinobu Ashinara, *The Aesthetics Townscape*, MIT Press, 1984
12. Edmund Bacon, *Design of Cities*, Thames and Hudson, 1967.
13. Kevin Lynch, *The Image of The City*, MIT Press 1960
14. Kevin Lynch, *What is Time and Place,* MIT Press 1972

ARCHITECTURAL PSYCHOLOGY

ENAR600045
3 CREDITS
Learning Objective:
Student should be able to use basic conceptual knowledge of psychological process to identify and analysis human need in using built environment and outdoor space.
Syllabus:
Relationship between architecture and human behavior, motivation, needs, and value as basis of human actions, Gestalt perception, Ecological perception (Gibson), Affordances and its implementation in architecture, definition of cognition and its implementation in architecture, personal space, privacy, territoriality, crowding, post occupancy evaluation (POE).
Prerequisites: -
References:

1. Bell, Fischer and Greene, *Environmental Psychology*, Harcourt Publisher, 1996
2. Bryan Lawson, *The Language of Space*, Architectural Press, 2001
3. Byron Mikellides, *Architecture for People: Exploration in a New Humane Environment*, 1980
4. Wolfgang F.E. Preisser, Harvey Z. Rabinowitz, Edward T. White, *Post-Occupany Evaluation*, Van Nostrad Reinhold, 1988
5. Dak Kopec, *Environmental Psychology for Design* , Fairchild Books, 2012

REAL ESTATE

ENAR600046
3 CREDITS
Learning Objective:
Student should be able to demonstrate knowledge on real estate, and its relation to architecture and built environment.
Syllabus:
Definition of real estate, planning and development process of real estate (the eight phases of Real Estate Development Process), basic knowledge on property rental and sales project's cash-flow (short and long term project) and simple feasibility study.
Prerequisites: -
References:

1. Mike A. Miles, et.al, *Real Estate Development: Principles and Process*, Urban Land Institute, 2000
2. Carl Gunther, *Real Estate Fundamentals (Study Guide)*, 1995
3. Hartono Poerbo, *Tekno Ekonomi Bangunan Bertingkat Banyak*, Djambatan, 1993
4. Ralph Basile, et.al, *Downtown Development Handbook*, Urban Land Institute, 2000
5. Adrienne Schmitz, *Residential Development Handbook*, 3rd ed, Urban Land Institute, 2004
6. Dean Schwanke, *Mixed Used Development Handbook*, 2nd ed, Urban Land Institute, 2003

PROJECT FEASIBILITY

ENAR600047
3 CREDITS
Learning Objective:
Student should be able to propose a project plan and explain the feasibility of a project, or program development in a clear, comprehensive and systematic manner.
Syllabus:
Basic knowledge which covers the requirement analysis, technical and environmental feasibility, time feasibility, socio-cultural aspects, legal feasibility, market and economic feasibility, exercise on issue formulation, SWOT analysis, scope, activities types and products, strategy, operational standard procedure, analyzing organizational plans, human resources and management, calculating market and economic possibility, as well as legal feasibility in relation to institutional consequences.
Prerequisites: -
References:

1. Novom, Martin L. *The Fundraising Feasibility Study: It's Not About the Money*. Hoboken, New Jersey: John Wiley & Sons Inc, 2007.
2. Suad Husnan, *Studi Kelayakan Proyek Bisnis*, Yogyakarta: UPP STIM YKP, 2014.
3. Kasmir, Jakfar, *Studi Kelayakan Bisnis*, Jakarta: Kencana Prenada Media Group, 2013.

LIGHTING DESIGN

ENAR600048/ENAR610031
3 CREDITS
Learning Objective:
Student should be able to design lighting fixtures and ambience for interior and exterior uses, using artificial as well as natural lights through a critical, active collaborative learning process based on functional and aesthetical problems.

Syllabus:
Basic lighting, color, natural light, artificial light, light distribution, interior lighting, exterior lighting (façade of a house and high rise), urban lighting.
Prerequisites: -
References:

1. William M.C. Lam, *Perception and Lighting as Formgivers for Architecture*, McGraw-Hill, 1977
2. Norbert Lechner, *Heating Lighting Cooling*, 2nd edition, translated by PT RajaGrafindo Persada, 2007
3. John E Flyinn, *Architectural Interior System, Van Nostrand Reinhold Environmental Engineering Series*, Van Nostrand Reinhold Company, 1971

SITE PLANNING AND DESIGN

ENAR600049/ENAR610033
3 CREDITS
Learning Objective:

Student should be able to implement basic principles of site and environmental planning in an integrated way.

Syllabus:

Principles and issues in site planning, mass orientation, natural site condition, role of outdoor elements, topographical study of site and environment, trees and vegetation, typology and analysis of site planning, site and environmental design method.

Prerequisites: -
References:

1. Joseph DeChiara & Lee L. Koppelman, *Standard Perancangan Tapak*, Penerbit Erlangga, 1994
2. Albert J. Rutledge, *Anatomy of a Park: The Essentials of Recreation Area Planning and Design*, ASLA, 1971
3. William A. Mann, *Landscape Architecture, An Illustrated History in Timeless, Site Plans and Biography*, 1993
4. Geoffrey & Susan Jellicoe, *The Landscape of Man, Shaping the Environment From Prehistory to the Present Day*, Thames and Hudson Ltd,1995
5. Charles W. Moore et al, *The Poetics of Gardens*, MIT Press, 1993
6. Francis DK Ching, *Architecture: Form, Space and Order*, Erlangga, 1996

URBAN HOUSING THEORY

ENAR600050
3 CREDITS
Learning Objective:

Student should be able to analyze the impact of housing, planning, and development in urban setting.

Syllabus:
Housing problems in an urban setting, studies on typology and housing area, methods and building typology, studies on economics and management of housing, studies on planning and design of urban housing.
Prerequisites: -
References:

1. Norma L. Newmark & Patricia J. Thompson, *Self, Space & Shelter: An Introduction to Housing*. New York: Harper and Row, Publisher, Inc., 1977
2. John F. C. Turner, *Housing By People: Towards Autonomy in Building Environtments*, Marion Boyars Publishers Ltd, 1976
3. Graham Towers, *At Home in The City: An Introduction to Urban Housing Design*, 2005
4. Paul Balchin & Maureen Rhoden. *Housing: The Essential Foundations,* Routledge, New York 2003
5. Abidin Kusno, *Politik Ekonomi Perumahan Rakyat dan Utopia Jakarta*, 2012

SPECIAL TOPIC OF COLLABORATION

ENAR600051
3 CREDITS
Learning Outcomes:
Having the ability to solve design problems by collaborating with students from several fields of study. Having insights about engineering in the future.
Syllabus:
Study the development of design and engineering; the application of contemporary engineering; developments in some other disciplines that affect architectural design.
Precondition: -

Textbooks: Relevant references to the topic offered.

SPECIAL TOPIC ON ARCHITECTURAL DESIGN

ENAR600052/ENAR610034
3 CREDITS
Learning Objective:
Students should be able to demonstrate knowledge on current architectural discourse and its implementation in architectural design.
Syllabus:
Studies on the development of contemporary architectural theories; the development of architectural design methods; the development of architectural representation techniques; the development in other relevant disciplines that have impacts of the development of architectural design theories and methods.
Prerequisites: -
References: Relevant references to the topic offered.

SPECIAL TOPIC IN URBAN DESIGN

ENAR600053/ENAR610037
3 CREDITS
Learning Objective:
Students should be able to demonstrate knowledge on current urban design discourse and its implementation in urban design.

Syllabus:
Studies on the development of urban design theories; the development of urban design methods; studies on current issues that are relevant to urban design; the development in other relevant disciplines that have impacts on the development of urban design theories and methods.
Prerequisites: -
References: Relevant references to the topic offered.

SPECIAL TOPIC ON URBAN HOUSING AND SETTLEMENT

ENAR600054/ENAR610038
3 CREDITS
Learning Objective:
Students should be able to demonstrate knowledge on current development of urban housing and settlement.
Syllabus:
Studies on the development of urban housing and settlement theories; studies on current issues that are relevant to urban housing and settlement.
Prerequisites: -
References: Relevant references to the topic offered.

SPECIAL TOPIC ON ARCHITECTURAL HISTORY, THEORY AND CRITICISM

ENAR600055/ENAR610055
3 CREDITS

Learning Objective:
Students should be able to demonstrate historical and theoretical knowledge on the development of architecture.
Syllabus:
Studies of architectural history throughout various periods of time; the development of discourse on architectural history and theory.
Prerequisites: -
References: Relevant references to the topic offered.

SPECIAL TOPIC ON BUILDING TECHNOLOGY

ENAR600056/ENAR610036
3 CREDITS
Learning Objective:
Students should be able to demonstrate knowledge on current discourse on sustainability and its implementation on architectural design.
Syllabus:
Studies on the development of theories on bulding technology and sustainable environment; studies on relevant issues of sustainability; architectural design innovative practice related to sustainability; innovation on building structure, construction, material and systems.
Prerequisites: -
References: Relevant references to the topic offered.

BUILDING UTILITY

ENAR600057
3 CREDITS
Learning Objective:
Student should be able to explain utility system in high-rise and wide span building that support the building to function well from the perspective of user safety and comfort.
Syllabus:
Clean, grey, and black water system, artificial ventilation system, artificial lighting system, audio system, CCTV, telephone, lightning rod, vertical transportation system, building cleaning system.
Prerequisites: -
References:

1. John S Reynolds and Benjamin Stein, Mechanical and Electrical Equipement for Buildings, John Willey and Sons, 1999
2. Ken Yeang, The Skyscraper Bioclimatically Considered, Academy Press, 1998
3. Esmond Reid, Understanding Building, MIT Press, 1984
4. Hartono Poerbo, Utilitas Bangunan: Buku Pintar untuk Mahasiswa Arsitektur-Sipil, Djambatan, 1992

TECTONIC WORKSHOP

ENAR600058
3 CREDITS
Learning Objective:
Students should be able to produce construction design based on tectonic knowledge and to realize the design by applying making skills.
Syllabus:
Design through material exploration approach; materiality of materials; construction, construction skills and techniques; detail and finishing.
Prerequisites: -
References:

1. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, MIT Press, 2001
2. Richard Weston, *Material, Form and Architecture*, Yale University Press, 2003
3. Markus Heinsdorff, *Die Bambusbauten, The Bamboo Architecture, Design with Nature*, Design Media Publishing, 2013
4. Francis DK Ching, *Building Construction Illustrated,* Wiley, 2014

Transition Rules

1. The implementation of 2020 curriculum will start at the Odd Semester 2020/2021. In principle, after the 2020 Curriculum is implemented, only the subjects listed in the 2020 curriculum will be offered.
2. Class of 2019 and earlier should follow the 2020 curriculum by referring to the transition rules.
3. The transition period takes place for one year in the academic year of 2020/2021. When necessary, courses with changes on its semester's placement (from Even to Odd, or vice versa) will be opened in both semesters of the transition period (Academic Year 2020 / 2021).
4. If there is a change in a subject's credit, the number of credits that will be calculated for graduation are the number of credits applied when the students took the course. Students who need to retake such subjects after the 2020 Curriculum is implemented will acquire the subjects with its new credit numbers.
5. If a compulsory subject in the 2016 Curriculum is removed without any equivalence in the 2020 Curriculum, then credits obtained from such subject will still be included in the calculation of total 144 credits required for graduation. Students who have not passed such course can take either newly required subjects or other elective courses in the 2020 Curriculum to complete their 144 credits.
6. Students who have not passed the compulsory subjects in the 2016 Curriculum will need to take the similar or equivalent subjects in the 2020 Curriculum. The 2016 Curriculum courses that are not listed in the transition table below will have a similar name and credit numbers in the 2020 Curriculum.
7. Students from the 2018 class or earlier who have not passed the Physics (Mechanical and Thermal) Laboratory in Curriculum 2016 should take any Elective subject in the 2020 Curriculum.
8. The Digital Design Media and History and Theory of Architecture 2 subjects are now offered in the odd semester. In the transition period, Digital Design Media and History and Theory of Architecture 2 subjects will be open in the even semester for students of 2019 and above who need to take/retake the subjects.

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

No.	Subject name in Curriculum 2016	Credit 2016	Subject name in Curriculum 2020	Credit 2020
1.	Integrated Character Building A	6	Integrated Character Building (MPKT)	5
	Integrated Character Building B	6		
2.	English	3	English	2
3.	Sports/Arts	1	Can be changed into Electives	1-3
4.	Physics (Mechanical and Thermal) Laboratory	1	Can be changed into Electives	1-3

Undergraduate Program in Interior Architecture

Program Specification

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

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

16. Course Composition

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

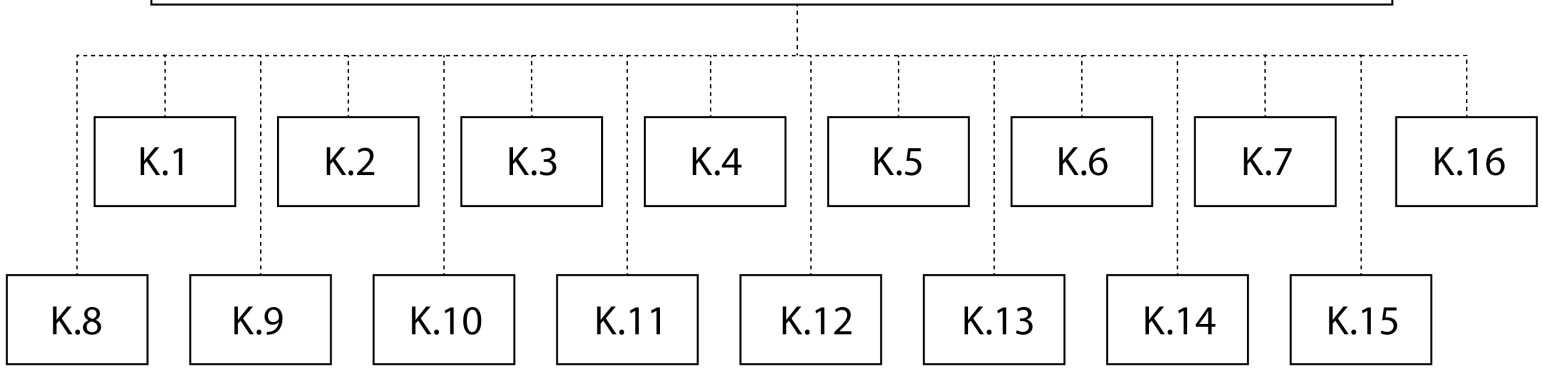
Job Opportunity

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

Graduate Profile / Competencies:

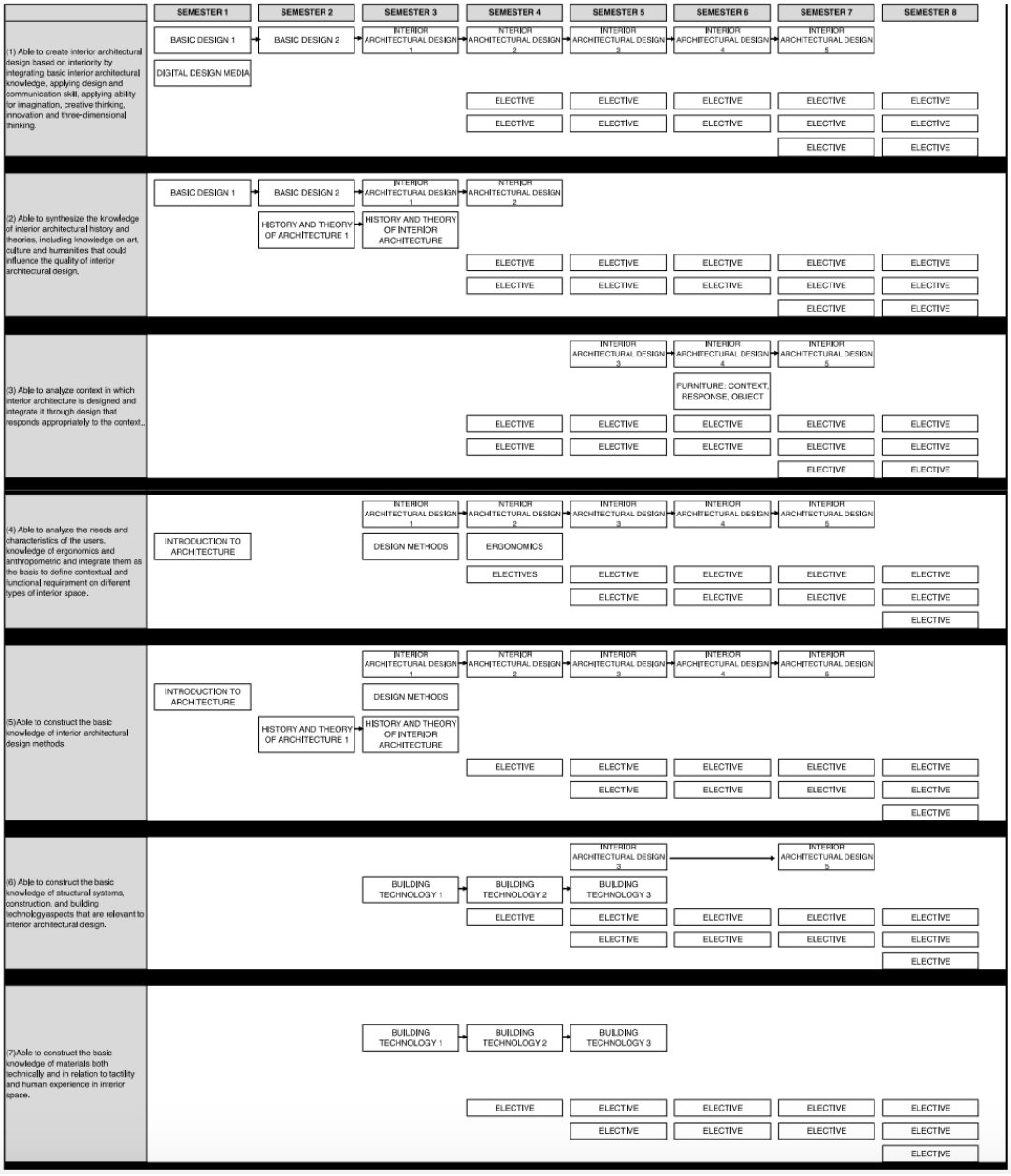
Sarjana Arsitektur Interior is a graduate who has the ability to design interior architectural works with respect to context and local needs and based on the application of basic knowledge of interior architecture. Graduates are expected to demonstrate the ability as:

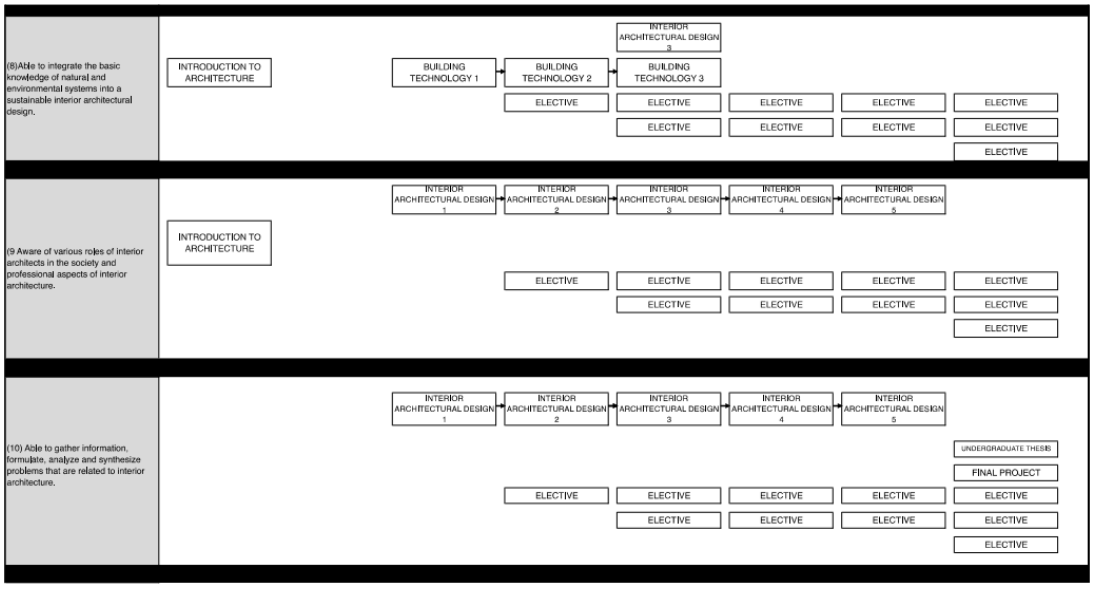
1. An Initiator – able to provide solutions to spatial problems critically and creatively with respect to local contexts and needs.
2. A Designer – have the skill in assembling interior architectural elements and materials, have an understanding of buildability aspects, and have sensitivity in creating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



Course Diagram in Achieving Compentencies

Undergraduate Program in Interior Architecture




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

S1 Arsitektur Interior

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

Curriculum Structure Undergraduate Interior Architecture Program

Code	Subject	SKS
	1st Semester	
UIGE600003	English	2
UIGE600004	Religion	2
ENGE600001	Calculus 1	3
ENAI600001	Basic Design 1	5
ENAR600009	Introduction to Architecture	3
ENAI600015	Digital Design Media	3
	Sub Total	**18**
	2nd Semester	
UIGE600007	Integrated Character Building	6
ENGE600004	Linear Algebra	4
ENAI600002	Basic Design 2	7
ENAI600010	History and Theory of Architecture 1	3
	Sub Total	**20**
	3rd Semester	
ENGE600005	Mechanics and Thermal Physics	3
ENAI600003	Interior Architectural Design 1	7
ENAR600011	Design Methods	3
ENAI600012	History and Theory of Interior Architecture	3
ENAI600013	Building Technology 1	3
	Sub Total	**19**
	4th Semester	
ENAI600004	Interior Architectural Design 2	8
ENAI600014	Building Technology 2	3
ENAI600018	Ergonomics	3
	Elective *	3
	Elective *	3
	Sub Total	**20**

	5th Semester	
ENAI600005	Interior Architectural Design 3	9
ENAI600016	Building Technology 3	3
	Elective *	3
	Elective *	3
	Sub Total	**18**
	6th Semester	
ENAI600006	Interior Architectural Design 4	9
ENAI600017	Furniture: Context, Response, Object	3
	Elective *	3
	Elective *	3
	Sub Total	**18**
	7th Semester	
ENAI600007	Interior Architectural Design 5	9
	Elective *	3
	Elective *	3
	Elective *	2
	Sub Total	**17**
	8th Semester	
ENAI600008	Undergraduate Thesis/ Final Project	6
	Elective *	3
	Elective *	3
	Elective *	2
	Sub Total	**15**
	Total	**145**

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

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

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

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

Electives

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

Interior Architecuture Required Courses

INTRODUCTION TO ARCHITECTURE

ENAR600009

3 CREDITS

Learning Objective:

Student should be able to understand basic principles in architecture, including basic theories, the relationship between architecture and human, architecture and nature, architecture and aesthetic, and architecture and technology; able to understand the position of architecture position among other disciplines.

Syllabus:

What is architecture? (Introduction: Architecture as discourse, career in architecture, arkhe + tekton; tekhne; Laugier primitive hut and the idea of shelter)

Aesthetic (proportion; rhythm; scale; golden rules; aesthetic trinity of classic Greek; Mandala and Maya; Taoism and nature, mathematical pattern in geometry)

Form and Space (Plato and form; type and how Quatrèmere de Quincy mimic nature; form and function; various views on space and the different meaning of raum and spatium)

Materiality and Materialization (re-investigating tekhne; the importance of understanding the characteristic and potential of material, tectonic which does not limit to construction)

Context (understanding of natural environment, artificial environment, and built environment; our existence and place according to Heidegger; material and context)

Human and relationship with others I (the importance of understanding human for designer; under- standing of human being; body, senses and space; personal space according to Hall)

Human and relationship with others II (space, the presence and the remoteness of people, the meaning of place for human)

Architects as profession

Prerequisitest: -

References:

1. James O'Gorman, *ABC of Architecture*, University of Pennsylvania Press, 1998
2. Marcus Vitruvius Pollio, *Decem Libri de Architectura*, Biblio Bazaar, 2008
3. Adrian Forty, *Words and Buildings: a Vocabulary of Modern Architecture*, Thames and Hudson, 2004
4. Yusuf B. Mangunwijaya, *Wastu Citra*, Gramedia Pustaka Utama, 1988
5. Martin Heidegger, *Building Dwelling Thinking, in Poetry, Language, Thought*, HarperPerennial, 1975
6. M. Merleau-Ponty, *Phenomenologie de la Perception Chapter II*, Routledge & Kegan Paul Ltd, 1962
7. Edward T. Hall, *The Hidden Dimension*, Double-day, 1966

HISTORY AND THEORY OF ARCHITECTURE 1

ENAR600010

3 CREDITS

Learning Objective:

Student should be able to understand the history of modern architecture from 1750s to present.

Syllabus:

This course is a survey of modern architecture history from 1750s to present, with main focus on the development of modern architecture. This course also discusses the relationship between the development of architecture and its socio-cultural, political, and technological contexts. This course also investigates principles in architecture and design. It emphasizes on several important moments in the development of modern architecture, and provide knowledge on the theories that are relevant to modern architecture.

Prerequisites: -

References:

1. Kenneth Frampton, *Modern Architecture: A Critical History 3rd Ed,* Thames & Hudson, 1997
2. Leonardo Benevolo, *History of Modern Architecture, Volume I & II*, MIT Press, 1979
3. Iain Borden, *Architecture and the Sites of History, Interpretations of Buildings and Cities*, Butterworth Architecture, 1995
4. William J.R. Curtis, *Modern Architecture since 1900, Third Edition*, Phaidon Press, 2002
5. Diane Ghirardo, *Architecture After Modernism,* Thames & Hudson, 1996
6. Spiro Kostof, *A History of Architecture, Settings & Rituals, 2nd Edition*, Oxford University Press, 1994
7. Bernd Evers & Christof Thoenes (eds.), *Architectural Theory: from the Renaissance to the Present,* Taschen, 2003

DESIGN METHODS

ENAR600011

3 CREDITS

Learning Objective:

Student should be able to understand the basic thinking and methods of designing built environment; student should be able to explain the basic thinking and apply one of the design methods through writings and drawings.

Syllabus:

Theory and method of thinking; phenomenology, semiotic; theory and method of identifying problems; architectural observation, design knowledge, factual, deontic, instrumental, black box, clear box; theory and method of understanding problems, analysis and synthesis; Theory and

methods of problem solving.

Prerequisites:

Student has taken Introduction to Architecture

References:

1. Christoper Alexander, *Notes on The Synthesis of Form*, Harvard University Press,1994
2. Don Koberg & Tim Bagnall, *The Universal Traveller: a Soft System Guide to Creativity, Problem Solving, & the Process of Reaching Goals*, Crisp Learning, 1991.
3. Gunawan Tjahjono, *Metode Perancangan: Suatu Pengantar untuk Arsitek dan Perancang*, 1998
4. Jean-Pierre Protzen & David J. Harris, *The Universe of Design: Horst Rittel's Theories of Design and Planning*, Routledge, 2010

HISTORY AND THEORY OF INTERIOR ARCHITECTURE

ENAI600013

3 CREDITS

Learning Objectives:

Students should be able to have an understanding architecture history and its relation to interior design history and art history, and also theories that are evolved in the development of interior architecture.

Syllabus:

Interior and interiority; relationship between body and space; types in interior architecture; sign and society; design in society; semiotics in design; critical regionalism; locality issue in design, development of interior representation.

Prerequisites:

Student has taken History and Theory of Architecture 1

References:

1. Shashi Caan Being, *Rethinking Design and Interiors: Human Beings in the Built Environment*, Laurence King Publishing, 2011.
2. Christine McCarthy, *Toward a Definition of Interiority*, in *Space and Culture,* Vol. 8, 2005, pp. 112-125
3. Mark Kingwell, Mark Taylor and Julieanna Preston, *Tables, Chairs, and Other Machines for Thinking,* in *Intimus,* by Mark Taylor and Julieanna Preston (eds.), Wiley-Academy, 2006, pp. 173-179
4. Gaston Bachelard, *The Dialectics of Outside and Inside,* in *Intimus,* by Mark Taylor and Julieanna Preston (eds.), Wiley-Academy, 2006, pp. 22-25
5. Ed Hollis, *The Secret Lives of Buildings: From the Ruins of the Parthenon to the Vegas Strip in Thirteen Stories*, Picador, 2010.
6. Michel Foucault, *Discipline and Punish: The Birth of The Prison (Chapter on Disciplining the Docile Bodies) 2nd ed,* Vintage Books, 1995
7. Neil Leach (ed), *Rethinking Architecture: A Reader in Cultural Theory (Articles by Umberto Eco and Roland Barthes),* Routledge, 1997
8. Jean Baudrillaed, *System of Objects*, Verso Books, 2006
9. Evans, Robin "The Developed Surface: An Enquiry into the Brief Life of an Eighteenth Century Drawing Technique", in *Translations from Drawing to Building and Other Essays*, London: Architectural Association, 1997): 195-231.

DIGITAL DESIGN MEDIA

ENAR600015

3 CREDITS

Learning Objective:

Student should be able to express, explore, investigate and communicate architectural ideas by using digital media.

Syllabus:

Introduction to techniques and variety of digital media which can be applied to represent architectural ideas, investigate the basic abilities of various digital tools, choosing the appropriate digital tools and techniques to express, explore or investigate certain architectural ideas, studying the workflow of digital and analog media as a part of the architectural design process.

Prerequisites:

Student has taken Basic Design 2

References:

1. L Farrelly, *Basic Architecture: Representation Techniques*. London, Thames & Hudson, 2008
2. B Kolarevic, (Ed), *Architecture in the Digital Age: Design and Manufacturing*, Spon Press, 2003
3. P Laseau, *Architectural Representation Handbook: Traditional and Digital Techniques for Graphic Communication*, McGraw-Hill Companies, 2000

BASIC DESIGN 1

ENAI600001

5 CREDITS

Learning Objective:

Student should be able to produce 2D and 3D works as creative responses towards contexts by applying basic knowledge of visual art and design; Student should be able to acquire and apply basic 2D and 3D representational techniques.

Syllabus:

Basic knowledge of visual art and design, basic knowledge of aesthetic; basic knowledge of space; visual elements: shape, color, texture, etc; basic principles of composition; introduction to art history and its role in the making of art; basic drawing techniques: expression drawing; shape drawing (natural and manmade objects); basic modeling and assembling techniques; understanding characteristics of media and materials; perceiving visually and communicating what is perceived; display and layout techniques.

Prerequisites: -

References:

1. Louis Fisher Rathus, *Understanding Art*, Prentice Hall, 1994
2. Claire Holt, *Art in Indonesia, Continuity and Changes*, Cornel University,Ithaca and London, 1967
3. Johannes Itten, *The Elements of Color*, John Wiley & Sons, 1970
4. Harvard Anarson, *History of Modern Art: Painting, Sculpture, Architecture & Photography*, Prentice Hall, 1998
5. Kimberly Elam, *Geometry of Design: Studies in Proportion and Composition*, Princeton, 1998
6. Gyorgy Kepes, *Structure in Art and in Science,* George Braziller, 1965
7. Frank D. K. Ching, *Architecture: Form, Space & Order*, John Wiley & Son, 1997
8. John Heskett. *Design: A Very Short Introduction*. Oxford: Oxford University Press, 2002.

BASIC DESIGN 2

ENAI600002

7 CREDITS

Learning Objective:

Student should be able to produce spatial works as creative responses towards contexts by applying knowledge of visual art and design and employed various 2D and 3D representation techniques; Student should be able to communicate architectural ideas by using appropriate techniques and media.

Syllabus:

Basic knowledge of relationship among space, human and time; Exploration of visual elements, non-visual elements (audio, kinesthetic) and moving elements (kinetics); creating spatial ideas as response to contexts; principles of architectural communication, basic architectural communication techniques: projection drawing, orthographic drawing, perspective drawing; modeling and assembling techniques; model making; understanding characteristics of media and materials; communicating object and space for various purpose and audiences; communicate human activity space.

Prerequisites:

Student has taken Basic Design 1

References:

1. Francis D.K. Ching, *Drawing & Perceiving: A Visual Dictionary of Architecture*, John Wiley & Sons, 1996
2. Francis D.K. Ching, *Architectural Graphics, 2nd Ed*, John Wiley & Sons, 2002
3. Francis DK Ching, *Drawing: A Creative Process*, Wiley, 1989
4. Paul Laseau and Norman Crewe, *Visual Notes for Architects and Designers*, Wiley, 1986
5. Jeffrey Balmer, Michael T. Swisher, *Diagramming the Big Idea: Methods for Architectural Composition*, Routledge, 2012
6. Mark Basinger, *Drawing Ideas*, Random House, 2013
7. Don Norman, *The Design of Everyday Things*, Basic Books, 2013
8. Atelier Bow Wow, *Graphic Anatomy,* Toto, 2007
9. Joy Monice Malnar, *Sensory Design,* University of Minnesota Press, 2004
10. Peter Zumthor, *Atmospheres: Architectural Elements, Surrounding Objects,* Birkhauser, 2006

INTERIOR ARCHITECTURAL DESIGN

Interior architectural design courses are the studio courses at the Department of Architecture. The studios denote learning locations as well as learning methods. At the end of studio-based learning process, students should be able to demonstrate their ability to think critically and creatively, which can be assessed from their ability to explain and present his/her design ideas. Interior Architectural Design learning process is implemented through Design Projects, which are direct manifestations of integration of knowledge, consisting of:

- Factual knowledge: understanding and formulating design problems which are abstract, qualitative, and related to socio-cultural aspects of human/space activities
- The context and the environment of interior living space, ranging from micro/local/personal space, family, community, to urban/rural environment
- Technical aspects such as structure, tectonics (including building materials), building physics, building systems, and building utilities that are relevant to the interior design.
- Design methods
- Communication techniques

In practice, Design Projects accommodate learning materials from several courses: Interior Architectural Design, Building Technology, and Furniture: Context, Response and Object, within the following order:

- Design Project 1 integrates Interior Architectural Design 1 and Building Technology 1
- Design Project 2 integrates Interior Architectural Design 2 and Building Technology 2
- Design Project 3 integrates Interior Architectural Design 3 and Building Technology 3
- Design Project 4 integrates Interior Architectural Design 4 and Furniture: Context, Response, Object

Gradual acquisition of knowledge and ability is structured within each stage of learning in Architectural Design in each semester.

DESIGN PROJECT 1

Design Project 1 focuses on the design of space for human self. Design Project 1 is an integration of knowledge on spatial design, based on the understanding of the relationship between human and space, basic structural logic, and basic principles

of environmental comfort within spatial design. Design Project 1 consist of learning activities performed in two courses which complement each other, Interior Architectural Design 1 and Building Technology 1.

INTERIOR ARCHITECTURAL DESIGN 1

ENAI600003

7 CREDITS

Learning Objectives:

Student should be able to design a space for a single person, through understanding the relation- ship between human and space.

Syllabus:

Interior Architectural Design 1 is an early and critical stage to introduce students to architecture through imaginative, creative, and innovative spatial design. Architectural knowledge encompasses basic comprehension about the personal spatial meaning and experience, interaction between human body and spatial quality, understanding of site and surrounding context as experienced by human body. Design activities consists of information gathering, formulation of design problem, analysis, and making critical decisions to formulate an active strategy toward human space, ability to think three-dimensionally through spatial design exploration, and communicating design ideas.

Design exercises consist of: Designing a simple space for a single person that is materialized through 1:1 scaled model; Designing a space for an episode of human life.

Prerequisites:

Students have taken Basic Design 2

Students have taken or are taking Building Technology 1

References:

1. Bruno Zevi, *Architecture as Space: How to Look at Architecture,* 1993.
2. Donlyn Lyndon and Charles W. Moore, *Chambers For A Memory Palace,* MIT Press, 1994
3. Edward T. Hall, *The Hidden Dimension*, Peter Smith Publications, 1992
4. Francis DK Ching, *Architecture: Form, Space and Order*, Wiley, 1996.
5. Karen Franck & Bianca Lepori, *Architecture Inside Out*, Academy Press, 2000.
6. Michael Pollan, *A Place of My Own*. Penguin Press, 2008.
7. Steen Eiler Rasmussen, *Experiencing Architecture*, MIT Press, 1959.
8. Yi-Fu Tuan, *Space and Place: The Perspective of Experience*, University of Minnesota Press, 1981

BUILDING TECHNOLOGY 1

ENAI600012

3 CREDITS

Learning Objectives:

Students should be able to understand basic technical aspects of structure, material, construction, and building comfort; should be able to formulate technical design process and integration of structure and construction technologies into a functionally effective whole; should be able to produce a report of analysis and synthesis of all aspects of building technology.

Syllabus:

Structure in nature; Basic principle of structure and construction (logic of structure, basic mechanics); Site context (natural elements that influence building); Building material (material use and position in building, material property values that influence comfort); Basic building physics (building orientation, environmental influence to comfort); Introduction to basic structure and construction principles of simple building; Introduction to working drawing.

Prerequisites: -

References:

1. Mario Salvadori, *Why Building Stands Up*, W.W. Norton & Company, 2002
2. W. O. Kilmer, *Construction Drawings and Details for Interiors: Basic Skills*, John Wiley and Sons, 2003
3. Bjorn N Sandaker, Arne P Eggen, and Mark R Cruvellier, *The Structural Basis of Architecture: Second Edition*, Routledge, 2011
4. Forest Wilson, *Structure: The Essence of Architecture*, Van Nostrand Reinhold Company, 1971
5. Mark Dekay and G. Z. Sun Brown, *Wind & Light: Architectural Design Strategies: 3rd Edition,* John Wiley & Sons, 2014
6. Francis DK Ching, *Building Construction Illustrated,* Wiley, 2014
7. Edward Allen and Joseph Iano, *The Architect Studio Companion: Rules of Thumb for Preliminary Design,* Wiley and Sons, 2002
8. Ken Parsons, *Humn Thermal Environments: The effects of Hot, Moderate, and Cold Environments on Human Health, Comfort, and Performance*, CRC, 2014
9. Pete Silver and Will McLean, *Introduction to Architectural Technology*. Laurence King, 2013

DESIGN PROJECT 2

Design Project 2 is about designing space for core social unit (family, a couple, etc). Design Project 2 integrates knowledge on spatial design based on the idea dwelling, the analysis of family life cycle and daily activities, application of basic structural principles and constructions of low rise building, building systems, and principle of building physics. Design Project 2 integrates the learning activities performed in two courses that complement each other, Interior Architectural Design 2 and Building Technology 2.

INTERIOR ARCHITECTURAL DESIGN 2

ENAI600004

8 CREDITS

Learning Objectives:

Students should be able to design a dwelling as a living space for core social unit through tectonic approach and by thorough consideration of the life cycle and daily activities of the core social unit.

Syllabus:

Interior Architectural Design 2 proposes critical issues of human living space in urban community context, through the design of a dwelling. Design knowledge herewith includes the understanding concept of dwelling, observation and analysis of core social unit, formulating spatial program based on understanding of the needs of core social unit, development of spatial idea through tectonic exploration as *the art of joining* and exploration of spatial composition as an integration of *part-whole* that appropriately accommodate the programs, which are implemented into an integrated spatial design and communicated by complying with standard principles of architectural communication.

Prerequisites:

Students have taken Interior Architectural Design 1
Students have taken or are taking Building Technology 2

References:

1. Martin Heidegger, *Building Dwelling Thinking, in Poetry, Language, Thought*, HarperPerennial, 1975
2. Adam Sharr with Simon Unwin, *Heidegger's Hut, in ARQ (Architectural Research Quarterly) Vol.5 No.1*, 2001
3. J Macgregor Wise, *Home: Territory and Identity pp. 391-396, in INTIMUS Interior Design Theory Reader,* 2006
4. Norberg Schulz, *The Concept of Dwelling – Introduction*, Rizzoli International Publications,1985
5. Hannah Arendt, *The Human Condition - Chapter I & II*, University of Chicago Press, 1958
6. Rapoport, *House Form and Culture - Chapter II Alternative Theories of House Form & Chapter III Socio-cultural Factors and House Form, pp. 18-82*, Prentice Hall Inc, 1969
7. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction – Chapter I Introduction: Reflections on the Scope of the Tectonic*, MIT Press, 2001
8. Charles Moore, Gerrad Allen, Donlyn Lyndon, *Assembling A Room, in The Place of Houses*, University of California Press, 2000
9. Francis D. K. Ching, *Architecture: Form, Space and Order*, Wiley, 2014
10. Erik H. Erikson, *Life Cycle Completed – Chapter 3 Major Stages in Psychosocial Development*, W. W. Norton & Company, 1998
11. Jonathan Hill, *Immaterial Architecture – House and Home,* Routledge, 2006
12. Peter Zumthor, *Atmospheres: Architectural Environments, Surrounding Objects*, Birkhäuser Architecture, 2006

BUILDING TECHNOLOGY 2

ENAI600014

3 CREDITS

Learning Objectives:

Students should be able to understand technical aspects of structure, material, construction, and building comfort for low rise building; should be able to formulate technical design process and integration of structure, construction technologies and building systems into a functionally effective whole; should be able to produce a report of analysis and synthesis of all aspects of building technology.

Syllabus:

Identification of all aspects of building technology in a simple low rise building that include: structural logic, buildability, and comfort; Introduction to in-depth knowledge on the materiality of material, construction techniques and details; Dimension and configuration of materials and their relation to structure and construction of simple building; Elements of air conditioning and lighting in a building; Introduction to basic knowledge of building utility; Creating technical documentations (working drawing).

Prerequisites:

Students have taken Building Technology 1
Students have taken or are taking Interior Architectural Design 2

References:

1. Francis DK Ching, *Building Construction Illustrated,* Wiley, 2014
2. Arthurs Lyons, *Materials for Architect & Builders*, Butterworth-Heinemann, 2008
3. Graham Bizley, *Architecture in Details*, Architectural Press, 2008
4. Andrea Deplazes, *Constructing Architecture: Materials Processes Structures, A Handbook*, Birkhauser, 2008
5. Gail Peter Borden, *Material The Typology of Modern Tectonics*, Wiley, 2010
6. Thomas Schropfer, *Material Design*, Birkhauser Architecture, 2010
7. Norbert Lechner, *Heating, Cooling, Lighting: The Sustainable Design Methods for Architect*, Wiley, 2013
8. Charlie Wing, *How Your House Works: a Visual Guide to Understanding and Maintaining Your Home, Updated and Expanded,* RSMeans, 2012
9. Corky Binggeli, *Corky Building Systems for Interior Designers*, John Wiley & Sons, 2003

DESIGN PROJECT 3

Design Project 3 focuses on buildability and performances of interior space. Design Project 3 is an integration of design knowledge through the understanding of existing technological context, exploration of technological aspects, application of structural principles, construction and materials and building support system into interior design process. Design Project 3 integrates the learning activities in two courses that support one another, Interior Architectural Design 3 and Building Technology 3.

INTERIOR ARCHITECTURAL DESIGN 3

ENAI600005

9 CREDITS

Learning Objectives:

Students should be able to design public interior space through exploration on development of technology ideas in interior architecture.

Syllabus:

Interior Architecture Design 3 proposes critical issues on the aspect of buildability and interior space performance. Design knowledge consists of design as a response to technological aspects of existing interior space condition; program development based on analysis of existing technological context; development of advanced tectonic ideas, including material development, detail, and construction; development of interior architecture ideas based on its performance and building system. Design assignment consists of: interior space design based on exploration of technological aspects, such as materials, assembly techniques, portable/ flexible furniture, etc.; Interior space design as a response to the existing building context in medium to large scale.

Prerequisite:

Students have taken Interior Architectural Design 2
Students is taking Building Technology 3

References:

1. Mark Taylor, Julieanna Preston (eds), *Intimus: Interior Design Theory Reader,* Academy Press, 2006
2. Mark Kingwell. "Tables, Chairs and Other Machines for Thinking*," in Intimus,* Queen's Quarterly, 2005
3. Peter Opsvik, *Rethinking Sitting*, W. W. Norton & Company, 2009
4. Eva Maria Herrmann, Marcus Kaiser, Tobias Katz, *Furnishing, Zoning: Spaces, Materials, Fit Out*, Birkhauser, 2014
5. Sylvia Leydecker, *Designing Interior Architecture: Concept, Typology, Material, Construction*,
6. Corky Binggeli, *Building Systems for Interior Designers*, Wiley, 2009
7. Lisa Godsey, *Interior Design Materials and Specification*, Fairchild Books, 2012
8. Sally Augustin, *Place Advantage: Applied Psychology for Interior Architecture, John Wiley & Sons, 2009*

BUILDING TECHNOLOGY 3

ENAI600016

3 CREDITS

Learning Objectives:

Students should be able to understand advanced technical aspects of structure, material, construction, and building comfort that are relevant to interior architecture design approach in order to respond the architectural existing condition; should be able to formulate technical design process and integration of technological aspects of interior space that consist of structural system, construction technology, materials and utility system into a functionally effective whole; should be able to create technical documentation and create analysis/synthesis report from all aspects of building technology; should be able to understand energy conservation issues and ecological sustainability in interior context.

Syllabus:

Building technology aspects that are relevant to the design approach through fitting out, remodeling, renovating, retrofitting, extension. Understanding and responding to existing structure condition. Understanding the utility of existing condition and modifying it on basis of design necessities. Knowledge of materials in terms of detail and construction, relationship between material and acoustics, lighting and maintenance, as well material innovation and development of advance material. Communication of technological aspects, such as, furniture, fixture and other interior entirety.

Prerequisites:

Students have taken Building Technology 2
Students have taken or are taking Interior Architectural Design 3

References:

1. Gary Gordon, *Interior Lighting*, Wiley, 2003
2. Corky Binggeli, *Building Systems for Interior Designers*, Wiley, 2009
3. Lisa Godsey, *Interior Design Materials and Specification*, Fairchild Books, 2012
4. John E. Flynn, Arthur W. Segil, *Architectural Interior System: Lighting, Accoustics, Air Conditioning*, Van Nostrand Reinhold, 1992
5. Deplazes, *Constructing Architecture: Materials, Process, Structures*, A. Basel: Birkhauser, 2005
6. Atelier Bow Wow, *Graphic Anatomy Atelier Bow-Wow*, Toto, 2007
7. Christian Schittich, *In Detail: Interior Spaces: Space, Light, Material*, Birkhauser, 2002
8. Blaine Brownell, *Transmaterial: A Catalog of Materials That Redefine our Physical Environment (1, 2, & 3),* Princeton Architectural Press, 2005, 2008, & 2010

ERGONOMICS

ENAI600018

3 CREDITS

Learning Objectives:

Students should be able to understand and apply the basic concept of ergonomics and human factors and anthropometry in interior design as well universal design.

Syllabus:

Basic principles of ergonomics and human factors; basic principles of anthropometry; application of ergonomics and human factors in the design of built environment; basic principles of universal design.

Prerequisites: -

References:

1. Mark S Sanders and Ernest J. McCormick. *Human Factors in Engineering and Design*, McGraw Hill, Singapore, 1992
2. Galen Cranz, *The Chair: Rethinking Culture, Body and Design*, W & W Norton Company, 2000
3. R. S. Bridger, *Introduction to Ergonomics*, Routledge-Taylor & Francis, London, 2003
4. Pheasant, Stephan. *Bodyspace: Anthropometry, Ergonomics and the Design of Work*. Taylor & Francis, London, 2003
5. H. E. Kroemer, Ann D. Kroemer, *Office Ergonomics*, Taylor & Francis, London, 2001
6. Edward Steinfeld, Jordana L. Maisel, *Universal Design*, Wiley, New Jersey, 2012

DESIGN PROJECT 4

Design Project 4 focuses on the design of public space. It integrates architectural typology-based design method, issue-based design and basic knowledge of urban interior. Design Project 4 integrates the learning activities performed in two courses that support each other, Interior Architectural Design 4 and Furniture: Context, Response, Object.

INTERIOR ARCHITECTURAL DESIGN 4

ENAI600006

9 CREDITS

Learning objectives:

Students develop their ability in designing interiors of public space through architectural typology-based design approach and issue-based design approach, by considering urban interior knowledge as well creatively exploring ideas on form and space quality.

Syllabus:

Interior Architectural Design 4 proposes the critical issues of human interior living space with socio-cultural complexities as found in urban/suburban interior context, through two approaches: a) top-down approach through the exploration of design ideas based on typology, and b) bottom-up approach through exploration of issue-based design ideas. Urban interior knowledge consists of comprehension on interior concepts of urban scale. Design knowledge includes the understanding of the concept of *public*, analysis of functional interior types, spatial programming, the concept of institution and how it is elaborated into interior spatial design, the formulation of initial statement based on issues, development of architectural programs and how they are elaborated into interior spatial design. Knowledge of site and environment includes the contextual explanation of the design through the understanding toward site physical condition, socio-cultural context or urban-scaled interior space, and consideration of sustainability.

Design assignments consist of: Designing interior space within social environment context with a close kinship; Designing interior space in more complex urban environmental context.

Prerequisite:

Students have taken Interior Architectural Design 3
Students have taken or are taking Building Technology 3

References:

1. Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture*, *Chapter 'Space', hal. 256-275*, Thames & Hudson, 2000
2. Yi-Fu Tuan, *Space and Place: The Perspective of Experience,* University of Minnesota Press, 1981
3. Henri Lefebvre, *The Production of Space*, Blackwell, 1991
4. Jeremy Till, *Architecture Depends*, MIT Press, 2009
5. Karen Franck & Bianca Lepori, *Architecture Inside Out*, Academy Press, 2000
6. Giulio Carlo Argan, *On the Typology of Architecture, in Nesbitt, Theorizing a New Agenda for Architecture hal. 240-246*, Princeton Architectural Press, 1996
7. Jonathan D. Sime, *Creating Places or Designing Spaces*, Journal of Environmental Psychology, Vol 6, hal. 49-63, 1986
8. Andrew Ballantyne, *What is Architecture?,* Routledge, 2002
9. Aaron Betsky & Erik Adigard, *Architecture Must Burn: Manifestos for the Future of Architecture*, Gingko Press, 2001
10. Robert Venturi & Denise Brown, *Learning from Las Vegas*, MIT Press, 1977
11. Bernard Tschumi, *Architecture and Limits I-III, in Nesbitt, Theorizing a New Agenda for Architecture hal. 150-167,* Princeton Architectural Press, 1996
12. Suzie Attiwill & Rochus Urban Hinkel, *Urban Interior: Informal Explorations, Interventions and Occupations*, Spurbuchverlag, 2011
13. Christine McCarthy, "Before the Rain: Humid Architecture," *Space and Culture*, 6, 337, 2003
14. Graeme Brooker, *Key Interiors since 1900*, Laurence King, 2013

FURNITURE: CONTEXT, RESPONSE, OBJECT

ENAI606017

3 CREDITS

Learning Objectives:

Students should be able to understand the concepts, functions, and construction of furniture; able to understand theories and methods to develop furniture concept and design.

Syllabus:

This course encourages student to learn about furniture and its existence in a space. Furniture is observed as a tool to connect space that is located between human bodies, as in a building or on a broader scope. Furniture is observed as functional objects that occupy the space. Students are expected to learn and criticize a priori knowledge on furniture, so that they can consider a new perspective in designing furniture.

Prerequisites:

Students have taken or are taking Interior Architecture Design 4

References:

1. Galen Cranz, *The Chair, Rethinking Culture, Body and Design*, W. W. Norton & Company, 2000
2. Christopher Natale, *Furniture Design and Construction for the Interior Designer*, Fairchild Pub, 2009
3. Jim Postell, *Furniture Design*, Wiley, 2007.
4. M. F. Ashby, Kara Johnson, *Materials and Design: The Art and Science of Material Selection in Product Design*, Elsevier, 2002

INTERIOR ARCHITECTURAL DESIGN 5

ENAI600007

9 CREDITS

Learning Objective:

Students should be able to design interior architecture based on particular design method; should be able to produce design ideas that demonstrate buildability and compliance to general building and interior codes; should be able to demonstrate the application of knowledge on the principles of building technology that are relevant to interior architectural design.

Syllabus:

Designing with *fitting out, remodelling, renovating, retrofitting, or extension* approach within design units. Design units offered may include but not limited to: typology-based design (commercial, educational, hospitality); designing based on adaptive reuse; evidence-based design; designing with technological, computational, or parametric approach. Knowledge and implementation of building and interior codes that include safety, security, health, comfort, and accessibility. Design communication that comply with standard drawing convention. Awareness and understanding of role of various disciplines of design, construction, mechanical and electrical in interior architectural design process.

Prerequisites:

Students have taken Interior Architectural Design 4

References:

1. Stewart Brand, *How Buildings Learn: What Happens After They're Built*, Penguin Books, 1995
2. Sally Stone and Graeme Brooker, *Re-Readings: Interior Architecture and the Design Principles of Remodelling Existing Buildings*, RIBA Publishing, 2014
3. Adrian Forty, *Words and Buildings: a Vocabulary of Modern Architecture*, Thames and Hudson, 2004
4. Fred Scott, *On Altering Architecture*, Routledge, 2008
5. Charles Bloszies, *Old Buildings New Designs: Architectural Transformations*, Princeton Architectural Press, 2011
6. Julianna Preston, *Interior Atmosphere*, Architectural Design series, May/June 2008
7. Peter Zumthor, *Atmospheres: Architectural Environments, Surrounding Objects*, Birkhäuser Architecture, 2006
8. Edward Dimendberg, *Diller Scofidio + Renfro: Architecture After Images*, University Of Chicago Press, 2013
9. Atelier Bow Wow, *Graphic Anatomy Atelier Bow-Wow*, Toto, 2007
10. Christopher Gorse and David Highfield, *Refurbishment and Upgrading of Buildings*, Spon Press, 2009
11. Corky Binggeli, *Building Systems for Interior Designers*, John Wiley & Sons, 2009

UNDERGRADUATE THESIS

ENAI600008

6 CREDITS

Learning Objectives:

Student should be able to identify, study and communicate issues within specific area of study related to architecture; able to develop basic skills in scientific reading, researching and writing; able to develop understanding of research as an activity that requires systematic and logical thinking; able to develop critical understanding of various architectural issues.

Syllabus:

The thesis begins with an inquiry into what the student wishes to study in depth. It involves the understanding of issues and explanation of the understanding with limited depth level. At this level, the student is neither required to solve a problem nor create or invent something new that would contribute to the discipline architecture. Simple investigation is performed through literature search and/or case studies. Originality. Modes of writing:

descriptive, narrative, explanatory or argumentative.

Prerequisites:

Students have earned 114 CREDITS and have taken Interior Architectural Design 4

References:

1. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
2. David Evans & Paul Gruba, *How To Write A Better Thesis Dissertation*, Springer, 2014
3. F. Crews. *The Random House Handbook, ed, pgs 10-114*, McGraw-Hill Higher Education,1992
4. Border and K. Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
5. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005

FINAL PROJECT

ENAI600008

6 CREDITS

Learning objectives:

Student should be able to identify, study and communicate issues within specific area of study related to architecture; able to develop basic skill in analyzing and synthetizing theory and demonstrate it through design; able to develop understanding of research as an activity that requires systematic and logical thinking; able to develop critical understanding of various architectural issues.

Syllabus:

The thesis begins with an inquiry into what the student wishes to study in depth. It involves the understanding of issues and explanation of the understanding with limited depth level, which is demonstrated through architectural design.

Prerequisites:

Students have earned 114 CREDITS and have taken Interior Architectural Design 5

References:

1. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
2. Border and K. Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
3. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
4. Iain Border and Katarina Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
5. Murray Fraser, *Design Research in Architecture*, Ashgate Publishing, 2013

Course Description: Elective Courses

ACOUSTICS

ENAI600019

3 CREDITS

Learning Objectives:

Student should be able to understand basic principles of acoustic in space and environment; able to conduct analysis in order to create good acoustic design.

Syllabus:

Basic acoustics, characteristics of sounds, acoustic criteria in space, sound intensification and sound isolation, environmental noise.

Prerequisites: -

References:

1. Leslie L. Doelle & Lea Prasetio, *Akustik Lingkungan*, Erlangga,1993
2. PH Parkin & HR Humpreys, *Acoustics Noise and Buildings*, Faber and Faber Ltd, 1984
3. Finarya Legoh & Siti Hajarinto, *Buku Ajar Akustik*, 2002

ANATOMY OF SPACE

ENAI600020

3 CREDITS

Learning Objectives:

Students should be able to master the principles in disassembling the elements and system of a space in terms of user's needs.

Syllabus:

Dissection method in anatomy as an approach to analyze space, understanding the parts, the characteristics, the relationship among one another and how together they create a working system of space; Anatomy of domestic space: domestic service space, space saving strategy, flow, and flexibility; Anatomy of public space: hierarchy and public space organization, back and front separation, grid; Anatomy of space for special needs: the concept of enabling environment, architecture for users with limited vision, hearing difficulty, limited mobility, architecture for children with special needs (such as ADHD, autism, mental retardation).

Prerequisites: -

References:

1. Jean Baudrillard, *Structures of Interior Design in The Domestic Space Reader,* University of Toronto Press, 2012
2. Karel Teige, *The Minimum Dwelling*, MIT Press, 2002
3. Jeremy Till & Tatjana Schneider, *Flexible Housing*, Routledge, 2007
4. Erving Goffman, *Front and Back Region in Everyday Life in Everyday Life Reader* by Ben Highmore, Routledge, 2001
5. Jos Boys, *Doing Disability Differently: An alternative handbook on architecture, dis/ability and designing for everyday life,* Routledge, 2014

ART APPRECIATION

ENAI600021

3 CREDITS

Learning Objectives:

Students should be able to understand art and art appreciation and to apply this practice through delivering experience (sense and aesthetic) and understanding (concept and theory) of art works; on basis of formal-technic criteria; should be able to demonstrate a comprehension on theories through interpretive view of visual and spatial art works that are relevant to interior architecture; understand context of art gallery and curatorial process.

Syllabus:

Art and art appreciation. Critic and art appreciation. Aesthetic principles. Art history timeline. Visual elements in visual artwork. Spatial art, multisensory art, public art. Introduction to art and national gallery. The role in art. Curating.

Prerequisites: -

References:

1. E H Gombrich, *The Story Of Art*, Paidon Press, 1995
2. Immanuek Kant, *The Critique Of Judgement*, Oxford University Press, 2009
3. Maurice Merleau-Ponty, *Phenomenology Of Perception*, Routledge, 2002
4. Thierry de Duve, *Kant After Duchamp*, MIT Press, 1996
5. L H Hanks, J Hale & S Macleod, *Making: Narratives, Architectures, Exhibitions, (Museum Meaning),* Routledge, 2012
6. Joshua C Taylor, *Learning To Look*, University of Chicago Press, 1957

FURNITURE DESIGN

ENAI600022

3 CREDITS

Learning Objectives:

Students should be able to understand the basic principles of designing furniture as disposable items that serve as forming element of spatial quality, in relation to architectural design, space and interiority.

Syllabus:

Furniture as disposable objects with certain prerequisites based on the intention behind the design. Interiority and spatial quality as inseparable aspects of furniture design. After such comprehension is established, the learning process will include: basic furniture construction and furniture construction that shapes the space quality.

Prerequisites: -

References:

1. Joyce Ernest, *The Technique of Furniture Making*, B.T. Batsford Liminted, 1970
2. *Sunset Series for Furniture Making, Cabinet and Book Shelves Making, Bedroom Storage; Kitchen Storage.*
3. Ernest Scott, *The Mitchell Beazley Illustrated Encyclopaedia of Working in Wood: Tools - Methods - Materials – Classic*, Mitchell Beazley, 1992

LIFESTYLE AND INTERIOR ARCHITECTURE

ENAI600023

3 CREDITS

Learning Objectives:

Students should be able to understand the role of lifestyle in interior and its application.

Syllabus:

Lifestyle principles in society and in interior design. The development of style from the beginning of modern period until now and its role in interior design. Appropriate style in society and its effect in interior design.

Prerequisites: -

References:

1. Idi Subandy Ibrahim, *Lifestyle Ecstasy: Kebudayaan Pop dalam Masyarakat Komoditas Indonesia*, Jalasutra, 2004
2. Jean Baudrillard, *The Consumer Society: Myths and Structures 1st Ed,* Sage Publications Ltd, 1998
3. Dominic Strinati, *An Introduction to Theories of Popular Culture 2nd Ed,* Routledge, 2004
4. Agus Sachari & Yan Yan Sunarya, *Modernisme: Sebuah Tinjauan Historis Desain Modern*, Balai Pustaka, 1999
5. David Chaney, *Life Style: Key Ideas*, Routledge, 1996.
6. Francois Baudot, *Styles: Compendium of Interiors*, Assouline, 2005

FIELD STUDY

ENAI600024

3 CREDITS

Learning Outcomes:

Students are able to analyze architectural phenomena and / or practices in a context of both natural and socio-cultural environments that are obtained through experience or field observations. Students are able to demonstrate this knowledge in the form of reports and documentation.

Syllabus:

Introduction to the field context, both the natural environment and the socio-cultural system; architectural observation approaches and their context; measurement, documentation and representation methods; planning activities and compiling the results of field observations.

Prerequisite: -

Textbooks:

Relevant references to the topic offered.

INDEPENDENT STUDY

ENAI600025

3 CREDITS

Learning Objectives:

Students should be able to demonstrate advanced architectural knowledge on particular topic and to implement the knowledge into the development of ideas of architectural intervention.

Syllabus:

Advanced studies on architectural knowledge in particular context; development of architectural intervention ideas based on thorough inquiry of contexts and theoretical inquiry on related topic.

Prerequisite:

References: Relevant references to the topic offered.

DESIGN STUDY

ENAI6000236

3 CREDITS

Learning Objectives:

Students should able to develop basic skills on reading, inquiry and writing a scientific writing related to design activities.

Syllabus:

Communicating design process through a writing that complies with scientific writing requirements; Communicating systematically literature review, development of design methods and design process through in writing.

Prerequisite:

Student has passed Interior Architectural Design 4 and is taking Final Project.

References:

1. John Zeisel, *Inquiry by Design*, W. W. Norton & Company, 2006
2. David Evans & Paul Gruba, *How To Write A Better Thesis Dissertation*, Springer, 2014
3. F. Crews. *The Random House Handbook, ed, pgs 10-114*, McGraw-Hill Higher Education,1992
4. I. Borden and K. Ruedi, *The Dissertation: an Architecture Student's Handbook*, Oxford University Press, 2000.
5. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005

INTERNSHIP

ENAI600027

3 CREDITS

Learning Objectives:

Students should be able to understand the processes of planning, implementation and evaluation of engineering activities; to demonstrate knowledge on teamwork of relevant disciplines in professional practice; to demonstrate knowledge on the processes of planning, design and implementation of a built environment; to get involved as assistant interior designer, assistant field project officer, assistant field supervisor, or community interior architect.

Syllabus:

Real project management process in a company, architecture consultant or organization. Techniques of writing simple proposal and reporting field work. Techniques of presentation, Method of managing material, data, equipment, human resources and coordination among stakeholders in engineering planning and implementation activities.

Prerequisite: -

References: -

2D DIGITAL DESIGN COMMUNICATION

ENAI600028

3 CREDITS

Learning Objectives:

Student should be able to use 2D digital drawing media in architectural design process; should be able to choose and use various way and technique in drawing for particular purpose.

Syllabus:

Drawings in CAD and NURBS, pixel base drawing, vector base drawing, architectural representation and diagram.

Prerequisites:

Student have taken Basic Design 2

References:

1. Hamad M.M, *Autocad 2010 Essentials,* Jones and Bartlett, 2010
2. Robert McNeel & Associates, *Rhinoceros: NURBS Modelling for Windows*, USA, 1998
3. H Sondermann, *Photoshop in Architectural Graphics*, SpringerWienNewYork, 2009

3D DIGITAL DESIGN COMMUNICATION

ENAI600029

3 CREDITS

Learning Objectives:

Student should be able to use 2D digital modelling tool in architectural design process; should be able to choose and use various way and technique in digital modelling; should be able to create appropriate graphical representation for the model.

Syllabus:

Polygon and NURBS-based digital model, inter-platform exchange, from 2D representation to 3D model, rendering techniques.

Prerequisites:

Student have taken Basic Design 2

References:

1. Chaos Group Youtube Channel: https://www.youtube.com/user/ChaosGroupTV/playlists
2. Alex Hogrefe's Architectural Graphic Tutorials: https://visualizingarchitecture.com

MATERIALITY IN INTERIOR ARCHITECTURE
ENAI600030
3 CREDITS
Learning Objectives:
Students should be able to understand material as an essential part of thinking and design process.
Syllabus:
Conceptual understanding of material through the idea of materiality; Relationship between material and human body, space and senses; Tectonic and detail of material; Material innovation in interior architecture.
Prerequisites: -
References:

1. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, The MIT press, 1995
2. K Lloyd Thomas (ed), *Material Matters: Architecture and Material Practice*, Routledge, 2007
3. Martin Bechtold, *Innovative Surface Structures: Technologies and Applications*, Taylor & Francis, 2008
4. Blaine Brownell, *Transmaterial: A Catalog of Materials That Redefine our Physical Environment (1, 2, & 3),* Princeton Architectural Press, 2005, 2008, & 2010
5. Blaine Brownell, *Material Strategies: Innovative Applications in Architecture*, Princeton Architectural Press, 2012
6. Michael Bell and Jeannie Kim, ed, *Engineered transparency: the technical, visual, and spatial effects of glass*, Princeton Architectural Press, 2009
7. Andrea Bruno, et al, *Featuring Steel: Resources Architecture Reflections*, Arcelor Mittal, 2009
8. Sigfried Giedion, *Mechanization Takes Command: A Contribution to Anonymous History*, W.W. Norton, 1948
9. *Innovation in Glass*, Corning: Corning Glass Museum, 1999
10. Sheila Kennedy, *KVA: Material Misuse*, Architectural Association, 2001
11. Klaus-Michael Koch with Karl J. Habermann, *Membrane Structures: Innovative Building with Film and Fabric*, Prestel, 2004
12. Christian Schittich, et al, *Glass Construction Manual*, Birkhauser, 2007
13. Thomas Schropfer, *Material Design: Informing Architecture by Materiality*, Birkhauser, 2011
14. Toshiko Mori, *Immaterial Ultramaterial*, George Brazillier, 2002

SPATIAL OBJECTS
ENAI600031
3 CREDITS
Learning Objectives:
Students should be able to understand and identify spatial objects with potential in creating the quality of interior space; develop spatial object design ideas within interior architecture context and realize it into prototype.
Syllabus:
Understanding of spatial object and its role in producing spatial quality; creative methods to develop spatial object design; materials, tools, techniques and technology in the making of spatial objects; developing the design of spatial objects; realization of design into prototype.
Prerequisites: -
References:

1. Michalko, Michael. *Thinkertoys*. Berkeley, Calif.: Ten Speed Press, 2006
2. Moore, Rowan. *Why We Build.*
3. Gorman, Carma. *The Industrial Design Reader.* New York: Allworth Press, 2003
4. Meikle, Jeffrey L. *Design In The USA*. Oxford: Oxford University Press, 2005
5. Yelavich, Susan, and Elio Caccavale. *Design As Future-Making.*
6. Rodgers, Paul, and Alex Milton. *Product Design.* London: Laurence King, 2011
7. Aspelund, Karl. *The Design Process*. Fairchild Books.
8. Norman, Donald A. *The Psychology of Everyday Things*. New York: Basic Books, 1988
9. Karl. T. Ulrich & Steven D. Epingger. *Product Design Development*. 3rd Edition. Mc Graw-Hill. 2004
10. Dieter. *Design Engineering,* 3rd edition, Mc.Graw Hill, 2000
11. James G. Bralla. *Design For Excellence*. McGrawHill, 1996
12. Milton D. Rosenav, Jr. et. al. *The PDMA Handbook of New Product Development,* John Willey & Sons, 1996
13. Hamid Noor & Russel Radford. *Production & Operation Management*, McGrawHill, 1995

ARCHITECTURAL PSYCHOLOGY
ENAI600032
3 CREDITS
Learning Objectives:
Student should be able to use basic conceptual knowledge of psychological process to identify and analysis human need in using built environment and outdoor space.
Syllabus:
Relationship between architecture and human behavior, motivation, needs, and value as basis of human actions, Gestalt perception,

Ecological perception (Gibson), Affordances and its implementation in architecture, definition of cognition and its implementation in architecture, personal space, privacy, territoriality, crowding, post occupancy evaluation (POE).

Prerequisites: -

References:

1. Bell, Fischer, Greene, *Environmental Psychology,* Harcourt Publisher, 1996
2. Bryan Lawson, *The Language of Space*, Architectural Press, 2001
3. Byron Mikellides, *Architecture for People: Exploration in a New Humane Environment*, 1980
4. Wolfgang F.E. Preisser, Harvey Z. Rabinowitz, Edward T. White, *Post-Occupany Evaluation*, Van Nostrad Reinhold, 1988
5. Dak Kopec, *Environmental Psychology for Design*, Fairchild Books, 2012

EXHIBITION SPACE AND NARRATIVE

ENAI600033

3 CREDITS

Learning Objectives:

Students should be able to understand the basic principles of exhibition space design through narrative approach and critical thinking towards the interpretive experiences of objects.

Syllabus:

Various types of exhibition space, the process of designing exhibition space to create meaningful experiences of objects, ideas, and information in physical spaces and virtual spaces. Exhibition space types, exhibition, museum, pop-up event. Narrative approach in spatial design. Development of curatorial concept, designing display strategies, graphic and materials.

Prerequisites: -

References:

1. Martin M Pegler, *Visual Merchandising and Dislplay*, Blomsbury Academic, 2011
2. David Dernie, *Exhibition Design*, Laurence King Publisher, 2006
3. Pam Locker, *Basic Interior Design : Exhibition Design*, Ava Publishing, 2011
4. Reesa Greenberg, Bruce W.Ferguson and Sandy Nairne, *Thinking About Exhibitions,* Routledge, 1996
5. Kossman De Jong, *Engaging Space: Exhibition Design Explored*, Frame Publisher, 2012
6. Bryan Lawson, *Language of Space*, Routledge, 2001
7. L H Hanks, J Hale & S Macleod, *Making: Narratives, Architectures, Exhibitions, (Museum Meaning),* Routledge, 2012
8. David Dean, *Museum Exhibition*, Routledge, 1996
9. Kathleen McLean, *Planning for People in Museum Exhibitions*, Association of Science-Technology Centers, 1993
10. Nigel Holmes, *The Best in Diagrammatic Graphics*, Rotovision, 1996
11. Giles Velarde, *Designing Exhibitions 2nd ed*, Gower Pub, 2001
12. Stephanie Weaver, *Creating Great Visitor Experiences: A Guide for Museums, Parks, Zoos, Gardens & Libraries*, Routledge, 2008
13. John H Falk, *Identity and the Visitor Experience*, Routledge, 2009
14. Nina Simon, *The Participatory Museum*, Museum 2.0, 2010
15. Porter Abbott, H, *The Cambridge Introduction to Narrative*, Cambridge University Press, 2002
16. Potteiger, M and Purington, J, *Landscape Narratives: Design Practices for Telling Stories*, John Wiley and Sons, 1998

ART AND ARCHITECTURE

ENAI600034

3 CREDITS

Learning Objectives:

Students should be able to understand the potential of art in architectural space; create art in architectural setting.

Syllabus:

Art and architecture, Art Nouveau and Art Deco, Bauhaus, International style, Cubism, Surealism, etc, Art and Architecture installation, installation in the setting: Happy Art; detail in architectural element.

Prerequisites: -

References:

1. Cinthya Maris Dantzic, Design Dimensions, An Introduction to the Visual Surface, Prentice Hall College Div, 1990
2. Maly and Dietfried Gerhardus, Cubism and Futurism: The evolution of the self-sufficient Picture, Phaidon Oxford
3. Arsen Pohribny, Abstract Painting, Phaidon Oxford
4. "The Ideal Place" in Art and Design Magazine No.42
5. Chris Drury, Silent Spaces, Thames and Hudson Ltd, 1989
6. Fiedler Jeannine and Peter Feierabend, Bauhaus, Konemann, 1999
7. Booqs,1000 Details in Architecture, Belgium, 2010
8. William Hardy, A Guide to Art Nouveau Style, World Pubns, 1996
9. Patrick Lowry, The Essential Guide to Art and Design, Hodder & Stoughton, 1997

LIGHTING DESIGN IN INTERIOR ARCHITECTURE

ENAI600035

3 CREDITS

Learning Objectives:

Student should be able to design lighting fixtures and ambience for interior uses, using artificial as well as natural lights through a critical, active collaborative learning process based on functional and aesthetical problems.

Syllabus:

Basic lighting, color, natural light, artificial light, light distribution, interior lighting, exterior lighting (façade of a house and high rise), urban lighting.

Prerequisite: -

References:

1. William M.C. Lam, Perception and Lighting as Formgivers for Architecture, McGraw-Hill, 1977
2. Norbert Lechner, Heating Lighting Cooling, 2nd edition, translated by PT RajaGrafindo Persada, 2007
3. John E Flyinn, Architectural Interior System, Van Nostrand Reinhold Environmental Engineering Series, Van Nostrand Reinhold Company, 1971

SPECIAL TOPIC ON INTERIOR ARCHITECTURE

ENAI600036

3 CREDITS

Learning Objectives:

Students should be able to demonstrate knowledge on current discourse on interiority and interior architecture.

Syllabus:

Studies on the development of theories on interiority; current issues on interior architecture and interiority; the development in other relevant disciplines that have impacts of the development of interior architectural design theories and methods.

Prerequisite: -

References:

Relevant references to the topic offered.

SPECIAL TOPIC OF COLLABORATION

ENAI600037

3 CREDITS

Learning Outcomes:

Having the ability to solve design problems by collaborating with students from several fields of study. Having insights about engineering in the future.

Syllabus:

Study the development of design and engineering; the application of contemporary engineering; developments in some other disciplines that affect architectural design.

Prerequisite: -

Textbooks:

Relevant references to the topic offered.

CHAPTER 5

PROFESSIONAL PROGRAM

Professional Program

Architect

Program Specification

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Program**	Professional Program for Architect	
5.	**Vision and Mission**	Vision: "To be a high-quality architectural Institution that receives national and international recognition, to foster graduates with good design knowledge and skills as professional architects that have professional ethics and sensibility to environment sustainability." Mission: Organizing professional architectural education programs that: 1. generates creativity and design innovation with a sustainable approach 2. responds to the changing social, cultural and technological conditions 3. prepares graduates to become professional architects	
6.	**Class**	Regular	
7.	**Degree Offered**	Arsitek (Ar.)	
8.	**Accreditation / Recognition**	Accredited from BAN-PT	
9.	**Language(s) of Instruction**	Bahasa Indonesia	
10.	**Study Scheme (Full Time / Part Time)**	Full Time	
11.	**Entry Requirements**	Graduated from Undergraduate Architecture Program	
12.	**Duration of Study**	1 year	
	Semester	Total Semester	Weeks/Semester
	Regular	2	16-17
	Short (optional)	-	-
13.	**Aims of the study programme** 1. Mastering code of ethics and code of conduct for Architect; 2. Mastering Architect professional services to community, such as making preliminary design, permit documents, design development to complete construction documents; 3. Mastering the principles of professional architect service administration; 4. Mastering code of conformity regarding professional services to client, local regulations and other disciplines related to building construction.		
14.	**Profile of Graduates:** Graduates with the ability to design professionally based on relevant requirements (code compliance) in order to meet the competency needs as an architect determined by Ikatan Arsitek Indonesia (IAI).		

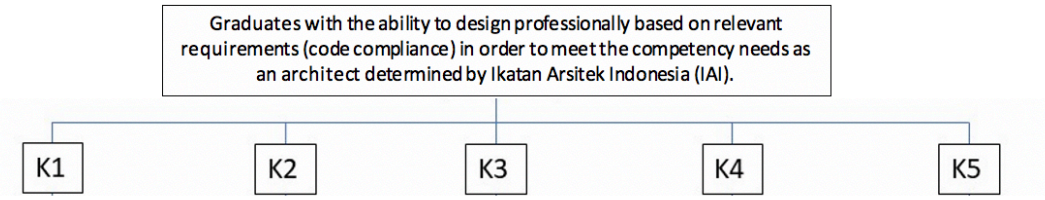
15.	**Expected Learning Outcomes (ELO):** 1. Able to create architectural design that complies to codes related to services to clients, compliance to local building codes, and technical aspects building structure and construction, mechanical and electrical. 2. Able to manage architectural consultation service that comprises of preliminary design, building permit, and design development. 3. Able to integrate knowledge of ethical codes and architects' professional codes of conduct into professional practice. 4. Able to integrate knowledge on theory of architecture and sustainability into professional practice. 5. Able to explain the principles of consultation administration and project management.
16.	**Course Composition**

No.	**Type of Courses**	**Credits**	**Percentage**
I	University General Subjects	0	0%
II	Basic Engineering Subjects	0	0%
III	Architecture Core Subjects	21	87,5%
IV	Electives	3	12,5%
	Total	24	100%
	Total Credits for Graduation		**24 sks**

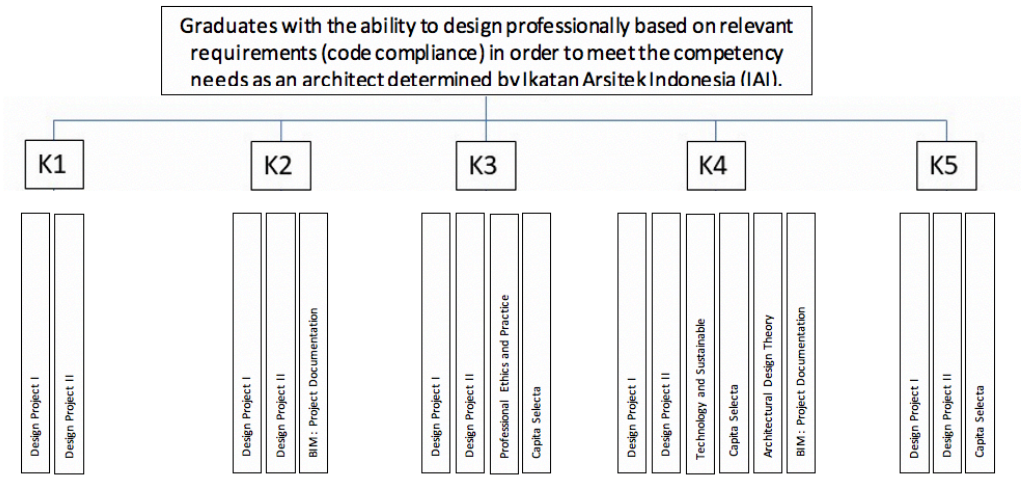
Job Opportunity

Graduates of this program can work in various fields within the construction industry, as architects or supervisors implementing construction. Then they can also work as researchers and lecturers in educational institutions related to architecture. In addition graduates can also work in the fields of urban design, real estate, building maintenance, building feasibility audits, appraisers for project feasibility studies, building managers, housing and settlements and the environment, working in industry of materials and building elements, and working in the government sectors in matters of building management, building construction and relating to the built environment.

NETWORK OF COMPETENCIES



DETAIL NETWORK OF COMPETENCIES



Course Diagram for Achieving ELO in the Professional Program for Architect

ELO	SEMESTER 1	SEMESTER 2
(1) Able to create architectural design that complies to codes related to services to clients, compliance to local building codes, and technical aspects building structure and construction, mechanical and electrical.	DESIGN PROJECT I	DESIGN PROJECT II
(2) Able to manage architectural consultation service that comprises of preliminary design, building permit, and design development.	DESIGN PROJECT I	DESIGN PROJECT II BIM : PROJECT DOCUMENTATION
(3) Able to integrate knowledge of ethical codes and architects' professional codes of conduct into professional practice.	DESIGN PROJECT I → DESIGN PROJECT II PROFESSIONAL ETHICS AND PRACTICE	CAPITA SELECTA
(4) Able to integrate knowledge on theory of architecture and sustainability into professional practice.	DESIGN PROJECT I → DESIGN PROJECT II TECHNOLOGY AND SUSTAINABLE ENVIRONMENT → CAPITA SELECTA	ARCHITECTURAL DESIGN THEORY BIM : PROJECT DOCUMENTATION
(5) Able to explain the principles of consultation administration and project management.	DESIGN PROJECT I → DESIGN PROJECT II	CAPITA SELECTA

Course Structure Professional Program for Architect

Code	Subject	SKS
	1st Semester	
ENAR701001	Design Project 1	6
ENAR701003	Professional Ethics and Practice	3
ENAR701004	Technology & Sustainable Environment	3
	Sub Total	**12**
	2nd Semester	
ENAR702002	Design Project II	6
ENAR702005	Architectural Design Theory	3
	Elective*	3

*Student can also take required and elective courses available in Master of Architecture Program or other programs at the Department which are equal to courses for the Professional Program.

Elective Courses

Code	Subject	Credit
ENAR700006	BIM: Project Documentation	3

Syllabus Professional Program for Architect

Design Project I

ENAR701001
6 SKS
Learning Objectives:

Students can demonstrate a professional skill in architecture technical drawing, applicable to various design stages and construction schemes. Students show confidence to perform the responsible design skill, respectful to social, cultural, historical, environmental, and economic values. Adequate knowledge of tectonic is necessary as proof of evidence of the design buildability. Understanding legal aspects of architecture services shall lead architects to take good care of their client's needs under lawful performances.

Syllabus:

Professional ethics; relationship of architect and the client is focused on understanding, expression or presentation of ideas and service to clients as outlined in preliminary design products; understanding of local building codes; producing Bill of Quantity (BQ); administration of architecture consultation including the preparation of contracts and payment for services; the role of Building Information Modeling (BIM) in design practice.

Prerequisites: -

References:

1. Hall, Dennis J (ed), Architectural Graphic Standards (12th edition), American Institute of Architects, 2016
2. Emmitt, Stephen, Design Management for Architects, (2nd edition), Wiley-Blackwell, 2014
3. Kensek, Karen, and Douglas Noble, Building Information Modeling: BIM in Current and Future Practice, John Wiley & Sons, 2014
4. Holzer, Dominik, The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering and Construction, John Wiley & Sons, 2016
5. Ching, D.K, and Barry S.Onouye, Douglas Zuberbuhler, Building Structure Illustrated (2nd edition). John Wiley & Sons, 2014.
6. American Institute of Architects, The Architect's Handbook of Professional Practice (15th edition), 2013
7. RIBA Handbook for Practice Management (9th edition), 2013
8. Schittich, C, In Detail, Cost-Effective Building, Economic Concepts and Constructions, Birkhauser, 2007
9. Buku Pedoman Hubungan Kerja antara Arsitek dengan Pengguna Jasa, Ikatan Arsitek Indonesia
10. Undang – undang Nomor 6 Tahun 2017 tentang Arsitek
11. Undang – undang Nomor 2 Tahun 2017 tentang Jasa Konstruksi
12. Undang – undang Nomor 11 Tahun 2010 tentang Cagar Budaya
13. Undang – undang Nomor 28 Tahun 2002 tentang Bangunan Gedung
14. Peraturan Pemerintah Nomor 15 Tahun 2021 tentang Peraturan Pelaksanaan UU Nomor 6 Tahun 2017 tentang Arsitek
15. Peraturan Pemerintah Nomor 16 Tahun 2021 tentang Peraturan Pelaksanaan UU Nomor 28 Tahun 2002 tentang Bangunan Gedung
16. Peraturan Menteri PUPR Nomor 14 Tahun 2017 tentang Persyaratan Kemudahan Bangunan Gedung
17. Peraturan Menteri PUPR Nomor 11 Tahun 2014 tentang Pengelolaan AIr Hujan pada Gedung dan Persilnya
18. Peraturan Menteri PUPR Nomor 02 Tahun 2015 tentang Bangunan Gedung Hijau
19. Peraturan Menteri PUPR Nomor 18 Tahun 2010 tentang Pedoman Revitalisasi Kawasan
20. Peraturan Menteri PU Nomor 26 Tahun 2008 tentang Persyaratan Teknis Sistem Proteksi Kebakaran pada Bangunan Gedung dan Lingkungan
21. Peraturan Menteri PU Nomor 30 Tahun 2006 tentang Pedoman Teknis Fasilitas dan Aksesibilitas pada Bangunan Gedung dan Lingkungan
22. Peraturan Daerah Provinsi DKI Nomor 1 Tahun 2014 tentang Rencana Detail Tata Ruang dan Peraturan Zonasi
23. Peraturan Daerah Provinsi DKI Nomor 7 Tahun 2010 tentang Bangunan Gedung
24. Peraturan Gubernur Provinsi DKI Nomor 118 Tahun 2020 tentang Izin Pemanfaatn Ruang
25. Peraturan Gubernur Provinsi DKI Nomor 135 Tahun 2019 tentang Pedoman Tata Bangunan
26. Peraturan Gubernur Provinsi DKI Nomor 200 Tahun2015 tentang Akses Pemadam Kebakaran

27. Peraturan Gubernur Provinsi DKI Nomor 38 Tahun 2012 tentang Bangunan Gedung Hijau
28. Peraturan Kepala Dinas DKI Jakarta (Perkadis) Nomor 3 Tahun 2014
29. Pedoman Detail Teknis Ketatakotaan Pemerintah Daerah Provinsi DKI Jakarta 1995

Professional Etchics and Practice

ENAR701003
3 SKS
Learning Objectives:

Student should be able to demonstrate understanding of architects as profession and normative aspects of professional practice; Student should be able to understand the relationship between formal architecture education in university and further professional process to become architect, according to national and international agreement.

Syllabus:

Architect profession, architectural project, architectural firm; description about architectural practice where professional ethics become the main guide for conduct.

Professional ethics: understanding of law implication, code of ethics, professional code of conduct; knowledge on the existing resources to understand the emerging issues in architectural practice. Relationship with professional regulation: Regulation and code of ethics used by Ikatan Arsitek Indonesia (IAI), and international recommendation/policy which is agreed by all the members of Union Internationale des Architectes (UIA).

Pre-requisites: -

References:
1. Kode Etik Ikatan Arsitek Indonesia (IAI)
2. Dokumen *Union Internationale des Architectes (UIA)*
3. Landasan Etika Profesi

Technology and Sustainable Environment

ENAR701004
3 SKS
Learning Objectives:

Students should be able to perform an analysis on various approaches and strategies in building technology and the design of built environment towards sustainable environment.

Syllabus:

Environmental sustainable building technology principles; building technology, engineering, construction process, and building sevice and their impact on environmental sustainability; relationship among climate, built environment, construction, energy consumption and human well-being; application of building technology strategy in design project that complies with relevant building and environmental standard and regulation.

Pre-requisites:

References:

1. Kifert, Charles J, Sustainable Construction, Green Building Delivery, John Wiley & Sons Inc, New Jersey, 2013
2. Sarte, S Bry, Sustainable Infrastructure, The Guide to Green Enhgineering and Design, John Wiley & Sons Inc, New Jesey, 2010
3. Slessor, Catherine, Sustainable Architecture and High Technology, Eco Tech, Thames & Hudson, 1997
4. Stephen, Bougolah, Holcine & Shapler, Environmental, Technology and Sustainability, Taylor & ign and el 2006 Delivery, John Wiley, London, 2010
5. Laden, Gerhard Haus, DE Saldanka, Michael, Liedl, Peter, Climate Skin, Building Skin Concept that can do more with less energy, Birkhauser, Basel.
6. Meisel Arie, LEED Materials, A Resource Guide to Green Building, Princeton Press, New York, 2010
7. Applebay Paul, Integrated Sustainable Design of Buildings, Earthscan, London, 2011
8. Williams Daniel E, Sustainable Design, Ecology, Architrecture and Planning, John Wiley & Sons Inc, New Jersey, 2007

Design Project II

ENAR702002
6 SKS
Learning Objectives:

Students shouLd be able to understand and apply the knowledge of design presentation techniques, ethics, code of compliances relating to the preliminary design through design development for the purposes of building permit, project administration and project management at consultant which relate to the production and documentation of drawings, details, and building specification; Students should be able to demonstrate knowledge of various building materials.

Syllabus:

Professional ethics; relationship between architect and engineer and other related experts which is

focused on collaborative work, application of engineering standard which is demonstrated in complete tender document including working drawings, technical specification and implementation, and budget planning; the role of Building Information Modeling (BIM) in design practice.

Pre-requisite: -

References:

1. Hall, Dennis J. (ed), Architectural Graphic Standards (12th edition), American Institute of Architects, 2016
2. Emmitt, Stephen, Design Management for Architects, (2nd edition), Wiley-Blackwell, 2014
3. Kensek, Karen, and Douglas Noble, Building Information Modeling: BIM in Current and Future Practice, John Wiley & Sons, 2014
4. Holzer, Dominik, The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering and Construction, John Wiley & Sons, 2016
5. Ching, D.K, and Barry S.Onouye, Douglas Zuberbuhler, Building Structure Illustrated (2nd edition). John Wiley & Sons, 2014.
6. American Institute of Architects, The Architect's Handbook of Professional Practice (15th edition), 2013
7. RIBA Handbook for Practice Management (9th edition), 2013
8. Schittich, C, In Detail, Cost-Effective Building, Economic Concepts and Constructions, Birkhauser, 2007
9. Buku Pedoman Hubungan Kerja antara Arsitek dengan Pengguna Jasa, Ikatan Arsitek Indonesia
10. Undang – undang Nomor 6 Tahun 2017 tentang Arsitek
11. Undang – undang Nomor 2 Tahun 2017 tentang Jasa Konstruksi
12. Undang – undang Nomor 11 Tahun 2010 tentang Cagar Budaya
13. Undang – undang Nomor 28 Tahun 2002 tentang Bangunan Gedung
14. Peraturan Pemerintah Nomor 15 Tahun 2021 tentang Peraturan Pelaksanaan UU Nomor 6 Tahun 2017 tentang Arsitek
15. Peraturan Pemerintah Nomor 16 Tahun 2021 tentang Peraturan Pelaksanaan UU Nomor 28 Tahun 2002 tentang Bangunan Gedung
16. Peraturan Menteri PUPR Nomor 14 Tahun 2017 tentang Persyaratan Kemudahan Bangunan Gedung
17. Peraturan Menteri PUPR Nomor 11 Tahun 2014 tentang Pengelolaan AIr Hujan pada Gedung dan Persilnya
18. Peraturan Menteri PUPR Nomor 02 Tahun 2015 tentang Bangunan Gedung Hijau
19. Peraturan Menteri PUPR Nomor 18 Tahun 2010 tentang Pedoman Revitalisasi Kawasan
20. Peraturan Menteri PU Nomor 26 Tahun 2008 tentang Persyaratan Teknis Sistem Proteksi Kebakaran pada Bangunan Gedung dan Lingkungan
21. Peraturan Menteri PU Nomor 30 Tahun 2006 tentang Pedoman Teknis Fasilitas dan Aksesibilitas pada Bangunan Gedung dan Lingkungan
22. Peraturan Daerah Provinsi DKI Nomor 1 Tahun 2014 tentang Rencana Detail Tata Ruang dan Peraturan Zonasi
23. Peraturan Daerah Provinsi DKI Nomor 7 Tahun 2010 tentang Bangunan Gedung
24. Peraturan Gubernur Provinsi DKI Nomor 118 Tahun 2020 tentang Izin Pemanfaatn Ruang
25. Peraturan Gubernur Provinsi DKI Nomor 135 Tahun 2019 tentang Pedoman Tata Bangunan
26. Peraturan Gubernur Provinsi DKI Nomor 200 Tahun2015 tentang Akses Pemadam Kebakaran
27. Peraturan Gubernur Provinsi DKI Nomor 38 Tahun 2012 tentang Bangunan Gedung Hijau
28. Peraturan Kepala Dinas DKI Jakarta (Perkadis) Nomor 3 Tahun 2014
29. Pedoman Detail Teknis Ketatakotaan Pemerintah Daerah Provinsi DKI Jakarta 1995

Architectural Design Theory

ENAR702005
3 SKS
Learning Objectives:

Students are able to perform critical analysis to architectural ideas in classic and contemporary architectural literature, and able to identify the relationship between theory and practice in architectural design practice.

Syllabus:

The development in the mechanism of generating architecture from classical architecture to contemporary architecture; current ideas on the discourses of architectural design theoru and practice; multi-

disciplinary approach (art, mathematics, natural sciences, social sciences) in architectural theory and design.

Pre-requisite:-

References:

1. Stephen Cairns, Greig C Crysler, Hilde Heynen. The SAGE Handbook of Architectural Theory. SAGE Publications, 2012.
2. Michael Hays, Architecture Theory since 1968, MIT Press, 1998.
3. Kate Nesbitt, Theorizing a New Agenda of Architecture: An Antology of Architectural Theory 1965-1995. Princeton Architectural Press, 1996.
4. Charles Jenks & Karl Kropf, Theories and Manifestos of Contemporary Architecture. John Wiley and Sons, 1997.
5. Vitruvius. The Ten Books on Architecture, trans by M. H. Morgan. New York: Dover Publications, 1960.
6. D'Arcy Thompson, On Growth and Form. 1961.
7. Aaron Betsky & Erik Adigard, Architecture Must Burn. Gingko Press, 2000.
8. A+P Smithson. Irenee Scalbert, Towards a Formless Architecture: The House of the Future, 1999.

BIM: PROJECT DOCUMENTATION

ENAR700006
3 SKS
Learning Objectives:

Student should be able to use Building Information Modeling tool in the design, development, and documentation of architectural design.

Syllabus:

Introduction to BIM in architecture; model development, information and database handling, analysis and documentation.

Pre-requisites: -

References:

1. Eastman, C., Eastman, C.M., Teicholz, P. and Sacks, R., *BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors*. John Wiley & Sons, 2011
2. Kensek, K, and Noble, D., *Building Information Modeling: BIM in Current and Future Practice*, John Wiley & Sons, 2014
3. Holzer, D, *The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering and Construction*, John Wiley & Sons

Capita Selecta

ENAR700007
3 SKS
Learning Objectives:

Students should be able to expand their knowledge on various topics that support the mastery of professional architecture competence.

Syllabus:

Selected topics that are relevant to the mastery of professional architecture competence and the development of architecture knowledge

Prerequisite: -

References: Relevant references to the topic offered.

CHAPTER 6

MASTER PROGRAM

Master Program in Architecture

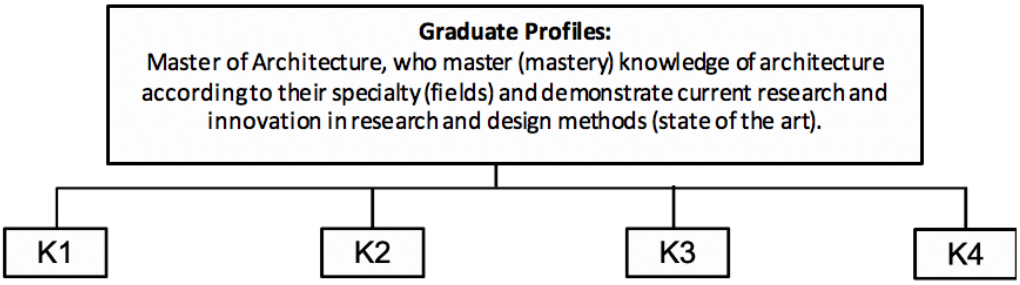
Program Specification

1.	**Degree Awarding University**	Universitas Indonesia	
2.	**University/Institution**	Universitas Indonesia	
3.	**Faculty**	Engineering	
4.	**Major Name**	Master of Architecture	
5.	**Vision and Mission**	Vision: "Establishing a high-quality Architecture Education Institution that receives national and international recognition, in order to foster future leaders who are critical, knowledgeable, and creative thinkers, with sensibility to local wisdom and environment sustainability." Mission: "Establishing the Architecture Education institutional system with excellent quality, adaptive, and inclusive towards the implementation of teaching, research and community engagement in higher education."	
6.	**Type of Class**	Reguler, Research	
7.	**Awarding Degree**	Magister Arsitektur (M. Ars.) / Master of Architecture	
8.	**Educational Accreditation**	BAN-PT: Akredited A	
9.	**Language**	Bahasa Indonesia	
10.	**Learning Scheme (Full Time / Part-Time)**	Full Time	
11.	**Requirements**	Bachelor degree	
12.	**Study Period**	2 years	
	Type of Semester	Number of semester	Number of weeks/semesters
	Reguler	4	17
	Short (opsional)		
13.	**Aims of the programme:** 1. Education: Producing Master of Architecture graduates who master certain competencies in accordance with the level of education excellence and quality. 2. Research: Encouraging excellent research works, which are able to compete at regional and international levels. 3. Community Service: Encouraging the application of architectural knowledge to the community		
14.	**Profile of Graduates:** Master of Architecture graduates who master knowledge of architecture according to their fields and able to demonstrate the state of the art and contribution both in their research and design methods.		
15.	**Graduate Outcomes:** Master of Architecture graduates has following competencies: 1. Ability to independently conduct and manage an architectural research in relation to their fields. 2. Ability to synthesize knowledge and exploration methods of architectural phenomena and ability to solve architectural design problems. 3. Ability to position themselves as individual in relation to others and as part of the society, through behaving and thinking in support to the success of community life, teamwork, and act responsively to the surrounding environment.		

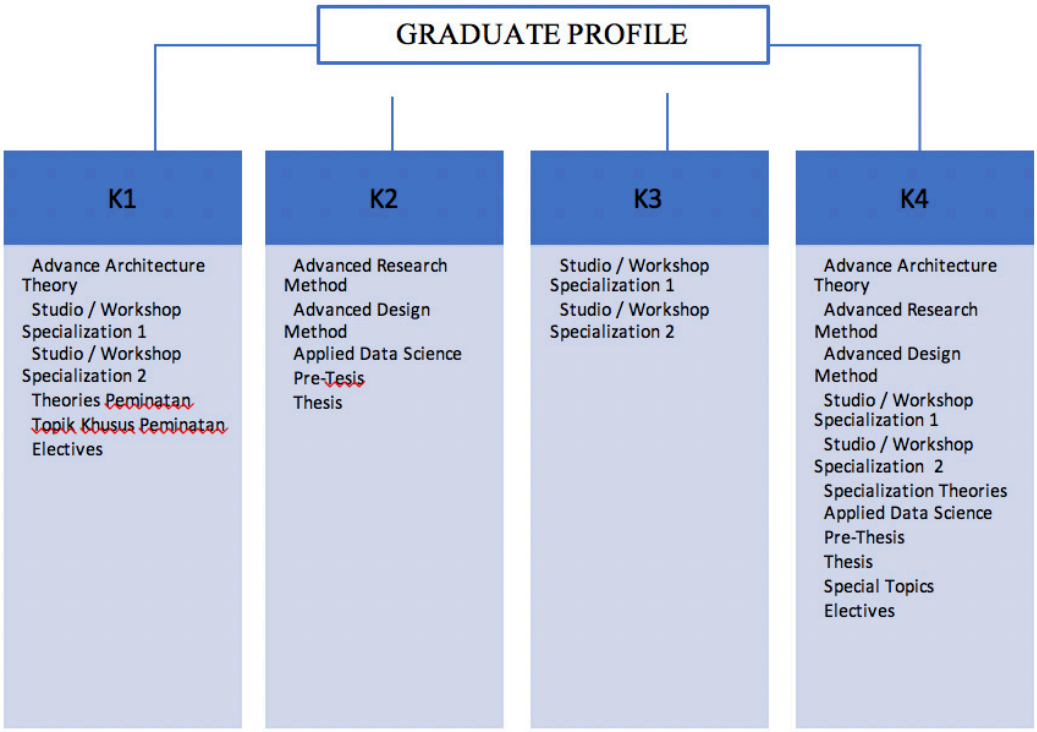
Job Prospects

Graduates can work in the business of architecture practitioners, academics, researchers, policy makers in government, entrepreneurs and activists in sectors related to human environment.

Network of Competencies



Detail Network of Competencies Graduates



Course Diagram in Achieving Competencies for Master Program in Architecture

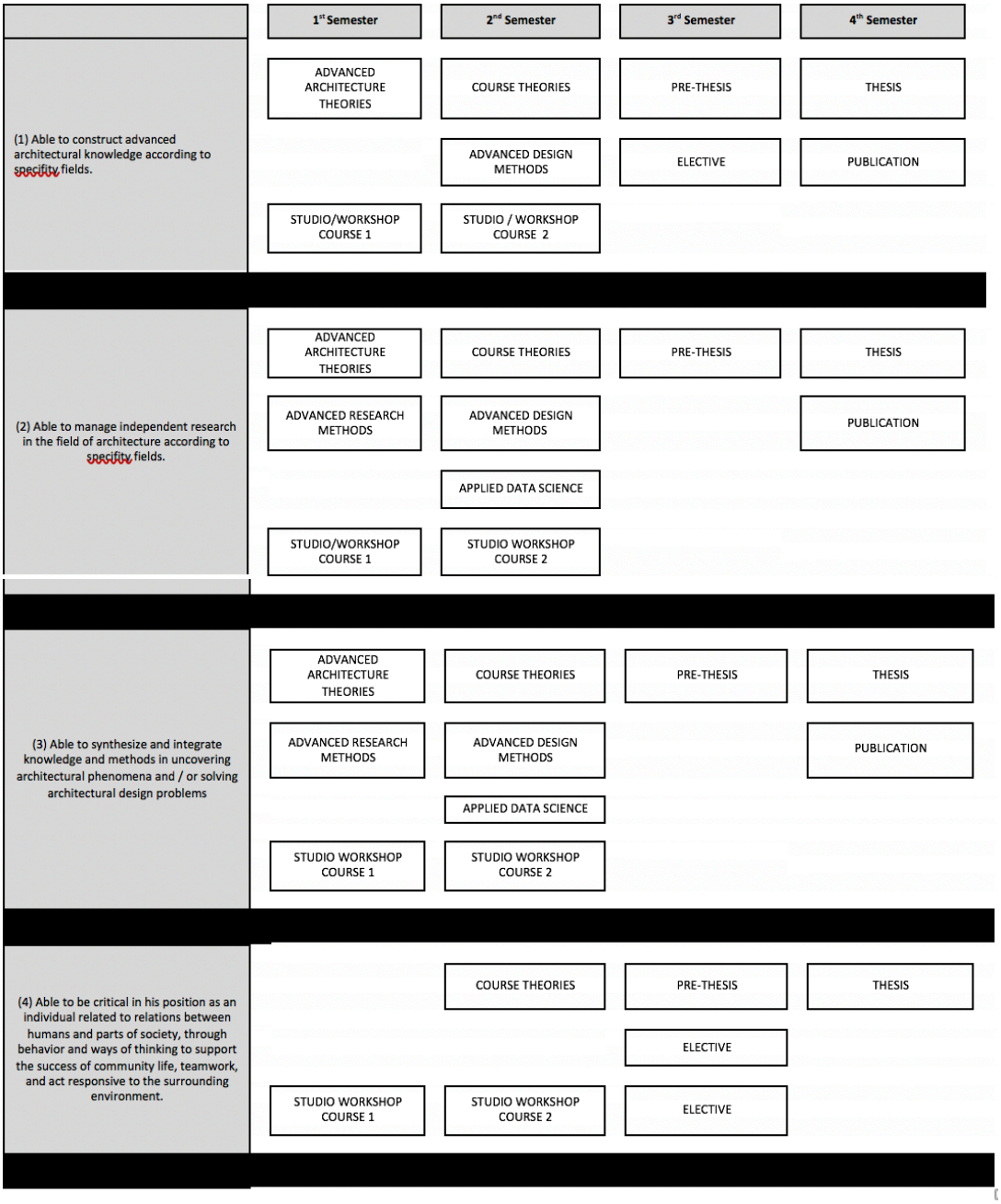


Figure 3 Course Diagram in Achieving Competencies for Master Degree in Architecture

Course Structure Master Program Architecture

Table 4 Curriculum Structure of Master of Architecture Program

Kode	Mata Ajar	Subjects	Peminatan					
			AD	UD	UHS	P	ATH	AS
Semester 1								
ENAR800001	Metode Penelitian Lanjut	Advanced Research Methods	3	3	3	3	3	3
ENAR800002	Teori Arsitektur Lanjut	Advanced Architectural Theories	3	3	3	3	3	3
ENAR800008	Studio Perancangan Arsitektur 1	Architectural Design Studio 1	5					
ENAR800009	Studio Perancangan Perkotaan 1	Urban Design Studio 1		5				
ENAR800010	Studio Perumahan dan Permukiman Perkotaan 1	Urban Housing and Settlement Studio 1			5			
ENAR800011	Workshop Properti 1	Property Workshop 1				5		
ENAR800012	Workshop Sejarah dan Teori Arsitektur 1	History and Theory Workshop 1					5	
ENAR800013	Workshop Arsitektur dan Keberlanjutan 1	Architecture and Sustainability Workshop 1						5
		Sub Total	**11**	**11**	**11**	**11**	**11**	**11**
Semester 2								
ENAR800003	Metode Perancangan Lanjut	Advanced Design Methods	3	3	3	3	3	3
ENAR800004	Ilmu Data Terapan	Applied Data Science	2	2	2	2	2	2
ENAR800014	Teori Perancangan Arsitektur	Architectural Design Theories	3					
ENAR800015	Teori Perancangan Perkotaan	Urban Design Theories		3				
ENAR800016	Teori Perumahan dan Permukiman Perkotaan	Urban Housing and Settlement Theories			3			
ENAR800017	Teori Properti	Property Theories				3		
ENAR800018	Teori dan Sejarah Arsitektur	Architectural Theory and History					3	
ENAR800019	Teori Arsitektur dan Keberlanjutan	Theory of Architecture and Sustainability						3
ENAR800020	Studio Perancangan Arsitektur 2	Architectural Design Studio 2	5					
ENAR800021	Studio Perancangan Perkotaan 2	Urban Design Studio 2		5				
ENAR800022	Studio Perumahan dan Permukiman Perkotaan 2	Urban Housing and Settlement Studio 2			5			
ENAR800023	Workshop Properti 2	Property Workshop 2				5		
ENAR800024	Workshop Sejarah dan Teori Arsitektur 2	History and Theory Workshop 2					5	

ENAR800025	Workshop Arsitektur dan Keberlanjutan 2	Architecture and Sustainability Workshop 2						5
		Sub Total	**13**	**13**	**13**	**13**	**13**	**13**
Semester 3								
ENAR800005	Pra Tesis	Pre-Thesis	4	4	4	4	4	4
	Pilihan	Elective	3	3	3	3	3	3
	Pilihan	Elective	3	3	3	3	3	3
		Sub Total	**10**	**10**	**10**	**10**	**10**	**10**
Semester 3								
ENAR800006	Publikasi Ilmiah	Scientific Publication	2	2	2	2	2	2
ENAR800007	Tesis	Thesis	4	4	4	4	4	4
		Sub Total	**6**	**6**	**6**	**6**	**6**	**6**
		Total	**40**	**40**	**40**	**40**	**40**	**40**

List of Elective Courses

CODE	MATA KULIAH	Elective Course	Credits
ENAR800026	Analisis Spasial Lanjut	Advanced Spatial Analysis	3
ENAR800027	Arsitektur dan Teks	Architecture and Text	3
ENAR800028	Arsitektur di Kawasan Pesisir	Coastal Architecture	3
ENAR800029	Arsitektur Etnik	Ethnic Architecture	3
ENAR800030	Arsitektur Pusaka	Heritage Architecture	3
ENAR800031	Arsitektur, Media dan Konteks	Architecture, Media, and Context	3
ENAR800032	Bangunan Hemat Energi	Energy Efficient Building	3
ENAR800033	BIM: Analisis & Asesmen Performa Bangunan	BIM: Building Performance Analysis & Assessment	3
ENAR800034	Desain Komputasi dan Permodelan Parametrik	Computational Design and Parametric Modelling	3
ENAR800035	Geometri dan Arsitektur	Geometry and Architecture	3
ENAR800036	Kajian Mandiri	Independent Study	3
ENAR800037	Kapita Selekta	Capita Selecta	3
ENAR800038	Kebijakan Perumahan	Housing Policy	3
ENAR800039	Keseharian dan Arsitektur	Everyday and Architecture	3
ENAR800040	Manajemen Proyek	Project Management	3
ENAR800041	Memahami Fenomena: Plato sampai dengan Derrida	Understanding Phenomenon: Plato to Derrida	3
ENAR800042	Morfologi Kota	City Morphology	3
ENAR800043	Perencanaan Kota	City Planning	3
ENAR800044	Psikologi Arsitektur	Architecture Psychology	3
ENAR800045	Teaching Assistantship	Teaching Assistantship	3
ENAR800046	Topik Khusus Perancangan Arsitektur	Special Topic on Architectural Design	3
ENAR800047	Topik Khusus Perancangan Perkotaan	Special Topic on Urban Design	3
ENAR800048	Topik Khusus Perumahan dan Permukiman Perkotaan	Special Topic on Urban Housing and Settlement	3
ENAR800049	Topik Khusus Properti	Special Topic on Property	3

ENAR800049	Topik Khusus Properti	Special Topic on Property	3
ENAR800050	Topik Khusus Sejarah, Teori dan Kritik Arsitektur	Special Topic on Architectural History, Theory and Criticism	3
ENAR800051	Topik Khusus Sustainabilitas	Special Topic on Sustainability	3

Master By Research

Code	Subject	SKS
	1st Semester	
ENEE800102	Research Proposal Examination	4
ENEE800101	Scientific Seminar	8
	2nd Semester	
ENEE800203	Proceeding Publication	4
ENEE800204	Research Result Examination	6
	3rd Semester	
ENEE800105	Journal Publication	8
	4th Semester	
ENEE800206	Master Thesis	10

SUBJECT SYLLABUS

Syllabus of Required Courses

Advanced Research Methods

ENAR800001
3 Credits
Learning Objectives:

Student are able to synthesize research processes that emphasize on the method of inquiry (inquiry); Student are able to conclude the right research design to answer research questions; Student are able to formulate problems, research questions, and how to answer research questions.

Sub Learning Objectives:

Student are able to analyze the ontology and epistemology of a scientific concept; Student are able to conclude the differences in research logic in various research paradigms and their application in the formulation of research designs; Student are able to compose writings that meet the rules of scientific writing and appropriate writing style to convey a sequence of ideas or scientific ideas in accordance with their field of specialty; Student are able to analyze the relationship between models, theories, hypotheses, and research methods; Student are able to identify research questions; Student are able to formulate research designs that are in accordance with research questions and objectives in accordance with the field of specialty.

Syllabus:

Through this course, students are able to choose an appropriate approach for research in the field of architecture and the built environment. The target is that students are able to prepare architectural research proposals appropriately, with the following sub-targets: student are able to formulate research questions that can be carried out, compile literature reviews that are relevant to the research to be carried out, and identify methods of obtaining information needed to answer research questions. The discussion covers the process of thinking and research in architecture; terminology (ontological, psychological); architectural texts and stylistics; research questions, research arguments; research logic; assumptions and paradigms; research strategies and tactics; and procedures for preparing research proposals

Pre-requisites:

No prerequisites for master's students. Requires instructors' approval for undergraduate students.

References:

1. J.M. Bochenski, *The Methods of Contemporary Thoughts*, , Harper Torchbook, 1968
2. G. Broadbent, *Design in Architecture: Architecture and the Human Sciences,* David Fulton Publisher, 2000;
3. Sir Karl Popper, *The Logic of Scientific Discovery,* Routledge Classic, 2002
4. T. Y.Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur, 2005
5. F. Crews, *The Random House Handbook*, 3rd ed, Random House, 1980
6. Edward Tufte, *Envisioning Information*, Graphics Press, 1983
7. John Zeisel, *Inquiry by Design*: *Environment/ Behavior/Neuroscience in Architecture, Interiors, Landscape, and Planning,* W. W. Norton, 2006
8. Linda Groat & David Wang, *Architectural Research Methods*, John Wiley & Sons, 2002
9. Murray Fraser (Ed). *Design Research in Architecture*, Routledge, 2013
10. Philip Plowright, *Revealing Architectural Design: Methods, Frameworks, Tools*, Routledge, 2014
11. Bryan Lawson, *How Designers Think: The Design Process Desmystified,* Architectural Press, 2005
12. Hazel Clark dan David Brody (eds), *Design Studies: A Reader*, Berg, 2009.
13. Nigel Cross, *Designerly Ways of Knowing*, Birkhauser, 2007

Advanced Architectural Theories

ENAR800002
5 Credits
Learning Objectives:

Students are able to understand and critically examine ARCHITECTURE as a DISCIPLINE related to physical & metaphysical phenomena of the HUMAN built environment (space/place); Students are able to understand Architectural Theory as a trans-disciplinary study which includes, among others: design, urban design, history & theory of architecture, urban housing and settlements; property, building technology and sustainability; Students are able to explain their thoughts related to the Trans-Disciplined Architecture Theory both orally through presentations and scientific writings.

Sub Learning Objectives:

Students show their participation through attendance at each session; Students are able to compile data and present their thoughts through power point and posters; Students are able to communicate their thoughts through active discussions both in class and in groups; Students are able to write scientific writings/articles.

Syllabus:

This course examines ARCHITECTURE as a DISCIPLINE related to physical & metaphysical phenomena of the human environment (space/place), which grows into a certain Advanced or specialization; : design, urban design, history & theory of architecture, urban housing and settlements; property, building technology and sustainability; Students are able to explain their thoughts related to the Trans-Disciplined Architecture Theory both orally through presentations and scientific writings.

Learning Materials:

Introductory Session: Introduction to Architectural Theory; Architectural Design Theory; Urban Design Theory; Urban Housing and Settlement Theory; Property Theory; Session 5: History and Theory of Architecture; Session 6: Building Technology Theory and Sustainability.

Pre-requisites: -

References:

1. Christopher Alexander, Notes on the Synthesis of Form, Harvard University Press Publication, 1964
2. -----, The Appraisal of Real Estate 13th edition, Appraisal Institute, 2008
3. Andrew Ballantyne (ed.), Architecture Theory, A Reader in Philosophy and Culture, Continuum, 2005
4. S Bell et.al. Sustainability Indicators: Measuring the Immeasurabel?, Earthscan Publications Ltd, 2000
5. A Bertaud, The Regulatory Environment of Urban Land in Indonesia: Constrains Imposed on the Poor and Impact of World Bank's Urban Projects, Asia Technical Department, 2003
6. Ricky Burdet eds, Living in the Endless City: The Urban Age Project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society, Paidhon, 2011
7. Stephen Cairns, Greig C Crysler, and Hilde Heynen, The SAGE Handbook of Architectural Theory, Sage Publication, 2012
8. Adrian Forty, Words and Buildings, A Vocabulary of Modern Architecture, Thames and Hudson, 2000
9. Bernd Evers and Christof Thoenes (eds), Architectural Theory from the Renaissance to the Present, Taschen, 2003
10. Michael K Hays, Architecture Theory since 1968, MIT Press, 1998
11. Triatno Y Hardjoko, Urban Kampung. Its Genesis and Transformation into Metropolis, with particular reference to Penggilingan in Jakarta, VDM, 2009
12. Charles Jencks (eds.), Theories and Manifestoes, Academy Editions, 1997
13. Keith Jenkins, Re-thinkingHistory, Routledge, 1991
14. Paul Alan Johnson, The Theory of Architecture: Concepts, Themes & Practices, Van Nostrand Reinhold, 1994
15. Hanno-Walter Kruft, A History of Architectural Theory from Vitruvius to The Present, Princeton Architectural Press, 1994
16. M Larice and E Mcdonald (eds), Urban Design Reader, Routledge, 2006
17. Henri Lefebvre translated by Donald Nicholson-Smith, The Production of Space, Blackwell, 1991
18. Miko E Miles, Gayle Berens, and Marc A Weiss, Real Estate Development, Urban Land Institue, edisi terakhir
19. M Mostavi at all (eds.), Ecological Urbanism, Lars Muller Publisher, 2010
20. Kate Nesbitt (Ed), Theorizing, A New Agenda for Architecture, An Anthology of Architectural Theory, Princeton Architectural Press, 1996
21. Jean-Pierre Protzen and David J Harris, The Universe of Design: Horst Rittel's Theories of Design and Planning, Routledge, 2010
22. W Rutz, Cities and Towns in Indonesia: Their Development, Current Positions and Functions with Regard to Administration and Regional Economy, Gebrunger Borttraeger, 1987
23. Christian Norbrg Schulz, Intentions in Architecture, MIT Press, 1968
24. D G Shane, Recombinant Urbanism: Conceptual Modeling in Architecture, Urban Design and City Theory, Academy Press, 2005
25. James D Shilling, Real Estate, Oncourse Learning, 2001
26. D'Arcy Thompson, On Growth and Form, Cambridge University Press, 1987

Architectural Design Methods

ENAR800003
3 Credits
Learning Objectives:

Student are able to produce research proposals that contain a synthesis of research and design relationships in research issues that are relevant to their specialty.

Sub Learning Objectives:

Student are able to analyze the relationship between research and design; Student are able to evaluate the process of developing a thesis from a research and/or design practice; Student are able to evaluate the process of building architectural arguments from a research and/or design practice; Student are able to synthesize design concepts and design approaches as the basis for research formulation and/or

design practice; Student are able to formulate the relationship between research and design as the basis for the preparation of a design proposal or research proposal.

Syllabus:

Through this course, students are able to explain the relationship between research and design, as well as various design approaches that have developed in the architectural discipline. In addition, by taking this course, students are able to choose a design approach that is suitable for architectural research. The discussion in this course will cover the relationship between research and design (research by design, research for design, research into design); design research, the formulation of a design thesis; forms of architectural argumentation in design practice; programming; typology and type of architecture; development of representation and visualization techniques and their application in architectural research; the various design approaches that have developed within the architectural discipline; narrative-based, performative, computational design approach. It is expected that after taking this course, students will be able to critically manage independent research in the field of architecture in accordance with their specialities, based on the synthesis and integration of relevant knowledge and methods in uncovering architectural phenomena.

Learning Materials:

Introduction: Design and research; Theses statements; Architectural argumentation forms; Architectural programming; Types and typologies in architecture; Various design methods: narrative, computational, ecological, situationist, adaptive reuse; Proposals preparation based on statements.

Pre-requisites:

No preconditions for participants in the Master of Architecture Program. Need to get permission from the lecturer for participants in the Architecture Undergraduate Program.

References:

1. Linda Groat & David Wang, Architectural Research Methods, John Wiley & Sons, 2002
2. Raymond Lucas, Research Methods for Architecture, Lawrence King, 2016
3. Murray Fraser (Ed), Design Research in Architecture, Routledge, 2013
4. Ilpo Koskinen, et al, Design Research Through Practice: From the Lab, Field, and Showroom, Morgan Kaufmann, 2011
5. John Zeisel, Inquiry by Design: Environment/ Behavior/Neuroscience in Architecture, Interiors, Landscape, and Planning, W. W. Norton, 2006
6. Kate Nesbitt (Ed), Theorizing A New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995, Princeton Architectural Press, 1996
7. Ulrich Conrads, Program and Manifestos on 20th Century Architecture, The MIT Press, 1964
8. Edward Tufte, Envisioning Information, Graphics Press, 1983
9. R Oxman and R Oxman, Theories of the Digital in Architecture, Routledge, 2014

Applied Data Science

ENAR800004
2 Credits
Learning Objectives:

Students are able to arrange the process of collection, creation, analysis, representation, and automation of data in architectural research based on the principles of scientific research methods.

Sub Learning Objectives:

Students are able to analyze data requirements and the stages of data processing in various ethical architectural researches; Students are able to conclude the process of collection and creation of various architectural data; Students are able to develop the process of analysis and representation of various architectural data; Students are able to design data processing processes in architectural research that utilizes simple digital automation processes.

Syllabus:

The Applied Data Science course is a mandatory knowledge for master students to be able to carry out architectural research. After following this course, students are expected to be able to plan and implement data processing processes in architectural research. This course introduces the character and variety of data in architectural research, building an understanding of the various stages in sorting, organizing, and analyzing various categories of data. In addition, this course also provides an introduction and application of various types of data visualization and representation as part of the analysis process, as well as providing an introduction and application of scripting as a form of data processing automation in architectural research. Students are given initial material which consists of three separate parts, such as the variety of data that can be collected, the variety of data analysis processes, and the automation of data organization. This material then becomes a trigger for students to apply the process of collecting, analyzing, and automating data in groups.

Learning Materials:

Definition and basis for organizing data in architectural research; Ethics of organizing data in architectural research; The process of collecting and developing measurement and calculation-based data in architectural research; The process of data collection and development based on modeling/ simulation in architectural research; The process of collecting and developing text-based data in architectural research; The process of collecting and developing visual-based data in architectural research; The process of collecting digital data and the ethics of using digital data in architectural research; The process of analyzing and visualizing data based on measurements and calculations in architectural research; The process of analyzing and visualizing text-based data and visuals in architectural research; The process of analyzing data based on complex measurements and calculations (multiple variables); The process of data visualization with a participatory method; The process of data analysis with simulation and modeling; Digital data visualization process in architectural research; Introduction to the importance of process automation in architectural research; Statistical-based architectural data analysis process with mixed methods; The process of scripting and prototyping as a form of automation in architectural research.

Pre-requisites: Have followed Advanced Architectural Theory

References:

1. Decoding the City: Urbanism in the Age of Big Data (Dietmar Offenhuber, Carlo Ratti (Eds.), 2014)
2. AD Smart Cities: A Spatialised Intelligence (Antoine Picon, 2015)
3. Bit by Bit: Social Research in the Digital Age (Matthew J Salganik, 2018)
4. Code: Between Operation and Narration (Andrea Gleiniger, Georg Vrachliotis (Ed.), 2012)
5. Computational Drawing: From Foundational Exercises to Theories of Representation (Carl Lostritto, 2019)
6. Doing Research In and On the Digital: Research Methods across Fields of Inquiry (Christina Costa, Jenna Condie (Ed.), 2018)
7. The Death of Drawing: Architecture in the Age of Simulation (David R. Scheer, 2014)
8. Visualizing Data: Exploring and Explaining Data in the Processing Environment (Ben Fry, 2007)

Pre-Thesis

ENAR800005
4 Credits
Learning Objectives:

Students are able to carry out research planning in the field of architecture according to their specialty.

Sub Learning Objectives:

Students are able to identify knowledge gaps and state of the arts in the field of specialty based on literature relevant to the research topic; Students are able to formulate research questions; Students are able to formulate appropriate research methods to answer research questions; Students are able to develop research proposals that meet the rules of scientific writing.

Syllabus:

The Pre Thesis stage prepares students to have the competencies of master of architecture graduates according to the IQF Level 8: a) Ability to develop knowledge in technology, and or art in their scientific fields or professional practice through research, to produce innovative and tested works; b) Ability to solve the problems of science, technology, and or art in the field of science through an inter or multidisciplinary approach; c) Ability to manage research and development that to be beneficial to society and science, and is able to gain national and international recognition. At the end of the pre-thesis stage, students will produce a research thesis proposal or a design thesis proposal that is ready to be followed up through research or design that shows a position on the state of the arts in its field of specialty and reflects an in depth thought at the mastery level towards architectural discipline.

Learning Materials:

Understanding the state of the art through a review of the relevant specialty literature; Understanding the formulation of research questions that have novelty and scientific contributions; Understanding the structured and efficient research methods in answering research questions.

Pre-requisites: Passed Advanced Design and Research Methods with minimum score is B

References:

1. I. Borden and K. Ruedi, *The Dissertation: An Architecture Students' Handbook*, Oxford University Press, 2000
2. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005
3. L. Groat & D. Wang, *Architectural Research Methods*, John Wiley and Sons, 2002
4. F. Crews, *The Random House Handbook*, 3rd ed, Random House, 1980

Scientific Publications

ENAR800006

2 Credits
Learning Objectives:

Students are able to produce scientific writings from studies or research that meet the rules of scientific writing with a decent quality to be published in national journals or international level dissemination forums

Sub Learning Objectives:

Students are able to analyze the elements of scientific writing; Students are able to manage reference sources in accordance with the rules of scientific writing; Students are able to state the position of knowledge in their respective research; Students are able to compile scientific articles for publication/ dissemination of research results.

Syllabus:

This course is a compulsory subject for master students as part of the dissemination of research results. After taking this course, students are expected to be able to produce scientific writings on the results of studies or research with a quality that is appropriate to be published in national journals or international level dissemination forums.

Learning Materials:

Scientific publications in the discipline of architecture; Scientific writing rules; Various modes of scientific writing; Elements of scientific writing; Reference management; The process of preparing scientific writings; Strategy of argument formulation in scientific writing; Publication procedures in national/international seminars/conferences; Publication procedures in international reputable journals; Review of articles in internationally reputed journals in architecture-related fields.

Pre-requisites: Passed Advanced Design and Research Methods Methods.

References:

1. I. Borden and K. Ruedi, *The Dissertation: An Architecture Students' Handbook*, Oxford University Press, 2000
2. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005
3. L. Groat & D. Wang, *Architectural Research Methods*, John Wiley and Sons, 2002
4. N. Gough, *Blank Spots, Blind Spots, and Methodological Questions in Postgraduate Research*, 2002

Thesis

ENAR800007
4 Credits
Learning Objectives:

Students should be able identify, study, and communicate issues in a specific research area which relates to architecture. Able to develop advanced mastery in reading, research, and write a thesis. For thesis research section: provide a thesis not more than 20.000 words. For design thesis section: provide the design as well as thesis not more that 10.000 words and design portfolio that gives the whole picture on design research process.

Syllabus:

Defining issue to respond, research questions which are clearly formulated, and the objectives of the research. Theoretical based, strategy for choosing methods, investigation of facts and synthesis of materials which lead to the responses to research questions and the conclusion.

Pre-requisites: Passed Pre-Thesis

References:

1. I. Borden and K. Ruedi, *The Dissertation: An Architecture Students' Handbook*, Oxford University Press, 2000
2. T. Y. Hardjoko, *Panduan Meneliti dan Menulis Ilmiah*, Departemen Arsitektur Universitas Indonesia, 2005
3. L. Groat & D. Wang, *Architectural Research Methods*, John Wiley and Sons, 2002
4. F. Crews, *The Random House Handbook*, 3rd ed, Random House, 1980

Architectural Design Studio 1

ENAR800008
5 Credits
Learning Objectives:

Student are able to develop design flow and ideas for architectural space programs in accordance with related design methods.

Sub Learning Objectives:

Student are able to synthesize key ideas from the architectural theory literature relevant to the design scope; Student are able to develop design statements and typology-based programming as a further synthesis of the literature; Student are able to develop quality and/or system of architectural space based on synthesis of theory, design statements and programming into a creative and comprehensive design; Student are ble to apply various creative and appropriate representation techniques and media, consisting of manual and digital 2D and 3D media, to communicate design ideas

Syllabus:

Through this course, students are able to develop

the ability to create space as an architectural design concept formulated as a specific design theme, with regional planning and sustainability considerations. In this studio, students explore typology-based design concepts, and explore the idea of sustainability in various contexts. Students have knowledge of urban spatial typology, building typology, programming needs and site analysis. Student are able to propose design ideas with themes and ideas of space in ecological ideas. Through this studio, students are able to carry out architectural researches: translating program into conceptual diagrams, layout, circulation, spatial integration through sketches, architectural drawings and models. The design needs to show tectonic exploration: the connection between tectonic themes and architectural typologies that are in harmony with the design concept. The design idea then developed by taking into account aspects of verbal and visual communication.

Learning Materials:

Reading synthesis on specific design theme; Precedent studies, analysis and synthesis; Programming, defining relationships and systems; Presentation of context study and individual design proposition; Development of spatial ideas; spatial scenario; micro-macro scenario; 6. 3D tectonic exploration and any necessary experiments; Design development; finalisation; Final design presentation.

Prerequisites: -

References:

1. Christopher Alexander, A Pattern Language, Oxford University Press, 1977
2. Peter Eisenman, Diagram Diaries, Thames & Hudson, 1999
3. William McDonough and Michael Braungart, The UpCycle: Beyond Sustainability – Designing for Abundance, Melcher Media: A Northpoint Press, 2013
4. Jean-Michel Kantor, "A Tale of Two Bridges: Topology and Architecture" in Nexus Network Journal, Volume 7, Issue 2, November 2005, pp 13-21
5. Works and thoughts of Zaha Hadid, Frank Gehry, Rem Koolhaas, Bernard Tschumi, Stephen Holl, Bjarke Ingels, Julien De Smedt, etc.

Urban Design Studio 1

ENAR800009
5 Credits
Learning Objectives:

Student are able to analyze, synthesize and integrate knowledge of urban design theory in revealing urban design phenomena; Student are able to apply urban design methods and rules in stages of urban design, starting from arranging urban elements to city control devices.

Sub Learning Objectives:

Student are able to understand the context of the site through tracing the characteristics of the area; Students are able to critically review various types of city plans and regulations including master plans, zoning, UDGL, etc.; Student are able to record all aspects and components of urban areas in the context of the case study, both artificial and natural components, and how these components affect users, such as the local community and the general community; Student are able to propose sustainable regional design alternatives from in-depth and critical analysis of the issues in the context of the site by considering the potential of the site; Students develop the skills in presenting urban design visually/ graphically as well as verbally in mezo (urban design) and micro (urban space) scales; Student are able to propose creative ideas for urban design works by developing place making or public spaces with strong and inclusive characters; Student are able to present presentations in the form of sketches, diagrams, models and standard drawings (site plans, pieces, 3D) from 1:2000 to 1:500 scale and skills to produce urban design portfolios professionally

Syllabus:

This course equips students with the basics of analysis and skills in applying urban design rules, starting from arranging urban to control devices for the use of urban space to a certain extent, with the object/case of the studio being a strip or a transit-oriented area spot (TOD). Students are introduced to the basics of urban design applications using the results of an in-depth analysis of urban contexts and issues.

The site/area chosen is a piece of complex road or spot/area and has a variety of elements and city elements so that it can provide opportunities for students to carry out "multiple analyses", understand and apply the idea of "place making" in the private and public spheres, open space and buildings, to realize individual and community/public needs.

Prerequisites: -

References:

1. Carmona, Matthew et.al, Public Spaces Urban Spaces. Oxford: Architectural Press, 2003
2. Gehl, Jan, How to Study Public Life, Copenhagen: Island Press, 2013
3. Hester, Randolph T., Design for Ecological Democracy, Cambridge, MA: The MIT Press, 2010

4. Shane, Graham, Recombinant Urbanism. Great Britain: John Willeys & Sons, 2005
5. Jacobs, Allan B., Looking at Cities. Cambridge, MA: Harvard University Press, 1985
6. Krier, Rob, Urban Space. New York: Rizzoli Int. Publication, 1970
7. Lynch, Kevin, Good City Form. Cambridge, MA: MIT Press., 1984
8. Larice, Michael, Urban Design Reader, London: Routledge, 2012
9. National Association of City Transportation Officials, Urban Street Design Guide, Copenhagen: Island Press, 2013
10. Rossi, Aldo, The Architecture of the City. Cambridge, MA: MIT Press, 1982

Urban Housing and Settlement Studio 1

ENAR800010
5 Credits
Learning Objectives:

Student are able to design housing projects based on market mechanisms; the design program includes a market feasibility study, market economy, location and types of houses.

Sub Learning Objectives:

Students are able to examine the main concepts in the housing and settlements sector, such as house, home and dwelling; Students are able to analyze data on residential needs by programming and designing vertical houses; Students are able to design housing projects based on market mechanisms; the design program includes a market feasibility study, market economy, location and types of houses.

Syllabus:

In this course, students design housing projects based on market mechanisms; the design program includes a market feasibility study, market economy, location and types of houses.

Learning Materials:

The main concepts in the field of housing and settlements, such as house, home and dwelling; Analysis of residential needs data with vertical house programming and design; Designing housing projects based on market mechanisms; the design program includes a market feasibility study, market economy, location and types of houses.

Pre-requisites: -

References:

1. C A Doxiades, Ekistics: An Introduction to the Science of Human Settlements, Oxford University Press, 1968
2. John Macsai F.A.I.A. et. al., Housing, John Wiley & Sons, 1982.
3. Jörg Blume (ed.), Housing for the Future: Projects in Germany 1996, Inter -Nationes, 1996
4. Direktorat Jenderal Cipta Karya, Dep. PU, Pedoman Teknik Perencanaan Perumahan Flat dan Maisonette, 1981
5. DC Corporate Documentation, Real Estate Investment Calculations
6. The Dewberry Companies, Land Development: Planning, Engineering and Surveying, McGraw-Hill, 2004
7. Joshua Kahr and Michael C. Thomsett, Real Estate Market Valuation and Analysis. John Wiley & Sons, 2005

Property Workshop 1

ENAR800011
5 Credits
Learning Objectives:

Students should be able to learn the relation between architecture and real estate activate in a small scale project. Relating to the place innovation for human activity like new building type, lifestyle, market segmentation, et cetera.

Syllabus:

The dream & the product; the products (precedence): residential property, commercial/ retail property, office building/ property for working; money matters/ feasibility study; the products & the users/ lifestyle; management aspects of a property product; The proposed products (future): residential property, commercial/ retail property, office building/ property for working; finance & management.

Prerequisites: -

References: - Relevant references to the topic offered.

History and Theory of Architecture 1

ENAR800012
5 Credits
Learning objectives:

Students are able to conduct research on History and Architectural Theory in an interdisciplinary and multidisciplinary manner; Students are able to communicate thoughts related to History and Architectural Theory to the public in various forms of representation of communication media (written and virtual); Students are able to analyze, criticize an architectural phenomenon and formulate a synthesis; Students master various research methods in History and Architectural Theory related to Historiography, Representation and Material Culture aspects, which will have an impact on architectural expertise in the area of scientific publications,

criticism and professional architects.

Sub Learning Objectives:

Students show their participation through attendance at each session; Students are able to compile data and present their thoughts through power point and posters; Students are able to communicate their thoughts through active discussions both in class and in groups; Students are able to apply architectural history research methods, including aspects of research triangulation in the analysis and synthesis stages; Students are able to make scientific writings/articles; Students are able to understand the profession as an Architectural Historian in Architectural History Research and Workshops.

Syllabus:

The course reviewed various research methods and approaches to History and Architectural Theory related to Historiography and Representation aspects. In this Semester the selected research relates to Film (Representation of City Architecture) and Material Culture (Design and Art).Students will be given various readings at the beginning of the topic that must be reviewed (literature review) and actively present the results of their analysis and research synthesis that reflect their critical thinking. Next, students look for issues based on the topics that have been given and use methods and approaches from the readings that have been given to conduct research on History and Architectural Theory. At the end of the research, students must communicate and publish the results of their research which also reflects their creative interpretation in the areas of scientific publication and criticism.

Learning Materials:

Task I: HISTORIOGRAPHY: History, Theory and Narrative; Task II: ARCHITECTURE and REPRESENTATION; Task III: Film/Movie and Representation of City Architecture

Prerequisites: -

References:

1. Iain Borden and David Dunster (eds), *Architecture and the Sites of History: Interpretations of Buildings and Cities*, Butterworth Architecture, 1995
2. E H Carr, *What is History?,* Penguin Books, 1961
3. Keith Jenkins, *Rethinking History*, Routledge, 1991
4. Hayden White, *Tropics of Discourse: Essays in Cultural Criticism,* The Johns Hopkins University Press, 1978
5. Hayden White, *"The Burden of History"*, *History and Theory,* Vol. 5, No. 2 , 1966 pp. 111-134
6. Mona Lohanda (ed), *Arsip dan Sejarah*, ANRI, 1980
7. G W F Hegel tr. J. B. Baillie, *Phenomenology of Mind,* 1910; 2nd ed. 1931
8. G W F Hegel tr. A. V. Miller, *Hegel's Phenomenology of Spirit,*Oxford University Press, 1977

Architecture and Sustainability Workshop 1

ENAR800013

5 Credits

Learning Objectives:

Students are able to manage advanced research related to the application of architectural principles and sustainability in design and the environment.

Sub Learning Objectives:

Students are able to explain the meaning and principles of the Module; Students are able to demonstrate the principles of sustainability related to modules; Students are able to identify sustainability issues in the design and its aspects; Students are able to develop the principle of sustainability in the design and its aspects; Students are able to manage advanced research related to the application of architectural principles and sustainability in design and the environment.

Syllabus:

Architecture and Sustainability Workshop 1 is 1 of 2 mandatory workshops on Masters in Architecture. Through this workshop, students are able to manage their own research related to design and the environment, by applying the principles of sustainable architectural design and with a building technology approach, economics and ecology with an emphasis on the application of sustainability principles in design and the surrounding environment, especially on the use of materials and utility systems. water, dirty water and garbage).

Learning Materials:

Module 1 (Architecture and Sustainability); Module 2 (Sustainable Construction and Materials); Module 3 (Water-Waste-Waste/Water-Wastewater-Waste (WWW))

Prerequisites: -

References:

1. Dominique Gauzin-Muller, *Sustainable Architecture and Urbanism*, Birkhausser, 2002
2. Earl R. Babbie, *The Practice of Social Research*, Belmont: Wadsworth Publ. Co.Inc, 1973
3. Giancolli DC. *General Physics*, Prentice Hall Inc, 1984
4. James Ambrose, *Simplified Design for Building*

Sound Control, John Wiley & Sons, 1995
5. Leslie L Doelle and Lea Prasetio, *Akustik Lingkungan*, Erlangga, 1993
6. KE Watt, *Understanding the Environment*, UC Press, 1982
7. SFPE Handbook, *Society of Fire Protection Engineering*.

Architectural Design Theories

ENAR800014
3 Credits
Learning Objectives:

Students are able to formulate the role of theory as the basis for the practice of architectural design.

Sub Learning Objectives:

Student are able to analyze design activities as a process of thinking and synthesis; Student are able to analyze the basic framework of architectural design; Student are able to analyze the role of technological developments in architectural design; Student are able to synthesize the relationship between theory and practice of architectural design based on relevant design theory; Student are able to formulate the position of design practice based on relevant design theory.

Syllabus:

Developments in the mechanism of architectural formation from classical to contemporary architecture; current ideas in architectural design theory and practice; ideal ideas in architecture; multidisciplinary approach (art, mathematics, natural sciences, and social sciences) in architectural theory and design.

Learning Materials:

Design: What is design? Design thinking; Design as synthesis; Three major frameworks: Pattern-based design, Force-based design, Concept-based design; Architecture and digital technology; Digital design methods: computational design, parametric modelling; How theory informs design practice; Case studies of design practice informed by particular theories; Designer's position.

Prerequisities: Has attended The Advanced Architectural Theories subject

References:

1. Stephen Cairns, Greig C Crysler, Hilde Heynen. *The SAGE Handbook of Architectural Theory.* SAGE Publications, 2012.
2. Michael Hays, *Architecture Theory since 1968,* MIT Press, 1998.
3. Kate Nesbitt, *Theorizing a New Agenda of Architecture: An Antology of Architectural Theory 1965-1995*. Princeton Architectural Press, 1996.
4. Charles Jenks & Karl Kropf, *Theories and Manifestos of Contemporary Architecture*. John Wiley and Sons, 1997.
5. Vitruvius. *The Ten Books on Architecture*, trans by M. H. Morgan. New York: Dover Publications, 1960.
6. D'Arcy Thompson, *On Growth and Form*. 1961.
7. Aaron Betsky & Erik Adigard, *Architecture Must Burn*. Gingko Press, 2000.
8. A+P Smithson. Irenee Scalbert, *Towards a Formless Architecture: The House of the Future*, 1999.

Urban Design Theories

ENAR800015
3 Credits
Learning Objectives:

Student are able to analyze criteria, indicators, and classifications in urban planning/design based on the theories or concepts; Student are able to map the context of future urban reconfiguration as part of the role of students as prospective urban designers/ planners.

Sub Learning Objectives:

Student are able to explain urban theory and form based on the relationship of urban design/planning with architectural philosophy, power and national identity; Student are able to explain good city theory, evaluate current urban conditions and the paradigm of urban life in the 21st century; Student are able to explain the development of human habitat and cities in Indonesia; Students are able to explain elements, agents, transformations, and urban history, see the difference between theory and practice and see their relationship to other fields of knowledge; Students are able to analyze and evaluate the most up to date urban design paradigm; Student are able to critically describe cities that are in line with the SDGs and the New Urban Agenda (NUA) in the context of cities in Indonesia.

Syllabus:

Urban Design Theory course is a basic knowledge in urban planning/design that studies the theories, principles and processes of urban planning/design in Indonesia and other countries. Students are expected to be able to develop a holistic view of the city as the basis for their ability to design cities in three dimensions, and are encouraged to always be critical in understanding current issues and paradigms, either directly or indirectly, that will have an impact on future city design.

Prerequisites: Students have taken Advanced Archi-

tectural Theories.

References:

1. R. Legates, *The City Reader,* 2nd ed, Routledge, 1999
2. Henri Pirenne, *The Medieval Cities: Their Origins and the Revival of Trade*, Princeton University Press, 1969
3. Aristoteles, *The Politics* (especially Book III and Book VII), Penguin Classics, revised edition, 1981

Urban Housing and Settlement Theories

ENAR800016
3 Credits
Learning Objectives:

Student are able to construct advanced architectural knowledge in the Urban Housidng and Settlements as a "presence" (existence) which indicates spatial formation in space-time.

Sub Learning Objectives:

Students are able to examine the concept of settlements and urban housing as a social presence and its spatial implications in the city; Students are able to analyze housing and living activities from socio-political-economic-spatial aspects; constitution of urban society-production and reproduction of society; Students are able to provide critical arguments for settlement and urban housing issues in Indonesia.

Syllabus:

This course introduces students to the understanding of urban settlements as a "human presence" in the formation of space/time. Architecture is seen as an environment that is interpreted as part of the human presence in an effort to condition oneself, especially to aspects of the natural, socio-political-cultural physical environment; then humans are conditioned by the conditions they create. The Conditions are not only related to the nature of individual life but also in living in groups; Aristotle termed humans as zoo polikon which literally means social animals - social creatures.

Learning Materials:

The concept of housing and urban settlement as a social presence and its spatial implications in the city; housing activities from the socio-political-economic-spatial aspect; constitution of urban society-production and reproduction of society; The problem of urban housing and settlemetnt in developing countries and especially Indonesia.

Prerequisites: Has attended the Advanced Architectural Theories subject

References:

1. A T Alamsyah, *Regionisme dalam Penataan Permukiman di Gugus Pulau Mikro*, Disertasi, PSIL UI, 2006
2. P Bourdieu, *Outline of A Theory of Practice*, Cambridge University Press, 1977, pp. 72-95
3. Rod Burgess, *Petty Commodity Housing or Dweller Control?: A Critic of John Turner View on Housing Policy,* 1978
4. Michel De Certeau tr by Steven F. Rendall, *The Practice of Everyday Life*, University of California Press, 1984, pp. 29-42 and 91-110
5. M Foucault, *'Space. Power and knowledge,' S. During (ed.), The Cultural Studies Reader Second Edition*, Routledge, 1999, pp. 134-41
6. A Giddens, *The Constitution of Society*, University of California Press, 1984, pp. 1-28
7. A Gilbert and Ann Varley, *Landlord and Tenant Housing the Poor in Urban Mexico*, Routledge, 1991, chapter 7&8
8. M Haan & Thomas Perks, *'The Housing Careers of Older Canadians: An Investigation Using Cycle 16 of the General Social Survey*, Canadian Studies in Population Vol. 35.2, 2008, pp. 223–242
9. T Y Harjoko, *Penggusuran or Eviction in Jakarta: Solution Lacking of Resolution for Urban Kampung*, E-Proceedings, http://coombs.anu.edu.au/SpecialProj/ASAA /biennial-conference/2004/Harjoko-T-ASAA2004.pdf, 18.02.2013
10. M Heidegger tr by Albert Hofstadler, *Kerper & Row, Poetry, Language, Thought*, Publishing Inc., 1971, pp. 145-161
11. H L Kendig, *'Housing Careers, Life Cycle and Residential Mobility : Implications for the HousingMarket'*, Urban Studies, 1984, pp. 21, 271-283
12. Shilpa Ranade, *"The Way She Moves, Mapping the Everyday Production of Gender and Space in Mumbai",* Economic and Political Weekly, Vol. 42, No. 17, Apr. 28 – May 4 2007, pp. 1519-1526
13. B Sullivan & Ke Chen, '*Design for Tenant Fitout: A Critical Review of Public Housing Flat Design in Hong Kong'*, Habitat Intl. Vol 21. No 3, 1997, pp. 291-303
14. John F.C Turner, *Housing By People: Towards Autonomy in Building Environtments,* Marion Boyars Publishers Ltd, 2000, pp 53-74
15. K D Willis, *Squatter Settlements*, Elsevier Ltd, 2009

Property Theories

ENAR800017
3 Credits
Learning Objectives:

Students are able to select, analyze and conclude in an integrated manner the phenomenon of property area development by using the theory that has been

studied; students are able to predict things that will happen if students plan to develop property areas.

Sub Learning Objectives:

Student are able to explain issues and problems; Students are able to obtain the material needed to understand the theory related to every issue and problem of property area development in depth; Student are able to analyze the material related to the main issues and problems of discussion; Student are able to make a summary in the form of presentation material for each subject and demonstrate verbal skills in explaining the theory; Student are able to write scientific papers related to issues and problems related to the development of selected property areas in an integrated manner.

Syllabus:

This course provides students with knowledge of issues and problems related to the implementation of property area development with broad spatial aspects, starting from the issue of land provision to calculation of the required financial resources as well as the scope of technical, environmental, social/cultural, legal discussions and economics/finance.

Learning Materials:

The main issues and problems of property area development; Open space and built space in the context of the property environment; The need for providing land to fulfill livelihood; Technical aspects for the development of property areas; Selection of the property area and its relation to accessibility and its issues and impacts; Availability and provision of infrastructure and utilities; The effect of visibility on consumer interest and property value increases; Spatial analysis of property space; Availability and provision of public facilities to the economic value of the property area; Provision of sports facilities and leisure facilities to the perception of potential consumers; The influence of policies (economic, financial, political and legal) on the development of property areas; Conventional financing for property area development; Non-conventional financing for the development of property areas; The effect of economic/financial policies (taxes/interest rates) on property development.

Prerequisites: Has attended the Advanced Architectural Theories.

References:

1. Michael Ball et.al, *The Economics of Commercial Property Markets*, Routledge, 1998
2. Sheman J Maisel, *Real Estate Investment and Finance*, McGraw-Hill, Inc., 1976
3. Hugh O. Nourse, *Managerial Real Estate Corporate Real Estate Asset Management*, Prentice Hall, 1990
4. Mark W. Patterson, *Real Estate Portfolios*, John Willey & Sons, Inc, 1995

Architectural Theory and History

ENAR800018
3 Credits
Learning Objectives:

Students are able to understand and analyze various theories related to historical architectural thinking (and architectural historigraphy) in the world and their developments, so that students can examine the theoretical and historical aspects of their respective research.

Learning Objectives:

Students are able to understand and be able to analyze various theories related to ideas about the history of architecture (and architectural historigraphy) in the world and their development and relevance in architectural issues; Connecting architectural theory and history with architectural phenomena as well as analyzing theoretical and historical aspects in their respective research and compiling them in scientific writings.

Syllabus:

This course studies architectural theories, especially since modern and post-modern times. Through discussion and case studies, this course underscores the interrelationships between architecture, people, and the context of socio-cultural, political, and technological developments in the world. Students are also expected to connect theory with historical architectural thoughts (and architectural historigraphy) in the world and its development, so that students can examine theoretical and historical aspects of their respective research.

Learning Materials:

Philosophy of Architectural Histories and Theories; History, Tradisi & Memory; Fenomenologi; Semiologi; Structuralism, Post-Structuralism (Deconstruction); Modern and Posmodern; Design; Colonialism and Poscolonialism; Gender in Architecture.

Prerequisites: Has attended the Advanced Architectural Theories subject

References:

1. Andrew Ballantyne (ed.), *Architecture Theory, A Reader in Philosophy and Culture,* Continuum, 2005
2. Homi K Bhabha, *The Location of Culture*, Routledge, 1994
3. Iain Borden, Barbara Penner; Jane Rendell,

(Eds),*Gender Space Architecture: An Interdisciplinary Introduction (Archi- text)*, Routledge, 2000
4. Zeynep Celik, *Displaying The Orient: Architecture of Islam at Nine- teenth-Century World's Fairs,* University of California Press, 1992
5. Guy Debord translated by Donald Nicholson Smith, *The Society of the Spectacle*, Black & Red, 2004
6. M. Foucault, *The Archeology of Knowl- edge*, Vintage, 1982, Parts II & III
7. Terence Hawke, *Structuralism and Semiotics,* Routledge, 1997
8. Steven Holl, Juhani Pallasmaa, Alberto Perez-Gomez, *Questions of Perception: Phenomenology of Architecture,* William K Stout Pub, 2007
9. Keith Jenkins, *Re-thinking History*, Routledge, 1991
10. Neil Leach (ed.), *Rethinking Architecture: A Reader in Cultural Theory*, Routledge, 1998
11. Edward Said, *Orientalism,* Penguin, 1977
12. Panayotis Tournikiotis, *The Historiography of Modern Architecture,* The MIT Press, 1999

Architecture and Sustainability Theories

ENAR802622
5 Credits
Learning Objectives:

Provide an understanding of the principles of Architectural Theory in relation to a Sustainable Environment

Sub Learning Objectives:

Students are able to understand Architectural Theory according to the principles of sustainable building technology; Principles of Building Technology and Sustainability; Engineering and construction processes and building services and their impact on sustainability; The link between climate, the built environment, construction, energy consumption, and human well-being; Application of building technology strategy in design projects in the context of sustainable building standards/regulations and related environment; Acoustic.

Syllabus:

Understanding of the interrelationships and implications between Architectural Theory and sustainability aspects (three pillars: Environmental, Economic and Social)

Learning Materials:

Review The Science; Environmental, Technology & Sustainability; GBCI guidelines for new buildings, old buildings and interiors; Sustainable Architecture and High Technology; Sustainable Infrastructure, Construction, The Guide to Green Engineering and Design; Architectural Acoustics Introduction, History, Theory; Environmental acoustics; Building Skin: Concept, usage - thermal & acoustic.

Prerequisites: Has attended the Advanced Architectural Theories.

References:

1. Edward Allen, *Fundamentals of Building Construction: Material and Methods*, John Wiley and Sons, 1999
2. James Ambrose, *Simplified Design of Masonry Structures*, John Wiley and Sons, 1992
3. Wolfgang Schuller, *High Rise Building Structure,* Krieger Publishing Co, 1986
4. Benjamin Stein, *Building Technology: Mechanical and Electrical Systems*, John Wiley and Sons, 1995
5. DS Barrie, *Professional Construction Management*, Mc.Graw-Hill, 1986
6. J.M Boschenski, *The Methods of Contemporary Thought*, Herper and Row, 1968
7. Graham Haughton, et.al, *Sustainable Cities*, Cromwell Press, 1995
8. D. Chiras et.al, *Environmental Science: A Framework for Decision Making*, Cummings Publishing, 1985
9. Sears-Salinger, *Theormodynamics, Kinetic Theory and Statistical Thermodynamics*, Wesley, 1975

Architectural Design Studio 2

ENAR800020
5 Credits
Learning Objectives:

Student are able to develop design flow and ideas for architectural space programs in accordance with related design methods.

Sub Learning Objectives:

Student are able to synthesize key ideas from architectural theory literature relevant to the design scope; Student are able to develop design statements and programming based on reading the context related to further synthesis of the literature; Student are able to develop quality and/or architectural space systems based on theoretical synthesis, design statements and programming into a creative and comprehensive design; Student are able to apply various creative and appropriate representation techniques and media, consisting of manual and digital 2D and 3D media, to communicate design ideas.

Syllabus:

Through this course, students are able to explore and develop arguments for research-based architectural design concepts and design methods in an urban context. This course triggers the development of logical arguments based on design research, methods and designs in the studio which are related to design concepts, issues, keywords, design theories and programs in an urban context. Students are able to collect data based on external and internal determinants that make up the space. Based on this data, students are able to identify issues related to environmental sustainability and the tropical climate context, and program formulation as a spatial journey. Design exploration includes tectonic aspects related to the form, structure and building system. Student are able to compare the design based on typology and topology. Design ideas contain considerations of safety and health aspects, and are represented by mastering aspects of architectural expression including models, sketches, architectural drawings and digital media.

Learning Material:

Reading synthesis on specific design theme; Context issues exploration, analysis and synthesis; Programming, defining relationships and systems; Presentation of context study and individual design proposition; Development of spatial ideas; spatial scenario; micro-macro scenario; 3D tectonic exploration and any necessary experiments; Design development; finalisation; Final design presentation.

Prerequisites: -

References:

1. Dominique Hes, Chrisna Du Plessis, *Designing for Hope: Pathways to Regenerative Sustainability,* Routledge, 2014
2. Danilo Palazzo, Frederick Steiner, *Urban Ecological Design: A Process for Regenerative Places*, Island Press, 2012
3. S. Hernandez, C. A. Brebbia, W. P. De Wilde, editors, *Eco-Architecture III: Harmonisation between Architecture and Nature*, WIT Press, 2010
4. Manuel Castells, *"Space of Flows, Space of Places, Materials for a City of Urbanism in the Information Age.",* 2004
5. Jiat-Hwee Chang, *"Tropical Variants of Sustainable Architecture: A Postcolonial Perspective," in The SAGE Handbook of Architectural Theory*, SAGE Publications, Ltd, 2012, pp 602-617
6. Fabiano Lemes de Oliveira, *"Eco-cities: The Role of Networks of Green and Blue Spaces"* Cities for Smart Environmental and Energy Futures, part of the series Energy Systems, 2013, pp 165-178
7. Michael Lindfield and Florian Steinberg, *Green Cities.* Asian Development Bank (ADB) Urban Development Series, November 2012

Urban Design Studio 2

ENAR800021
5 Credits
Learning Objectives:

Student are able to combine methods and rules of advanced city design in stages to design mixed used areas starting from arranging urban elements to city control devices; Student are able to convey design ideas and urban design products through various verbal and non-verbal media; Student are able to analyze, synthesize and integrate knowledge of urban design theory with knowledge of locality and variation of stakeholder in uncovering urban design phenomena in rapidly developing areas.

Sub Learning Objectives:

Student are able to demonstrate understanding of urban design strategies and concepts through analysis of relevant urban project precedents; Student are able to develop advanced analytical and methodological skills as the foundation of the design process; Student are able to propose sustainable regional design alternatives from in-depth, sharp and critical analysis of the issues that exist in the context of the site by considering the potential of the site; Student are able to demonstrate the ability to present presentations in the form of sketches, diagrams, models and standard drawings (site plans, pieces, 3D) from a scale of 1:2000 to 1:500; Student are able to demonstrate the ability to work individually and in collaboration (groups) in conducting regional studies; Student are able to detect theories/issues/ themes needed to develop principles of ideas in a plan; Atudent are able to formulate various kinds of issues in urban space both from medium and large scale to be the basis for consideration in a city design process.

Syllabus:

The focus of this studio is the redesign of areas with high complexity; such as areas that experience rapid changes/developments and tend to show heterogeneous (mixed) properties. In this studio humans must be the main element of urban design, so students are required to be sensitive to the interests of various communities (residents/local communities) and the public as well as various regional stakeholders such as local government, government/private institutions, and business actors/ business. The goal is to accommodate and understand the needs, demands and aspirations of all parties related to activities in the region. The tangible and intangible factors that students should

pay attention to refer to Lynch (1984), such as: vitality, senses, fit, access and control. Students need to observe the area's infrastructure (transportation, utilities, public facilities/facilities), as well as how the context of the built environment and the natural environment (green and blue zones) form. All these aspects must be analyzed critically by students as part of their exploration to develop ideas, narratives, and visions of sustainable urban design that are able to display a strong regional identity and character. After attending this studio, students have the basic skills needed to become a professional urban designer.

Prerequisites: Has attended the Urban Design Studio 1**.**

References:

1. Protzen, Jean-Pierre and Harris, David J., *Universe of Design: Horst Rittel's Theories of Design and Planning*, London and New York: Routledge (2010)
2. Rutz, Werner: *Cities and Towns in Indonesia*, Stuttgart: Gebruder Borntraeger (1987)
3. Ricky Burdett (Editor), Deyan Sudjic (Editor), 2010, *Living in the Endless City: The Urban Age Project by the London School of Economics and Deutsche Bank's,* Alfred Herrhausen Society, Phaidon Press
4. Ricky Burdett (Editor), Deyan Sudjic (Editor) 2008. *the Endless City*, Phaidon Press
5. Mohsen Mostafavi (Author), Gareth Doherty (Author), 2010, Harvard University Graduate, *Ecological Urbanism*, Lars Muller Publishers
6. Charles Montgomery (2014). *Happy City: Transforming Our Lives Through Urban Design*, Farrar Straus Giroux
7. Abeyasekere, S. (1987). *Jakarta: A History*, Oxford: Oxford University Press.
8. Certeau, M.D. (1984). *The Practice of Everyday Life*. Berkeley: University of California Press.
9. Silver, C. (2011). *Planning the Megacity: Jakarta in the Twentieth Century*. New York: Routledge
10. Tunas, D. (2008). *The Spatial Economy in the Urban Informal Settlement*. Netherland: International Forum on Urbanism

Urban Housing and Settlement Studio 2

ENAR800022
5 Credits
Learning Objectives:

Student are able to design housing planning and housing design for urban communities based on the principle of preference.

Sub Learning Objectives:

Students are able to examine the main concepts in housing and settlements, such as preferences, satisfaction, displacement, and housing adjustments; Students are able to analyze data on preferences, satisfaction, displacement, and home adjustment; Students are able to design housing plans and housing designs for urban communities based on the principle of preference.

Syllabus:

This course explores socio-economic issues related to the complexity of providing housing for urban communities; housing planning and design is based on the principle of preference.

Learning Materials:

The main concepts in the housing and settlements sector, such a preferences, satisfaction, displacement, and housing adjustment; Data analysis of preferences, satisfaction, displacement, and adjustment to housing; Design housing planning and design of housing for urban communities based on the principle of preference.

Prerequisities: Has attended Housing and Urban Settlement Studio 1.

References:

1. J M Bang, *Ecovillages: Practical Guide to Sustainable Communities,* New Society Publishers, 2005
2. J N Habraken, *Support: An Alternative to Mass Housing*, Prager Publishers, 1972
3. N Hamdi, *Housing Without Houses: Participation, Flexibility, Enablement,* Van Nostrand Reinhold, 1991
4. G Minke, *Building with Earth: Design and Technology of a Sustainable Architecture*, Publishers for Architecture, 2006
5. B Saini, *'Site Development and Sanitary Services', in H S Murison & J P Lea (eds.), Housing in Third World Countries Perspectives on Policy and Practice*, The Macmillan Press, Ltd., 1979, pp 89-95
6. N Sheridan, '*Energy for the Built Environment', op. cit., H S Murison & J P Lea*, pp 100-110
7. Tokyo Student Session, *Sustainable Design Book*, The 2005 World Sustainable Building Conference in Tokyo, Student Session23-29 September 2005, Tokyo, Japan
8. United Nations, *Guidebook on Biogas Development*, Energy Resourve Development Series No. 21, 1980

Property Workshop 2

ENAR800023
5 Credits
Learning Objectives:

Student are able to study the relationship between urban architecture and real estate activities in a large-scale project related to urban management, the role of the public and private sectors in urban development, repositioning and revitalizing an area, and others.

Syllabus:

(1) Private sector/commercial development project, in an area of 50 ha. Product properties and the physical rules that apply. Project funding & purchase scheme: e.g. mortgages. Rights and obligations of developers & local governments (developer: on site, off site, pay cash, etc. Local government: tax holidays, incentives, city facilities, etc.). Implementation plan (rights & obligations + development time schedule) (2) Development of urban facilities related to property development (public-private development): Investigation/exploration of a public project through recovery opportunities by incorporating elements of property development in it such as the development of educational areas / science center, MRT/busway/tollway associated with property development along its route. Procurement of city facilities and infrastructure.

Prerequisites: Has attended Property Workshop 1

References: Relevant references to the topic offered.

History and Theory Workshop 2

ENAR800024
5 Credits
Learning Objectives:

Students are able to systematically compile a historical database of the Menteng and Kebayoran Baru areas; Students are able to communicate the History of Architecture through oral presentations; Students are able to criticize existing conservation policies and be able to propose a conservation recommendation; Students are able to conduct collaborative research to explore data and information related to regional archives (Case: Menteng and Kebayoran Baru).

Sub Learning Objectives:

Students show their participation through attendance at each session; Students are able to compile data and present their thoughts through power point and posters; Students are able to communicate their thoughts through active discussions both in class and in groups; Students are able to apply architectural history research methods, including aspects of research triangulation in the analysis and synthesis stages; Students are able to make scientific writings/articles; Students are able to understand the profession as an Architectural Historian in Architectural History Research and Workshops.

Syllabus:

The Architectural History Workshop 2 focuses on Historical Research and Architectural Theory in Indonesia related to the application of Architectural History of Human, Space, and Time. In this semester, the selected research relates to the Policy of Preserving Historic Areas, Historic City Landscapes and Indonesian Architectural Criticism. Students will be given various readings at the beginning of the topic that must be reviewed (literature review) and actively present the results of their analysis and research synthesis that reflect their critical thinking. Next, students look for issues based on the topics that have been given and use methods and approaches from the readings that have been given to conduct research on History and Architectural Theory. At the end of the research, students must communicate and publish the results of their research which also reflects their creative interpretation in the areas of scientific publication and criticism.

Learning Materials:

Module I: Policy for Preservation of Historic Areas; Module II: Historic Urban Landscapes – Historic Urban Landscapes; Module III: Criticism in Indonesian Architecture

Prerequisites: Has attended Advanced Architectural Theories.

References:

1. Nezar AlSayyad, Cinematic Urbanism: A History of the Modern from Reel to Real, Routledge, 2006
2. J. Bloomer, Architecture and the Text: the (s) crypts of Joyce and Piranessi (Theoretical Perspectives in Architectura), Yale University Press, 1995
3. Iain Borden, Jane Rendell, Intersections, Architectural Histories and Critical Theories, Routledge, 2000
4. Iain Borden, et.al (eds.), The Unknown Cities: Contesting Architecture and Social Space, The MIT Press, 2001
5. Iain Borden, et al. Strangely Familiar: Narratives of Architecture in the City, Routledge, 1996
6. Mike Davis, Ecology of Fear: Los Angeles and the Imagination of Disaster, Metropolitan Books, 1998
7. Nan Ellin, Architecture of Fear, Princeton Architectural Press, 1997
8. Murray Fraser. 'Dreams about Cities: REM and Koolhaas,' The Oxford Review of Architecture, vol. 2, 1997, p:76.

9. Bell hooks. Art on My Mind; Visual Politics, The New Press, 1995
10. Michael Keith and Steve Pile, Place and the Politics of, Routledge, 1993
11. Naomi Kleine, The Shock Doctrine: the Rise of Disaster Capitalism, Metropolitan Books, 2008
12. R. Koolhaas and B. Mau, S,M,L,XL, Office for Metropolitan Architecture (O.M.A.), 1995
13. Spiro Kostof (ed.), Architect, Oxford University Press, 1977
14. Intan Paramaditha, 'City and Desire in Indonesian Cinema' in Inter-Asia Cultural Studies: Runaway City/Leftover Spaces, vol. 12, no: 4, Routledge T&F, 2011, pp:500-512
15. A. Palladio tr by: Robert Tavernor & Richard Schofield, The Four Books on Architecture, MIT Press, 1997
16. Leonie Sandercock (ed.), Making the Invisible Visible, A Multicultural Planning History, University of California Press, 1998
17. Moira G Simpson. Making Representations Museum in the Post colonial Era, Routledge, 1996
18. R. Venturi, Complexity and Contradiction in Architecture, The Museum of Modern Art, 1966

Architecture and Sustainability Workshop 2

ENAR802623
5 Credits
Learning Objectives:

Students are able to manage advanced research related to the application of architectural principles and sustainability in design and the environment.

Sub Learning Objectives:

Students are able to explain the meaning and principles of the Module; Students are able to demonstrate the principles of sustainability related to modules; Students are able to identify sustainability issues in the design and its aspects; Students are able to develop the principle of sustainability in the design and its aspects; Students are able to manage advanced research related to the application of architectural principles and sustainability in design and the environment.

Syllabus:

Architecture and Sustainability Workshop Course 2 is 1 of 2 mandatory workshops on Masters in Architecture, in Sustainability. Through this workshop, students are able to manage their own research related to design and the environment, by applying the principles of sustainable architectural design, with a building technology approach, economics and ecology with an emphasis on applying the principles of sustainability to design and the surrounding environment, particularly in fire prevention systems and saving lives, thermal comfort and lighting.

Prerequisites: Module 1 (Fire Prevention and Life Saving Systems); Module 2 (Thermal Comfort); Module 3 (Lighting)

References:

1. James Cowan, Architectural Accoustics: Design Guide, McGraw-Hill, 2000
2. Frei Otto, Tensile Structure, MIT Press, 1997
3. Graham, P. Building Ecology, First Principles for A Sustainable Built Environment, ISBN 978-0-632-064137 (Publisher Willey-Blackwell, 2012)
4. Harold J. Rosen, The Professional Practice of Architectural Detailing, John Wiley & Sons, 1999
5. Gahijanti AS, Mekanika, Penerbit Salemba Teknik, 2000
6. Finarya Legoh dan Siti Handjarinto, Buku Ajar Akustik, 2002
7. Lechner, N. Heating Cooling Lighting: Sustainable Design Methods for Architects (Publisher: Willey, 2008)
8. Leonard, A. The Story of Stuff. (Publisher: Free Press, 2011)
9. Lippsmeier, G. Tropenbau Building in the Tropics (Publisher: Callwey, 1980)
10. Jain, A.K. Low Carbon City: Policy, Planning and Practice (Publisher: Discovery Publishing Pvt. Ltd., 2009)
11. McDonough, W. and Braungart, M. Cradle to Cradle: Remaking the Way We Make Things, ISBN: 0865475873 (Publisher: North Point Press, 2002)
12. Soeryani Moh ed, Lingkungan: Sumberdaya Alam dan Kependudukan dalam Pembangunan, UI Press, 1987
13. World Commission on Environment and Development. Our Common Future (Publisher: Oxford University Press, 1987)
14. Yeang, K. Eco Skyscrappers II ((Publisher The Image Publishing Group, 2011)

Elective Courses

Ethnic Architecture

ENAR800026
3 Credits
Learning Objectives:

Students are able to critically and creatively analyze and represent the phenomenon of ethnic architecture.

Sub Learning Objectives:

Student are able to define ethnic architecture and its scope; Student are able to explain (1) the basic

concept of ethnicity and (2) the role of ethnicity as a form of ethnic architectural identity; Student are able to explain the concept of (1) traditional architecture; (2) vernacular architecture; Student are able to investigate related aspects in the ethnic architectural forms; Student are able to critically review ethnic architectural literature; Student are able to explain the importance of meaning in ethnic architecture; Student are able to identify various ways/methods of studying ethnic architecture

Syllabus:

The main learning objectives of this course are that students are able to critically explain the phenomenon of ethnic architecture, issues and ideas of the architectural tradition of an ethnic group, including its influencing aspects, such as socio-culture, which includes ethnicity, tradition, culture, symbols and myths; including the development of vernacular architectural ideas, both in traditional and contemporary context. This course supports students' ability to analyze an architectural tradition.

Learning Materials:

Ethnic Architecture and the scope of ethnic architecture; Ethnicity and Identity; Traditional architecture & vernacular architecture; Aspects that affect architectural form; Revealing Meaning of Vernacular Architecture; Symbolic Classification; Traditional/vernacular architecture in Indonesia

Prerequisites: -

References:

1. Amos Rapoport, House Form and Culture, Englewood Cliffs, 1960
2. N. Egenter, Architectural Anthropology, Structura Mundi, 1996
3. Roxanna Waterson, The Living House: An Anthropology of Architecture in Southeast Asia, Oxford University Press, 1990
4. E. Guidoni, Primitive Architecture, Harry N. Abrams, 1978
5. Paul Oliver (ed.), Sign, Symbol, and Shel- ter, The Overlook Press, 1977
6. J. Fox (ed.), Inside Austronesian House, The Australian National University, 1993
7. Djauhari Sumintardja, Kompendium Arsitektur. Yayasan Lembaga Masalah Bangunan, 1978
8. Bourdier & N.AlSayyad (eds), Tradition, Dwellings and Settlements: Cross-cultural Perspectives, University Press of America, 1989

Architecture and Text

ENAR800027
3 Credits
Learning Objectives:

Students are able to analyze and critique architectural works as a part of the fabric between the work itself, texts and the context of society including its relationship with theory, history and writing of architectural history.

Sub Learning Objectives:

Student are able to analyze architecture as a text that can be read and interpreted based on the relationship between the text and its context and certain methods of reading architectural works as text; Student are able to conclude the relationship between architectural works and texts through the application of the method of reading architecture as text

Syllabus:

This course is an introduction to architectural works as texts. How do we read architectural works as text? How do we read architectural works as the connection between architectural works and the architect's experience, local conditions, places, and so on? It is these kinds of questions that we will try to answer together in this course. Introduction to architectural works as text.

Learning Materials:

Analogies in text and language; Recent developments in architectural texts; Exercise in reading architectural texts; Exercise in reading architectural works as text; Exercise in Writing-Designing text and architecture; The world of authorship in architecture; Text and context; Writing architecture as text; Survey of a built architectural work and practice writing it; Writing-designing method of text and narrative architecture.

Prerequisites: -

References:

1. Roland Barthes, *Mythologies*, Vintage Classics, 2000
2. John D Caputo (ed.), *Deconstruction in a Nutshell: a Conversation with Jacques Derrida*, Fordham University Press, 1997
3. Umberto Eco, *A Theory of Semiotics*, Indiana University Press, 1976
4. Joel Gilberthorpe, *What is a Text?: on the Limits of a Text as an Object of Knowledge* (http://www.arts.mq.edu.au/documents/NEO_Article_5_2009_Joel_Gilberthorpe.pdf)

Coastal Architecture

ENAR800028
3 Credits
Learning Objectives:

Students are able to analyze and visualize an architectural design as an effort to anticipate

problems in a coastal area.

Sub Learning Objectives:

Students are able to increase their understanding and describe the peculiarities of eco-anthroposystem living spaces and livelihoods in coastal areas that affect the sustainability of their architectural works; Students are able to increase awareness and narrate the relationship between time-space-biocultural changes and disaster risk in a coastal area with the development of environmental spatial planning and architecture; Students are able to improve the ability to write a study of problems in a particular coastal area as well as opportunities for architectural solutions into a paper in a sequential and systematic manner; Students are able to improve their ability to visualize an architectural idea as an effort to anticipate problems that may occur in a coastal area

Syllabus:

This course aims to increase students' understanding of the uniqueness of the eco-anthroposystem of living spaces and livelihoods in coastal areas that affect the sustainability of their architectural works; increase students' awareness about the relationship between changes in time-space-biocultural and disaster risk in a coastal area with the development of environmental spatial planning and architecture; improve the ability of students to write a case study in a particular coastal area as well as opportunities for architectural solutions into a paper in a coherent and systematic manner; and improve students' ability to visualize an architectural creation as an effort to anticipate problems that may occur in a coastal area.

Learning Materials:

Basic understanding of the definition of coastal architecture, the coastal of archipelagic area, waters and the interrelationship of islands and seas; Architectural typology in Architecture and Water associated with sustainable approach to buildings in the Coastal Zone; Functions, spatial planning, building facilities and architectural works in Indonesia's coastal areas; Environmental impact and disaster risk studies in coastal areas.

Prerequisites: -

References:

1. Abimanyu Takdir Alamsyah, *Regionisme dalam Penataan Permukiman di Gugus Pulau Mikro*, unpublished doctoral dissertation, PSIL Universitas Indonesia, 2006
2. Abimanyu Takdir Alamsyah, *Menata Permukiman Pulau-Laut, Mempertahankan Keberlanjutan Bertanahair Kepulauan*, Pidato pengukuhan Guru Besar Universitas Indonesia. Depok, 2009
3. Michael R. Bloomberg and Amanda M. Burden, *Urban Waterfront Adaptive Strategies in Waterfront Vision & Enhancement Strategy,* NYC Planning, 2013
4. Subandono Diposaptono and Budiman, *Tsunami*, Penerbit Buku Ilmiah Populer, 2006
5. Charles Moore and Jane Lidz, *Water + Architecture*, Thames and Hudson Ltd, 1994
6. Malcolm Newson, *Land, Water and Development: River Basin Systems and their Sustainable Development*, Routledge,1992
7. Koen Olthuis and David Keuning, *Float!. Building on Water to Combat Urban Congestion and Climate Change*, Frame Publishers, 2010
8. Djoko Pramono, *Budaya Bahari*, Gramedia Pustaka Utama, 2005
9. Alan P. Trujillo and Harold V. Thurman, *Essentials of Oceanography, Ninth Edition*, Pearson Education *Ltd, 2008*
10. Heather Vies and Tom Spencer, *Coastal Problems: Geomorphology, Ecology and Society at the Coast*, Edward Arnold, 1995
11. Ary Wahyono, AR Patji, SS Laksono, R. Indrawasih, Sudiyono dan Surmiati Ali, *Hak Ulayat Laut di Kawasan Indonesia Timur*, Media Presindo Yogjakarta, 2000

Energy Efficient Building

ENAR800029

3 Credits

Learning Objectives:

Students are able to design buildings with an Energy Saving approach

Sub Learning Objectives:

Students are able to conclude the meaning of comfort and health for residents; Students are able to classify green buildings in Indonesia; Students are able to demonstrate design strategies that take into account climatic conditions; Students are able to practice basic understanding in using EDGE applications; Students are able to demonstrate advanced utility systems in a building; Students are able to demonstrate the life-cycle of materials used in buildings; Students are able to demonstrate contemporary water conditions and the use of plants in a building; Students are able to optimize the application of Contemporary Green Building principles; Students are able to design buildings with an Energy Saving approach and run EDGE Software

Syllabus:

Energy Efficient Building Course summarizes knowledge about climate, ecology, building

technology & utilities, renewable energy, with relevant design theories that students have previously learned. Enriched with the latest network-based applications, Energy-Efficient Building course deepens students' understanding of the principles of sustainable architecture; Renewable energy, Climate and site, solar geometry, passive cooling, shading, natural & artificial light and solar cells.

Learning Materials:

Psychometric Chart, Predicted Mean Vote; Koppen-Geiger climate classification, urban heat island, passive design; HVAC, active design; Embodied energy, life cycle assessment, life cycle cost assessment; Hydrologic cycle, water distribution network, rain water harvesting.

Prerequisites: -

References:

1. Donal Watson, The Energy Design Handbook, The American Institute of Architecture Press, 1993
2. Klaus Daniels, The Technology of Ecological Building, English translation by Elizabeth Schwaiger, Birkshauser Verlag, Berlin 1994
3. Norbert Lechner, Heating Cooling Lighting, Edisi kedua, terjemahan, PT Raja Grafindo Persada, 2007

Computational Design and Parametric

ENAR800030
3 Credits
Learning Objectives:

Students are able to compose and design various forms of three-dimensional modeling based on computational and parametric knowledge.

Sub Learning Objectives:

Students are able to develop modeling based on fundamental geometry knowledge; Students are able to develop parametric modeling with advanced geometric elements; Students are able to develop computational-based modeling with coding knowledge; Students are able to design an artifact with various computational knowledge.

Syllabus:

Through this course, students can use computing media as part of the design process by using a parameter-based modeling approach and computer programming. In this course, students are introduced to computational-based design instruments, parameter-based design approaches, algorithmic architecture and scripting tools. The course will be divided into three modules: the fundamental geometry module and three-dimensional modeling techniques based on CAD, a parametric modeling module with advanced geometric elements, and computational-based modeling with coding knowledge.

Learning Materials:

Modules on fundamental geometry and three-dimensional modeling techniques based on CAD; Parametric modeling module with advanced geometric elements (based on Grasshopper); Computational modeling module with coding/ scripting knowledge

Prerequisites: Memiliki kemampuan dasar dalam modeling berbasis NURBS dan CAD

References:

1. B Kolarevic, Architecture in The Digital Age: Design and Manufacturing, Spon Press, 2003
2. Mode Lab, n.d, Foundations: Grasshopper Primer Third Edition.
3. K Terzidis, Algorithmic Architecture, Routledge, 2006
4. R Oxman and R Oxman, Theories of the Digital in Architecture, Routledge, 2014

Housing Policy

ENAR800031
3 Credits
Learning Objectives:

Students are able to understand housing policy as a set of concepts that underlie the activities of providing housing in the scope of government that considers social, political, demographic, economic, and technological issues.

Sub Learning Objectives:

Students are able to explain the definition, motive, and purpose of housing policy (what); Students are able to explain who (who and whom) are involved in housing policy; Students are able to explain how housing policy is formulated by considering social, political, demographic, economic, and technological issues; Students are able to analyze housing policies that apply in several countries

Syllabus:

The course provides knowledge about a series of concepts, principles, and guidelines that underlie the practice of implementing the housing sector in a country, which is multidimensional. These dimensions include the socio-cultural demographics of a country as well as the political and economic systems adopted by certain countries. The implementation of housing policies can be in the form of strategies, regulations or programs that usually aim to regulate the allocation of resources: land, financing, institu-

tions, technology and so on. After completing this course, students are expected to be able to critically examine housing policy, especially housing policy in Indonesia.

Learning Materials:

What: Definition, motives, and objectives of housing policy; Whom: Housing needs and demands with respect to population and households; Who: Housing offers and the parties and institutions that have jurisdiction over housing; How 1: Housing policy and ideological issues of a country's political economy; How 2: Housing policy and economic issues and housing finance; How 3: Housing policy and land issues and housing tenure status; How 4: Housing policy and technology issues and innovation in housing

Pre-requisites: -

References:

1. H Arendt, The Human Condition, The University of Chicago Press, 1958, pp. 7-17
2. M Heidegger tr by Albert Hofstadler, Kerper & Row, Poetry, Language, Thought, Publishing Inc., 1971, pp. 145-161
3. M Foucault, S. During (ed.), 'Space. Power and knowledge', The Cultural Studies Reader Second Edition, Routledge, 1999: 134-41
4. Henri Lefebvre translated by Donald Nicholson-Smith, The Production of Space, Blackwell, 1991, Chapter 1, pp. 26-52
5. P Bourdieu, Outline of A Theory of Practice, Cambridge University Press, 1977, pp. 72-95
6. M De Certeau tr by Steven F. Rendall, The Practice of Everyday Life, University of California Press, 1984, pp. 29-42 and 91-110
7. Kendig Hal L, 'Housing Careers, Life Cycle and Residential Mobility : Implications for the HousingMarket', Urban Studies, 1984, 21, 271-283
8. Michael Haan & Thomas Perks. 'The Housing Careers of Older Canadians: An Investigation Using Cycle 16 of the General Social Survey'. Canadian Studies in Population Vol. 35.2, 2008, pp. 223–242
9. K. D. Willis, Squatter Settlements, Elsevier Ltd, 2009
10. Brian Sullivan & Ke Chen. 'Design for Tenant Fitout: A Critical Review of Public Housing Flat Design in Hong Kong'. Habitat Intl. Vol 21. No 3, 1997, pp. 291-303
11. Leland Blank and Anthony Tarquin. Engineering Economy: Seventh Edition, McGraw Hills, 2012
12. B Harsman & J Quigley, Housing Markets & Housing Institutions in a Comparative Perspective". Housing Markets & Housing Institutions, Kluwer Academic, 1991, pp.1-29
13. Fashbir N Sidin, Housing Policy Systems in South and East Asia, Palgrave Macmillan, 2002, pp.161-176
14. John F.C Turner and Robert Fichter, Freedom to Build, Collier Mcmillan, 1972
15. John F.C Turner, Housing By People: Towards Autonomy in Building Environtments, The Value of Housing, 1976, pp. 53-74.
16. A T Alamsyah, Menata permukiman Pulau-Laut. Pidato Pengukuhan Guru Besar UI, 2008
17. Mayor Michael R Bloomberg and Amanda M.Burden, Coastal climate resilience, Urban waterfront adaptive strategies, Department of City Planning, 2013
18. A T Alamsyah, Regionisme dalam Penataan Permukiman di Gugus Pulau Mikro, Disertasi, PSIL UI, 2006
19. Diposaptono, Subandono, Budiman, Hidup Akrab dengan Gempa dan Tsunami, Penerbit Buku Ilmiah Populer, 2008

Everyday and Architecture

ENAR800032
3 Credits
Learning Objectives:

Student should be able to understnd the existence of everyday phenomena as an approach to architecture; should be able to define the position of architecture discipline in responsing to various phenomena of everyday living space.

Syllabus:

Understanding and historical background of the concept of the 'everyday' in architecture; domestic space; aesthetic in architecture and the 'everyday', the concept of an ideal city and its relation to the 'everyday'; cyber space and virtual space; the phenomenon of the 'everyday' in urban space: a participatory approach in architecture.

Prerequisites: -

References:

1. Steven Harris & Deborah Berke (eds.), Architecture of the Everyday, Princeton Architectural Press, 1997
2. Sarah Wigglesworth & Jeremy Till (eds.), The Everyday and Architecture, Architectural Design, 1998
3. Michel de Certeau, The Practice of Everyday Life, University of California Press, 1998
4. Malcolm Miles, The Uses of Decoration: Essays in the Architectural Everyday, Wiley, 2000
5. Jonathan Hill (ed), Occupying Architecture, Routledge, 1998
6. Margaret Crawford, et.al, Everyday Urbanism, Monacelli, 1999, Arnstein, Ladder of Citizen

Participation, 1969

Understanding Phenomenon: Plato to Derrida

ENAR800033
3 Credits
Learning Objectives:

Students are able to understand the empirical and metaphysical linkages in understanding architectural phenomena, including the application of related principles and theories in architectural discourses and works.

Sub Learning Objectives:

Understanding the relationship between architecture and philosophical thought through Phenomenology; Able to explain the relationship between theory and architectural discourse by paying attention to related concepts.

Syllabus:

This course introduce student to philosophy in architecture, especially differences in knowledge and physical/empirical evidence and metaphysical explanations in understanding architectural phenomena; Furthermore, students are expected to be able to participate in discourse and demonstrate the principles of critical thinking related to differences in observations and thinking of each architectural phenomenon, especially in the application of these principles in a particular architectural case discourse. Students wil discuss the progress of philosophical thought through phenomenology and its impact on life, culture and architecture.

Learning Materials:

Architecture and understanding the phenomenon; Forms and forms in the fictitious and metaphysical world; Ontological understanding of 'what' and 'why'; debates; Plato and Khora; Husserl's phenomena and phenomenology; Situated bodies: phenomenology of space and place; Heidegger; Semiotics Sign; Myth; Simulacra and simulation; Deconstruction; Knowledge-Power.

Prerequisites: -

References:

1. R Barthes tr by Annette Lavers, Mythologies, Hill and Wang, 1972
2. J D Caputo (ed.), Decosntruction in a Nutshell: Conversation with Derrida, Fordham University Press, 1997
3. G Deleuze tr by Paul Patton, Difference and Repetition, Columbia University Press, 1994
4. J Derrida edited by Thomas Dutoit, On The Name, Edited by Thomas Dutoit. Stanford University Press, Stanford, 1993, chapter about Khōra
5. J Derrida tr by Gayatri Spivak, Of Grammotology, The John Hopkins University Press, 1974, Translator's Note by G. Spivak
6. M Heidegger, Language, Poetry and Thinking, Perennial Classic, 1971, chapter: Dwelling, Building and Thinking.
7. D Moran, Introduction to Phenomenology, Routledge, 2000
8. R H Popkin and Avrum Stroll, Philosophy Made Simple, Doubleday Compay, Inc., 1956

BIM: Building's Assesment and Analysis

ENAR800034
3 Credits
Learning Objectives:

Students are able to explore the principles of building technology and sharpen the analysis of building performance in relation to a sustainable environment

Sub Learning Objectives:

Students are able to detail the principles of sustainable building technology; Students are able to operate BIM-based software; Students are able to evaluate holistic eco-friendly principles in buildings.

Syllabus:

Introduction to BIM in architecture; model development, information and database management, building performance's documentation, analysis, and assessment.

Learning Materials:

Mastering the principles of BIM technology theories and applying it to analyze and assess the building performance through energy analysis modeling with a green architectural approach.

Analyzing and assessing building performance using BIM-based software.

Prerequisites: -

References:

1. Eastman, C., Eastman, C.M., Teicholz, P. and Sacks, R., BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. John Wiley & Sons, 2011
2. Kensek, K, and Noble, D., Building Information Modeling: BIM in Current and Future Practice, John Wiley & Sons, 2014
3. Holzer, D, The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering and Construction, John Wiley & Sons

Advanced Spatial Analysis

ENAR800035
3 Credits
Learning Objectives:

Geography and other social and environmental disciplines have association to spatial data - data that shows phenomena locations on the earth surface. Although the phenomena studied are often different, from the level of air pollution, the location of hospitals, the pattern of human populations, to the size of rainwater, what unites all of this data is the fact that they all have a location or position relative to the surface of the earth.

Syllabus:

Methods for analyzing spatial data have existed since the 1930s, but in the last two decades there have been several significant developments, triggered by computer technology and GIS development. This course explores methods for analyzing three important types of spatial data: point data, area data (polygons), and field data (continuous surfaces). We will consider how these methods work, their strengths and limitations, and the examples of practical and research problems where these methods can be applied. This ccourse also consists of labs involving ArcGIS and other software such as GeoDA, SatScan and R.

Prerequisites: -

References:

1. Lloyd, C. (2011). Local Models for Spatial Analysis, 2nd Edition. Boca Raton, FL: CRC Press.
2. Bahan bacaan tambahan merupakan artikel terterbit yang menggunakan metode analisa spatial dalam berbagai macam area aplikasi.

Architectural Psychology

ENAR600036
3 Credits
Learning Objectives:

Students are able to conclude the symptoms/ problems of human interaction in the built environment using architectural psychological theories.

Sub Learning Objectives:

Students are able to analyze the relationship between human behavior and the environment; Students are able to analyze the embodiment of human values and human needs in the built environment; Students are able to analyze how humans perceive and process the results of perception of the built environment; Students are able to conclude the relationship between architectural and interior space with human behavior; Students are able to illustrate the results of the analysis through oral and written presentations.

Syllabus:

Architectural Psychology course is an elective course offered to master's students to provide an expanded insight into the role of architecture in meeting the human needs. After following this course, students are expected to be able to analyze the symptoms/problems of human interaction in the built environment using architectural psychology theories. Students are given initial material which consists of three separate parts: the relationship between humans and the environment, the embodiment of values and motivation in the built environment, perception and cognition, as well as various concepts that explain the relationship between spatial design and human behavior.

Learning Materials:

Background and scope of architectural psychology; Human and environmental relations; Values and motivation; Gestalt perception theory and ecological perception; Cognitive map; Proxemics: personal space, territoriality, privacy, crowding; Application of architectural psychology to various types of built environment; Post-occupancy evaluation

Prerequisite: -

References:

1. Bell, Fischer and Greene, Environmental Psychology, Harcourt Publisher, 1996
2. Bryan Lawson, The Language of Space, Architectural Press, 2001
3. Byron Mikellides, Architecture for People: Exploration in a New Humane Environment, 1980
4. Wolfgang F.E. Preisser, Harvey Z. Rabinowitz, Edward T. White, Post-Occupany Evaluation, Van Nostrad Reinhold, 1988
5. Dak Kopec, Environmental Psychology for Design , Fairchild Books, 2012

Urban Morphology

ENAR800037
3 Credits
Learning Objective:

Student are able to identify and critically review various main elements that foms a city in several levels/depth ranging from the most micro (buildings and spaces between buildings), roads and blocks, to regional/regional scales; Students are able to critically and accurately assess the city that will be their case study and are able to formulate their perspective on the morphology of a city in any

context and wherever the city is located.

Sub Learning Objective:

Students are able to understand how the historical/ ideological background influences the process of morphological formation by reviewing several cities in the world. The periodization starts from the city's embryonic period to the neoliberal era we face today; Students are able to understand the phenomenon of the metropolis/megalopolis which is analyzed in relation to various current issues related to ecology, energy and sustainability; Students are able to understand the phenomenon of informal urbanism that appears in big cities (especially in Jakarta) and the morphological characters that are influenced by local aspects of cities in Asia and Indonesia.

Sylabus:

Urban morphology course is a study of the process of city formation and the relationship between city components, with a focus on the composition and configuration of urban structures/patterns. The field of study is more emphasized in the form of geography, area (blocks and roads), buildings and spaces between buildings; which are formally/ informally influenced by economic, social, cultural, political and economic conditions. After completing this course, students can analyze the morphology of a city according to the periodization of its development correctly.

Learning Materials:

Mandatory textbook on urban morphology; Selected videos relevant to the morphology of the city; Maps related to the covered topics.

Prerequisite: -

References:

1. Gallion, A. B., & Eisner, S. (1963). The Urban Pattern - City Planning and Design. New York: D. Van Nostrand Company, Inc.
2. Hardy, D. (2011). The Making of Hong Kong: From Vertical to Volumetric. London & New York: Routledge.
3. Kidokoro, T., & al, e. (n.d.). Sustainable Urban Regeneration.
4. Krier, R. (1979). Urban Space.
5. Marshal, S. (2004). Street and Patterns - The Structure of Urban Geometry.
6. Oliveira, V. (2016). Urban Morphology. Springer International Publishing.
7. Rose, J. F. (2016). The Well-Tempered City - What Modern Science, Ancient Civilizations, and Human Nature Teach Us About the Future of Urban Life. Harper Wave.
8. Rossi, A. (1984). Architecture of the City. London: MIT Press.
9. Rowe, C., & Koetter, F. (1984). Collage City. MIT Press.
10. Shelton, B. (1999). Learning from the Japanese City - West meets East in Urban Design. Taylor and Francis.
11. Silver, C. (2007). Planning the Megacity - Jakarta in the Twentieth Century. Routledge.
12. Tiwari, R. (2018). Connecting Places, Connecting People - A Paradigm of Urban Living in the 21st Century. New York: Routledge.

Heritage Architecture

ENAR8000038
3 Credits
Learning Objectives:

An introduction to Heritage Architecture which includes both tangible and intangible aspects, as well as the 'Outstanding Universal Value' aspect of the Cultural Heritage Buildings and Cultural Heritage Areas. There will be discussions about critical issues related to heritage in architecture and cities. Introduction to preservation efforts includes: protection, development and reuse of buildings and cultural heritage areas.

Syllabus:

This course includes movie screenings and field trips to understand more about the precedents of heritage architecture in Indonesia and how heritage conservation efforts have been done so far.

This course is an elective subject that studies the architecture of the past in the context of present reality and the ongoing efforts to provide new life for the future generation. It includes Tradition, Memory, Authenticity, Value (Cultural Heritage Buildings - BCB), Sites (Cultural Heritage Sites - LCB), and Heritage Cities (Cultural Heritage Areas), with an emphasis on Cultural Heritage Buildings and the efforts made for Preservation / Conservation / Revitalization in it.

Prerequisites: -

References:

1. Diez, Fernando, 'Heritage', Cairns, Stephen, Crysler, Greig C., Heyne, Hilde. The SAGE Handbook of Architectural Theory. SAGE Publications, 2012, pp 274 – 86.
2. Rajagopalan, Mrinalini, 'Preservation and

Modernity: Competing Pespectives, Contested Histories and the Question of Authenticity'. Cairns, Stephen, Crysler, Greig C., Heyne, Hilde. The SAGE Handbook of Architectural Theory. SAGE Publications, 2012, pp. 308 – 24.
3. Avila, Fidel Alejandro Meraz, 'Social Memory and Assimilation: The Conflictive conjunction of theories of conservation and architecture'.
4. Boyer, M. Christine. 'Collective Memory Under Siege: The Case of Heritage Terrorism'. Cairns, Stephen, Crysler, Greig C., Heyne, Hilde. The SAGE Handbook of Architectural Theory. SAGE Publications, 2012, pp. 325 – 38.
5. Brown, Robert and Maudlin, Daniel. 'Concept of Vernacular Architecture'. Cairns, Stephen, Crysler, Greig C., Heyne, Hilde. The SAGE Handbook of Architectural Theory. SAGE Publications, 2012, pp: 340 – 55.
6. Walker, Paul. 'Culture'. Cairns, Stephen, Crysler, Greig C., Heyne, Hilde. The SAGE Handbook of Architectural Theory. SAGE Publications, 2012, pp: 369 – 82.
7. Feilden, Bernard M. 'Introduction to architectural conservation' in Conservation of Historic Building (1994), pp: 1 – 22.
8. Larkham, Peter J. 'Conflict and Conservation' in Conservation and the City, Routledge, 1996, pp 3 – 30.
9. Amorim, Luiz et. Al. 'Preserving Space'. Proceedings 6th International Space Syntax Symposium, Istanbul, 2007 pp. 032-01 – 032-14.
10. Hayden, Dolores "Rediscovering An African American Homestead', in Hayden, Dolores, The Power of Place: Urban Landscapes as Public History (Cambridge, Massachusetts and London, England: The MIT Press, 1997), pp. 168 – 187.
11. Kehoe, Marsely von Langerke. 'The Paradox of Postcolonial Historic Preservation'.
12. Barthelemy, Jean. ''The Architectural and Townspace Heritage As A Factor Influencing Trends in Development.'
13. Corten, Jean-Paul et.al. Heritage As An Asset for Inner-City Development: An Urban Manager's Guide Book, Ammersfoort: Cultural Heritage Agency, nai010 publishers.
14. Hayden, Dolores, The Power of Place: Urban Landscapes as Public History (Cambridge, Massachusetts and London, England: The MIT Press, 1997).
15. Larkham, Peter J., Conservation and the City, Routledge, 1996.
16. Pengantar Panduan Konservasi Bangunan Bersejarah Masa Kolonial, Pusat Dokumentasi Arsitektur dan Badan Pelestarian Pusaka Indonesia, 2011.
17. UU Cagar Budaya (UU No. 11 /2010 Tentang Cagar Budaya, UU No.28/2002 Tentang Bangunan Gedung dan PP No.39/2005 tentang Pelaksanaan UU No.28/2002, yang di dalamnya mencakup Pelestarian Bangunan Gedung, UU No. 26/2007 Tentang Penataan Tata Ruang).
18. Cultural Heritage Charters and Standard.
19. Asia Conserved, UNESCO, 2007.
20. Tjahjono, Gunawan (ed.), The Indonesian Heritage Series (Singapore: Archipelago Press, 1998).

Geometry and Architecture

ENAR8000039

3 Credits

Learning Objectives:

Students are able to formulate geometric-based creative methods as critical tools of analysis and critical tools of making.

Sub Learning Objectives:

Students are able to conclude the various roles of geometry as the basis for architectural design methods; Students are able to criticize the role of classical and Euclidean aesthetic geometry as "critical tools of analysis"; Students are able to criticize architectural works based on knowledge of the role of contemporary geometry as "critical tools of analysis"; Students are able to formulate creative methods based on the process of geometric analysis and synthesis as "critical tools of making"

Syllabus:

The Geometry and Architecture course is an elective course offered to master's students to provide an expanded insight into design methods to support their ability in architectural design. After taking this course, students are expected to be able to analyze the various roles of geometry as the basis for architectural design methods, as well as formulate geometric-based creative methods as critical tools of analysis and critical tools of making. Students are given initial material which consists of three separate parts; the basic principles of geometry in the context of classical aesthetics, various applications of geometry in various spatial contexts, and the role of geometry as the basis for the development of contemporary architectural design.

Learning Materials:

Geometry, classical aesthetics and architecture; Euclidean and non-Euclidean geometry in architecture; Geometry and visual perception; Geometry in the context of Ideal Cities; Music, space and architecture; Topology and architecture; Geometry and technology; Natural geometry and architecture.

Prerequisites: -

References:

1. Vitruvius, Ten Books on Architecture, Dover Publications, 1960
2. Colin Rowe, Mathematics of an Ideal Villa, MIT Press, 1976
3. Peter Davidson & Donald L. Bates, Architecture after Geometry, Architectural Design, 1999
4. Irenee Scalbert, Archis, Towards a Formless Architecture: The House of the Future by A+P Smithson, Archis, 1999
5. D'Arcy Thompson, On Growth and Form, Dover Publications, 1992
6. Jane Jacobs, The Death and Life of Great American Cities, RandomHouse, 1961
7. Elizabeth Martin, Architecture as a Translation of Music in Pamphlet Architecture 16, Princeton Architectural Press, 1994

Project Management

ENAR800040
3 Credits
Learning Objectives:

Students are able to prepare Planning/Design Project Proposals using project management knowledge and able to sell ideas/ideas and convince the assignor through presentation activities.

Sub Learning Objectives:

Setting goals and objectives; Establishing project management related theory; Developing proposals based on 5 project management processes; Developing proposals based on 10 project management area of knowledge.

Syllabus:

The discussion material in the Project Management course is focused on discussing "management", "projects" and "project management". This Project Management course is designed as a learning tool for students to acquire modern project management knowledge. The course basically studies ten areas of project management consisting of three main elements of Project Management; cost, quality and time and seven fields of knowledge as supporting elements. The ten areas of project management are linked to the five project management processes.

Learning Materials:

Prerequisites: -

References:

1. PMI, *A Guide to Project Management Body of Knowledge (PMBOK Guides) 3 ed,* Project Management Institute, 2004
2. J.M Amos and B.R Sarchet, *Management for Engineers,* Prentice-Hall Inc,
3. D Sbarrie, *Professional Construction Management,* McGraw-Hill, 1986
4. D Cadman and L Austin-Crowe, *Property Development,* EF & N Spon, 1978

Urban Planning

ENAR800041
3 Credits
Learning Objectives:

Student should be able to understand history and theory of urban planning though historical survey and/or through key themes; should be able to understand (1) how urban space works (based on historical context) based on spatial planning research; (2) key paradigms in urban planning thinking. This course is arranged around principle that history of urban planning is a theory of urban planning that is bounded by planning ethics.

Syllabus:

The syllabus is arranged following a chronological order that is divided by 5 sections: (1) reflection towards design ideas, origin and design practice; industrial city and housing question; spatial order exploration; (2) Modernist City; Colonial and Post-Colonial experiments; (3) Sub-urban dream (legacy of American city planning); from ghetto to city role model (racial and ethnic control); (4) City and citizenship in different historical moments; spatial rules and arrangements (basic rules of design); urban crisis, urban management, and business city; building a world class city in global south; (5) compatible theories in design and justice; see design over neo-liberalism: paradigm occurs in planning.

Alternatively, the syllabus can also interrupt the chronological order and be arranged like a survey class that organizes its material into key themes, such as: Empire ; Colonial / Post-colonial; Modernity & Alternative Modernity; Pacific Rim Capitalism and Transnational Urbanism; Race / Ethnicity, Planning and Real Estate; City and Village; Marginality; Rebuilding the City; City Entrepreneur, Dystopia Planning and Post Urban.

Prerequisites: -

References:

1. Selected articles from Journal of Planning Theory & Practices; Cities, Space & Polity, International Journal on Urban Regional Research; Journal of Planning Education and Research; Journal of Urban Studies; Journal of Urban Forum; Journal of Urban History, Environment and Urbanization; Antipode; Journal of Planning Literature
2. Paul H. Gleye, "City Planning versus Urban Planning: Resolving Profession's Bifurcated

Heritage," in Journal of Planning Literature, 2015, Vol 30(1), 3-17.
3. John Friedmann. Planning in the Public Domain: From Knowledge to Action, 1987
4. Peter Hall, Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century, Blackwell Publishing, 2002 (3rd ed)
5. Friedrich Engels, The Housing Question, Lawrence and Wishart, Ltd, 1942
6. Mike Davis, Planet of Slum, Verso, 2007
7. Dolores Hayden, Redesigning the American Dream: The Future of Housing, Work, and Family Life, W.W Norton & Company, 2007 (2nd ed)
8. Christine Boyer, Dreaming the Rational City: The Myth of American City Planning, MIT Press, 1986
9. Kermit C Parsons & David Schuyler (eds), From Garden City to Green City: The Legacy of Ebenezer Howard, Baltimore: The John Hopkins University Press, 2002
10. The Congress for the New Urbanism. 2001. Charter.
11. Robert Caro, The Power Broker: Robert Moses and the Fall of New York, Vintage, 1975
12. Marshall Berman, All That is Solid Melts into Air, Penguin Book, 1988
13. James Scott, Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed, Yale University Press, 1999
14. Nezar AlSayyad (ed), Forms of Dominance: On the Architecture and Urbanism of the Colonial Enterprise, Avebury, 1992
15. Lisa Peattie, Planning: Rethinking Ciudad Guayana, University of Michigan Press, 1987
16. James Holston, The Modernist City: An Anthropological Critique of Brasilia, University of Chicago Press, 1989
17. June Manning Thomas and Marsha Ritzdorf (eds), Urban Planning and the African American Community: In the Shadows, SAGE Publication, Inc, 1996
18. Kenneth T. Jackson, Crabgrass Frontier: The Suburbanization of the United States, Oxford University Press, 1987
19. St Clare Drake & Horace R. Cayton, Black Metropolis: A Study of Negro Life in a Northern City, University of Chicago Press, 1993.
20. Edward Banfield, Unheavenly City Revisited, Waveland Press, 1990
21. Susan S Fainstein & Scott Campbell, Reading in Planning Theory, Wiley-Blackwell, 2011
22. Lewis Mumford, The City in History: Its Origin, Its Transformation and Its Prospects, A Harvest/ HBJ Books, 1961
23. Stephen Graham & Simon Marvin, Splintering Urbanism: Networked Infrastructures, Technological Mobilities, and the Urban Condition, 2001
24. Aihwa Ong & Ananya Roy (eds), Worlding Cities and the Art of Being Global, Wiley-Blackwell, 2011
25. Patsy Haley, E.A Silva, et.al, "Routledge Handbook on Planning Research Methods" Routledge, 2015.
26. Faranak Mirahtab, Cities in the Global South Reader, Routledge, 2014.

Teaching Assistanship

ENAR8000 42
3 Credits
Learning Objective:

Students are able to conclude various roles and activities as well as their objectives in the architectural learning process.

Sub Learning Objective:

Students are able to detail the learning material in the facilitated courses; Students are able to organize activities in the facilitated courses; Students are able to evaluate the process of participating in activities through written reports.

Sylabus:

Through this course, students can act as facilitators in one of the regular undergraduate program subjects, which aims for students to understand various approaches in the learning process that will be useful for a professional career in the future, both in the academic and non-academic fields. Through this course, students are expected to be able to learn fundamental aspects of the teaching and learning process, how to prepare for class and create assignments, facilitate discussions, make assessments and evaluations, and use learning tools in the classroom. This course also provides an understanding of the three main approaches in learning theory: behaviorism, cognitive construction and social construction in relation to knowledge, learning, motivation and instructional methods.

Learning basics; basic learning theories: behaviorism, cognitive constructivism and social constructivism; instructional methods and facilitation techniques in architectural learning; evaluation and assessment methods, management of design studios in architectural education.

Learning Materials:

Fundamental aspects of the teaching and learning process; Class preparation and development of assignment; Methods of facilitating discussion, making judgments and evaluations; Use of learning tools in the classroom; Understanding the main

approaches in learning theory, such as behaviorism, cognitive construction and social construction in relation to knowledge, learning, motivation and instructional methods.

Prerequisite: -

References:

1. Heather Fry, Steve Ketteridge and Stephanie Marshall (eds.), A Handbook for Teaching and Learning in Higher Education: Enhancing Academic Practice (Third edition), Routledge, 2009.
2. David Nicol and Simon Pilling, Changing Architectural Education: Towards a New Professionalism, Taylor & Francis, 2000.
3. Rosie Parnell et al., Crit: An Architecture Student's Handbook, Routledge, 2007

Architecture, Media, and Context

ENAR800043
3 Credits
Learning Objectives:

Students discuss architecture as an embodiment of ideas and relates it to communication media and representation techniques such as images, photos and films on architectural works as well as the context of scale in understanding space.

Sub Learning Objectives:

Comparing the relationship between architecture, media and representational techniques in architecture through architectural precedents in the study of history, art and culture; Criticizing the relationship between architecture, media and the context of the used scale, through discussion of theory, history, and art that affect the quality of architectural design; Analyzing the relationship between architecture, media and context of scales such as miniature and urban scales

Syllabus:

The focus of this course is on how media operate in architecture and are used in a variety of contexts and scales. The student will be introduced to the history and theory of media and architecture, and explore the use of media in architecture and understand the relationship between architectural theory and practice and the meaning of space. In general, the discussion covers the use of media in art and architecture, media in the Renaissance & Classicism era, some observational techniques and new views on space, Collage & Montage in architecture, photography and representation in architecture, film and architecture, reading media contexts and scales such as miniatures and Megastructure, signs and semiotics in architecture and society of spectacle.

Learning Materials:

Media in Arts & Architecture; Media in the Classical & Renaissance Era; Collages & Montages; Representation of Architecture through Photography; Film & Architecture; Film & Architecture (Cinematic Spaces); Walter Benjamin The Work of Art; Reading Media & Scale: Miniature; Reading Media & Scale: Bigness + Megastructure + Curtain Wall; Society of Spectacles; Field Trip Understanding Media & Scale From Past to Present; Communicating Media & Scale: Sign and the Semiotic Dimension of Architecture;Media & Spectacle (Henri Lefebre)

Prerequisites: -

References:

1. Moore, Charles and Allen, Gerald. Dimensions. Space, shape & scale in architecture, (McGraw-Hill, 1977)
2. Colomina, Beatriz. "The Media House." Assemblage, no. 27 (1995)
3. Jonathan Crary, Techniques of the observer: on vision and modernity in the nineteenth century, the MIT Press, 1992
4. Sergei M. Eisenstein, Yve-Alain Bois, and Michael Glenny. "Montage and Architecture." Assemblage, no. 10 (1989).
5. Colin Rowe and Fred Koetter, "Collage city and the reconquest of time," in Collage City (MIT Press, 1978), 118-149; "Excursis" (images): 151-177.
6. James Ackerman, "On the Origins of Architectural Photography" In Kester Rattenbury, Ed., This is Not Architecture: Media Constructions (New York: Routledge, 2002): 26-35.
7. Giuliana Bruno, "Site-seeing: Architecture and the Moving Image" Wide Angle 19:4 (1997): 8-24.
8. Benjamin, Walter. 1969. 'The Work of Art in the Age of Mechanical Reproduction,' Illuminations. Ed. H. Arendt. (New York: Schocken) pp. 217–251.
9. Susan Steward, " Miniature," in On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection (John Hopkins U.P., 1984).
10. Rem Koolhaas, Delirious New York (New York: Monaceli Press, 1978).
11. Debord, Guy. 1994. The society of the spectacle. New York: Zone Books.
12. Baudrillard, Jean. 1994. Simulacra and Simulation, Ed. Sheila Faria Glaser, Michigan: University of Michigan Press.
13. Venturi, Denise Scott Brown, Steven Izenour, Learning From Las Vegas
14. Roland Barthes, "Semiology and Urbanism," in

Joan Ockman (ed), Architecture Culture 1943-1968 (New York: Rizzoli, 1993), pp. 412-418.
15. Henri Lefebvre, The Production of Space, Blackwell, 1991.

Independent Study

ENAR800044
3 Credits
Learning Objective:

Students are able to formulate architectural ideas based on a comprehensive study of the context of community.

Sub Learning Objectives:

Students are able to identify issues regarding context and society through extensive data collection; Students are able to develop architectural ideas based on the identification and analysis of issues that exist in the context and society; Students are able to communicate architectural ideas verbally and non-verbally.

Sylabus:

This course will provide students with the ability to have advanced architectural knowledge in various topics and apply it in the development of architectural intervention ideas.

Learning Materials:

The study of advanced architectural knowledge in a particular context; development of architectural intervention ideas based on in-depth study of the context and theoretical studies in related topics

Prerequisite: -

References: Relevant references to the topic offered.

Capita Selecta

ENAR800046
3 SKS
Learning Objectives:

Student are able to evaluate the role of architects in various contemporary architectural practices on a local and global scale.

Sub Learning Objectives:

Students are able to analyze the role of architects and problems in architectural practice; Students are able to analyze applicable regulations (codes) regarding service to clients, compliance with local building regulations, and technical problems related to building structures and construction, mechanical and electrical; Students are able to analyze the principles of administration, marketing and project management; Students are able to evaluate and compile insightful knowledge in various topics of knowledge that support the mastery of architectural professional abilities.

Syllabus:

An understanding of the topic that supports the mastery of a professional architect. Provide insight into the topics of professional architect practice.

Learning Materials:

Environmentally Sustainable Technology; Digital Advancement in Architecture; Architectural Restoration; Profession, Education, and Architectural Criticism; Structural system and Building Methods; Greenship; Collaboration with Foreign Architects; Construction Error.

Prerequisites: -

References: Relevant references to the topic offered.

Special Topic on Architectural Design

ENAR800046
3 Credits
Learning Objectives:

Students should be able to demonstrate knowledge on current architectural discourse and its implementation in architectural design.

Syllabus:

Studies on the development of contemporary architectural theories; the development of architectural design methods; the development of architectural representation techniques; the development in other relevant disciplines that have impacts of the development of architectural design theories and methods.

Prerequisite: -

References: Relevant references to the topic offered.

Special Topic on Urban Design

ENAR800047
3 Credits
Learning Objectives:

Students should be able to demonstrate knowledge on current urban design discourse and its implementation in urban design.

Sub Learning Objectives:

Students are able to analyze the practice of urban design architecture, as well as regional planning and its relationship to demographic factors, local and global resources; Students are able to express the social, cultural, political and economic context in

which the built environment is located.

Syllabus:

Students should be able to demonstrate knowledge on current urban design discourse and its implementation in urban design.

Learning Materials:

Studies on the development of urban design theories; the development of urban design methods; studies on current issues that are relevant to urban design; the development in other relevant disciplines that have impacts on the development of urban design theories and methods.

Prerequisite: -

References: Relevant references to the topic offered.

Special Topic on Urban Housing and Settlement

ENAR800048
3 Credits
Learning objectives:

Student are able to construct advanced architectural knowledge in the urban Housing and settlement from the given phenomenon or case of urban settlements and housing.

Sub Learning objectives:

Students are able to apply transdisciplinary concepts to understand urban housing and settlement issues; Students are able to analyze using demographic concepts and theories in cases of urban housing and settlements in Indonesia; Students are able to analyze using classical and contemporary concepts, theories used and approaches to urban anthropology in cases of urban housings and settlements in Indonesia; Students are able to analyze using concepts and theories of community psychology in cases of urban housings and settlements in Indonesia; Students are able to apply the use of cartographic principles and analyze data as a basis for mapping in the context of urban housings and settlements in Indonesia; Students are able to provide critical arguments for urban housing and settlements issues in Indonesia

Syllabus:

This course introduces students to the concept of transdisciplinary as a perspective to understand the problems of settlements and urban housing in Indonesia. Demographics, urban anthropology, community psychology, and cartography will be used to analyze the housing and housing cases given.

Learning Materials:

Transdisciplinary knowledge as a perspective to understand urban housing and settlement issues; Demographic knowledge to analyze case problems in urban housing and settlemet; Knowledge of urban anthropology to analyze case problems in urban settlements and housing; Knowledge of community psychology to analyze case problems in urban housings and settlement; Knowledge of cartography to analyze case problems in urban housing and settlements; The problem of urban housing and settlements in Indonesia.

Prerequisite: -

References: Relevant references to the topic offered.

Special Topic on Property

ENAR800049
3 Credits
Learning objectives:

Students are able to choose, analyze and conclude the phenomenon of property area development that occurs or by using the theory that has been studied in an integrated manner; Students are able to predict things that will happen if students plan to develop property areas.

Sub Learning Objectives:

Students are able to explain issues and problems; Students are able to obtain the material needed to understand the theory related to every issue and problem of property area development in depth; Students are able to analyze the material obtained related to the main issues and problems of discussion; Students are able to make a summary in the form of presentation material for each subject and demonstrate verbal skills in explaining the theory used in the summary; Students are able to write scientific papers related to issues and problems related to the development of selected property areas in an integrated manner.

Syllabus:

This course provides students with knowledge of issues and problems related to the implementation of property area development with various spatial aspects, starting from the issue of land provision to calculation of the required financial resources as well as the scope of technical, environmental, social/cultural, legal discussions and economics/finance.

Learning Materials:

The main issues and problems of property area development; Open space and built space in the context of the property area development; The need for providing land to fulfill the livelihood

activities; Technical aspects of property area development; Selecting location of the property area and its relation to accessibility and its issues and impacts; the availability and provision of infrastructure and utilities; The effect of visibility on consumer interest and property value increases; Spatial analysis of property space; Availability and provision of public facilities to the economic value of the property area; sports facilities and "leisure" facilities provisions to the perception of potential consumers; The influence of policies (economic, financial, political and legal) on the development of property areas; Conventional financing for property area development; Non-conventional financing (PPP) for the development of property areas; Effect of economic/financial policies (taxes/interest rates) on property development

Prerequisite: -

References: Relevant references to the topic offered.

Special Topic on Architectural History, Theory, and Criticism
ENAR800050
3 Credits
Learning Objectives:

Student should be able to construct advanced architectural knowledge in history and architectural theory from the given phenomenon or case.

Sub Learning Objectives:

Student should be able to analyze architectural theory and read architectural works critically as a part of interelation between the work itself, the text and the context of society; Students are able to provide critical arguments for the relationship between architectural works and political, social and cultural contexts, including their relationship to theory, history and the writing of architectural history.

Syllabus:

This course introduces students to the concept of transdisciplinary as a perspective to understand the built environment in Indonesia in relation to the history and theory of architecture. Theories related to anthropology, culture, urban, art, representation of space in various media such as films, museums and cartography will be used to analyze cases related to history and architectural theory including those related to traditional architecture, conservation, and design studies.

Learning Materials:

Studies of architectural history throughout various periods of time; the development of discourse on architectural history and theory; Case Studies

Prerequisite: -

References: Relevant references to the topic offered.

Special Topic on Sustainability
ENAR800051
3 Credits
Learning Objectives:

Students should be able to demonstrate knowledge on current discourse on sustainability and its implementation on architectural design.

Syllabus:

Studies on the development of theories on bulding technology and sustainable environment; studies on relevant issues of sustainability; architectural design innovative practice related to sustainability; innovation on building structure, construction, material and systems.

Prerequisite: -

References: Relevant references to the topic offered.

Curriculum Structure for Fast Track Program

Subject	SKS
Undergraduate Courses	
7th Semester	
Undergraduate Elective: Advanced Research Methods	3
Undergraduate Elective: Advanced Architectural Theories	3
Undergraduate Elective: (taken from Graduate Elective Course)	3
8th Semester	
Undergraduate Elective: Advanced Design Methods	3
Undergraduate Elective: Theory Peminatan	3
Total Transfer Credits	**15 SKS (34%)**
Graduate Courses	
1st Semester	
Graduate Required Course: Advanced Research Methods	3
Graduate Required Course: Advanced Architectural Theories	3
Graduate Elective	3
Sub Total	**9**
2nd Semester	
Graduate Required Course: Advanced Design Methods	3
Mata Ajar Peminatan S2 Theory Course	3
Studio/Workshop (Speciality) 2	5
Applied Data Science	2
Sub Total	**13**
3rd Semester	
Studio/Workshop (Speciality) 1	5
Pre-Thesis	4
Graduate Elective	3
Sub Total	**12**
4th Semester	
Thesis	4
Publication	2
Sub Total	**6**
Total Graduate Credits	**40**

Transition Rules

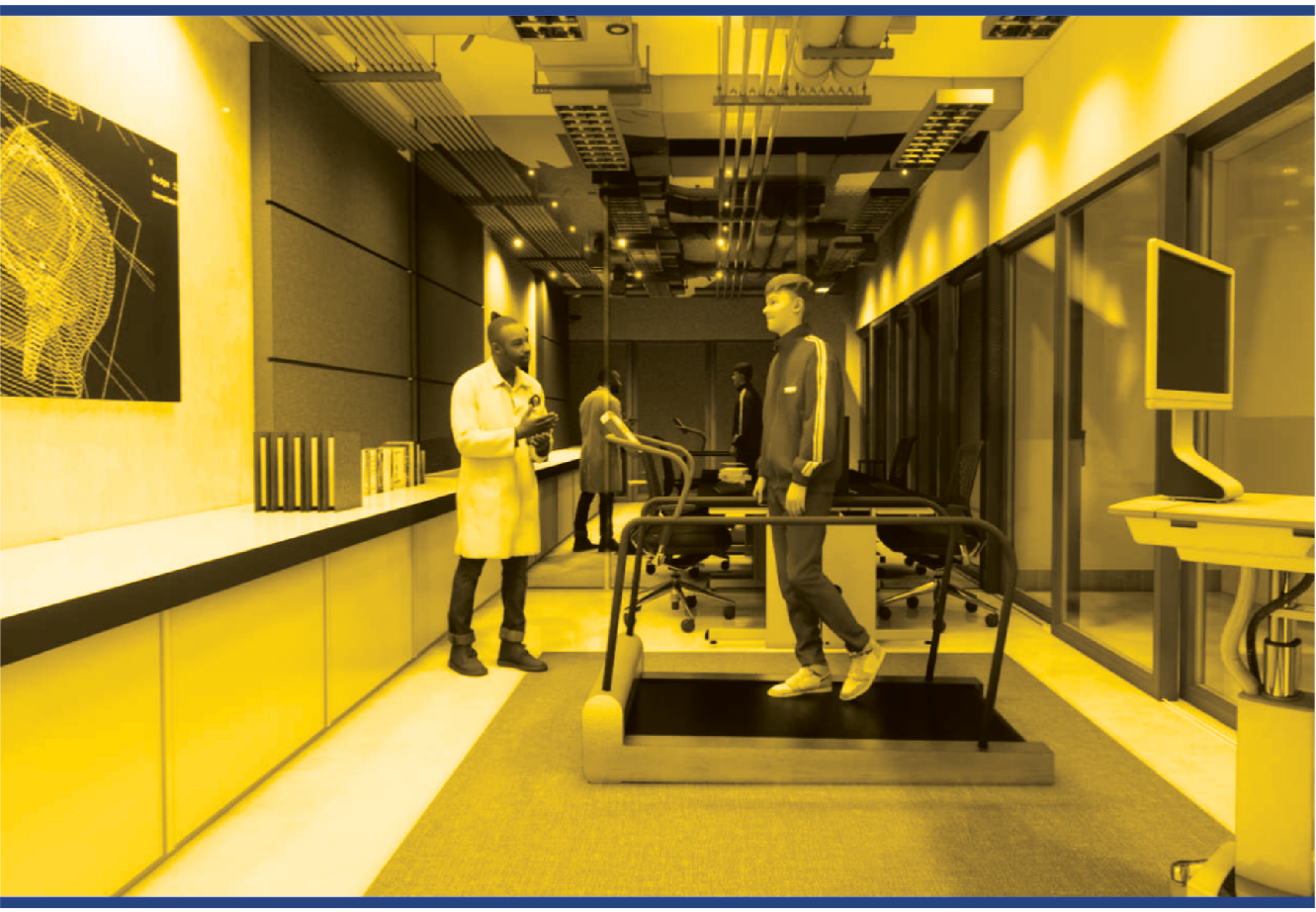
1. The 2020 curriculum is implemented starting in the Odd Semester 2020/2021. In principle, after the 2016 Curriculum is implemented, only subjects in the 2020 Curriculum will be opened.
2. Class of 2019 and previously followed the 2020 curriculum with transitional rules.
3. A transitional period is for one academic year of 2020/2021 and implemented for subjects where the semester placement changes (from Even to Odd, or vice versa), if necessary, will be opened in both semesters during the transition period (Academic Year 2020 / 2021).
4. If there is a change in the credits of the subjects, the number of credits calculated for graduation is the number of credits at the time the courses are taken. Same or equal subjects with different Credits, if repeated or newly taken will be listed with a new name and calculated with new Credits.
5. For students who have not passed the required courses in the 2016 Curriculum, are required to take the same or equivalent courses in the 2020 Curriculum. (Curriculum 2016 courses that are not listed in the Equality Table means that they have not changed, both the name and the size of their SKS).
6. Students who have not passed Advanced Design and Research Methods (4 credits) in the 2016 Curriculum must take Advanced Design Methods (3 credits) and Advanced Research Methods courses (3 credits) in the 2020 Curriculum to fulfill the required courses.
7. Students in 2019 and previously who have taken Thesis (8 credits) but not yet finished it due to Covid-19 can still take Thesis (8 credits) in odd semester during the transition period.

Table 8 Equivalence of 2016 Curriculum and 2020 Curriculum Master Program in Architecture

No	Course Name in 2016 Curriculum	Credits 2016	Course Name in 2020 Curriculum	Credits 2020
1	Advanced Design and Research Methods	4	Advanced Design Methods	3
			Advanced Research Methods	3
2	Thesis	6	Thesis (will be opened in odd semester transition period)	8

CHAPTER 7

DOCTORAL PROGRAM



Doctoral Program

FTUI holds Doctoral Program for the seven following study programs:

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

FTUI Doctoral program was officially opened in 2000 with the opening of the Civil Engineering and Electrical Engineering Doctoral program followed by the emersion of the Opto-electrotechnique and Laser Application study program into the Postgraduate Program of FTUI. The Mechanical Engineering study program was officially opened in 2006 while the Metallurgy & Material Engineering and Chemical Engineering followed in 2007. And In 2009, respectively Department of Architecture opened the Architecture Doctoral Program. In 2001, the Opto-electrotechnique and Laser Application was closed and was emerged into the Electrical Engineering study program. Each Doctoral study program is headed by the Head of Study Program which is held ex-officio by the Head of Department in the Faculty of Engineering UI. The Doctoral study programs have one or more focus subjects to give a more specific knowledge on engineering field to all students of the program.

Currently, the Doctoral Program is held in two ways: Lecture & Research; and Research.

New Students Selection

Selection process for new students for the FTUI Doctoral Program is as follow:

1. Pre-admission stage: future student is encouraged to informally contact their prospective Promotor or the Head of Department to further discuss his/her desired dissertation topic. This is important to make sure the availability of Promotor in accordance to said research topic. Communication may be done through email or face to face. The Head of Department and future Promotor then would discuss the student's proposal internally.
2. Future student should register online via http://penerimaan.ui.ac.id and complete the required documents and prerequisites.
3. Future student will then take the entrance examination (SIMAK UI) which consists of: (i) Academic Potential Examination and (ii) English Proficiency Test.
4. The results of the Entrance Examination will then be sent to FTUI by the UI Entrance Examination Committee. These results will then be discussed in a Department Committee Meeting headed by the Head of Department to determine which students accepted, and the proposed research topic approved, and the availability of future Promotor. An interview have to be arrange with the future student to determine the suitability of research topic, with previous study field, and the student's commitment to participate in the Doctoral program full time. Interview may be done directly or through email or messanger application.
5. The outcome of the Department Committee Meeting will then be submitted to the UI Entrance Examination Committee to be announced.

Academic Counseling

Since the day a student is registered as student for the Doctoral program until the time that he/she passes qualification examination, the student will be under the guidance of an academic advisor who the student expected to be their Promotor or Co-Promotor. Head of Department accepts a proposal of future Promotor/Academic Advisor from a committee in the Department. Once the student pass the qualification examination, the student will earn status as Doctor Candidate and the Academic Advisor's status will revert to Promotor/Co-Promotor.

Promotor and Co-Promotor

Promotor and Co-Promotor for Doctoral Program are lecturers or experts from related field and are assigned by Head of Department based on a Rector's Decree to guide and advise a Doctor candidate in conducting research and dissertation writing. Academic Advisor consist of 1 Promotor and a maximum of 2 (two) Co-Promotors. Promotor is a first chair Advisor who holds an academic degree of Professor or Doctor and a minimum of Senior Lecture academic position; has a relevant expertise in the field which the student's dissertation topic is; and is acknowledge as a full time faculty at the Universitas Indonesia, and for the last five years has produced at the latest: one scientific paper in an accredited national journal or a reputable international journal; or one other form of scientific product which is acknowledge by a group of experts set up by the Academic Senate of Universitas Indonesia.

Co-Promotors are the Promotor's companions who act as second and/or third chair advisor who hold academic degree of Doctor or Senior Lecturer, and has a relevant expertise in the field with the student's dissertation topic. Co-Promotor from outside of the Faculty of Engineering UI must have the approval from the Promotor. Promotor and Co-Promotors are appointed by the Rector based on the proposal submitted by the Dean which are also based on suggestions from the Head of Department after the student has pass the qualification examination. The appointment must be done at the latest 1 (one) semester after the qualification examination. A change of Promotor/Co-Promotor must be proposed by the Dean to the Rector based on a proposal from the Head of Department.

Program Specifications

1.	**Awarding Institution**	Universitas Indonesia	
2.	**Teaching Institution**	Universitas Indonesia	
3.	**Programme Title**	Doctoral Program in Civil Engineering Doctoral Program in Mechanical Engineering Doctoral Program in Electrical Engineering Doctoral Program in Metallurgy & Material Engineering Doctoral Program in Architecture Doctoral Program in Chemical Engineering Doctoral Program in Industrial Engineering	
4.	**Class**	Regular	
5.	**Final Award**	Doctor (Dr.)	
6 .	**Accreditation / Recognition**	Civil Engineering Doctoral Program: Accreditation A from BAN-PT Mechanical Engineering Doctoral Program: Accreditation A from BAN-PT Electrical Engineering Doctoral Program: Accreditation A from BAN-PT Metallurgy & Material Engineering Doctoral Program: Accreditation A from BAN-PT Chemical Engineering Engineering Doctoral Program: Accreditation A from BAN-PT Architecture Doctoral Program: Accreditation A from BAN-PT Industrial Engineering Doctoral Program: Accreditation A from BAN-PT	
7.	**Language(s) of Instruction**	Bahasa Indonesia	
8.	**Study Scheme (Full Time / Part Time)**	Full Time	
9.	**Entry Requirements**	Master graduate from study programs in line with study program chosen and pass the entrance examination	
10.	**Study Duration**	Programmed for 3 years	
	Type of Semester	Number of Semester	Number of weeks / semester
	Regular	6	14-17
	Streams: The Civil Engineering Doctoral Program has six streams as follow: • Structure • Construction Management • Transportation • Water Resource Management • Project Management • Geotechnique The Mechanical Engineering Doctoral Program has four streams as follow: • Energy Conversion		

	• Engineering Design and Product Development • Manufacture Engineering • Fire Safety Engineering and Management The Electrical Engineering Doctoral Program has eight streams as follow: • Telecommunication Engineering • Electrical Power and Energy Engineering • Photonic and Electronic Engineering • Control Engineering • Multimedia and Information Engineering • Security of Information Network Engineering • Telecommunication Management • Electrical Power and Energy Management The Metallurgy & Material Engineering Doctoral Program has two fields of specialization: • Corrosion and Protection • Material Engineering and Manufacture Process The Chemical Engineering Doctoral Program has five streams as follow: • Industry Catalist • Gas Management • Product Design and Chemical Process • Environmental Protection and Work Safety • Gas Technology The Industrial Engineering Doctoral Program has several research focus areas: 1. Manufacturing Systems Engineering • Industrial Policy and Analysis • Value Chain and Logistics • Quality and Reliability • Product/Process Design and Innovation 2. Service Systems Engineering • Product - Service - System • Service Design • Service Quality & Improvement • Decisions, Uncertainty & Risk 3. Optimization and Data Analytics • Operations Research • Data analytics and Forecasting • Real-time optimization
11..	**Graduate Profiles:** FTUI Doctoral Program Graduates haves the capabilities of demonstrating expansion, novelty breakthrough in research in the engineering or architecture field in accordance to certain stream or sub-stream. The FTUI Doctoral Program prepares student to work in academic and research in accordance to their own stream; dedicate their expertise in research laboratory, industry or government institution; or create a business based on their innovation. Graduates are able to posess the following skill: • Be able to show expertise in the engineering or architecture discipline; • Be able to uphold the academic and research ethics; • Be able to work collaboratively in research; • Be able to position themselves as leader in their community; • Be able to communicate well in their community and build networks; • Be able to demonstrate individual live skill in connection to human relationship; • Be able to demonstrate attitude, behavior and way of thinking which support their success in society.

12..	**Graduates Competencies:** The aim of Doctoral Program in FTUI is in line with the Doctoral Program of Universitas Indonesia, to produce quality graduates with the following competence: 1. Able to independently update their knowledge on science and technology in engineering or architecture through research based innovation breakthrough. 2. Able to show professionalism in their field of study that can be accountable towards the development of science and technology. 3. Able to write a scientific paper in engineering or architecture and convey the result of their research to the public both orally or written in an international scientific activity. 4. Able to recommend a solution for a complex problem faced by society in the field of engineering or architecture through inter, multi and trans discipline approach. 5. Able to lead a working or research team to solve problem in the field of engineering or architecture that can be of benefit for the good of mankind. 6. Able to develop and maintain a network of cooperation with fellow researcher and research community in the field of engineering and architecture both in national and international level.
13.	**Course Composition (Course & Research)**

No.	Classification	Credit Hours (SKS)	Percentage
i	Course Component	16	32%
ii	Research Component	34	68%
	Total	50	100%

14. Classification of Subjects. (Research)

No.	Classification	Credit Hours (SKS)	Percentage
i	Course Component	0	0 %
ii	Research Component	50	100 %
	Total	50	100%
	Total Credit Hours to Graduate	50 CP	

Curriculum Structure for FTUI Doctoral Program

The curriculum structure for the Doctoral Program in all study programs are the same, they are only differentiated by their codes for the research component. The code "xx" for each study programs are as follow:

ENCV for Civil Engineering, ENME for Mechanical Engineering, ENEE for Electrical Engineering, ENMT for Metallurgy & Material Engineering, ENAR for Architecture, and ENCH for Chemical Engineering, ENIE for Industrial Engineering

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

Doctoral Program (Course & Research)

The following is the curriculum structure for Course & Research Doctoral Program in Table 1.

Table 1. The Curriculum Structure – Doctoral Program in Course and Research

Code	Subject	SKS
	1st Semester	
ENGE901001	Advanced Research Method	6
ENXX900001	Special Subject I	3
	Sub Total	**9**
	2nd Semester	
ENGE902002	Qualitative & Quantitative Analysis	4
ENXX900002	Special Subject II	3
ENXX900004	Research Proposal	6
	Sub Total	**13**
	3rd Semester	
ENXX900006	Publication – International Conference	4
	Sub Total	**4**
	4th Semester	
ENXX900008	Research Result Examination	10
	Sub Total	**10**
	5th Semester	
ENXX900010	Publication International Journal	8
	Sub Total	**8**
	6th Semester	
ENXX900012	Promotion Examination	6
	Sub Total	**6**
	Total	**50**

The Lecture Component includes four subjects:

a. Advanced Research Method, 6 sks
b. Qualitative and Quantitative Analysis, 4 sks
c. Special Subject I, 3 SKS.
d. Special Subject II, 3 SKS.

The Research Component includes:

1. Research Proposal, 6 SKS
2. Publication – International Conference, 4 SKS
3. Research Result Examination, 10 SKS
4. Publication – International Journal, 8 SKS
5. Promotion Exam, 6 SKS

Doctoral Program (Research)

The following is the curriculum structure for Research Doctoral Program in Table 2.

Table 2. The Curriculum Structure – Doctoral Program in Research

Code	Subject	SKS
	1st Semester	
ENXX900003	Research Group Periodic Seminar	6
	Sub Total	**6**
	2nd Semester	
ENXX900005	Research Proposal	6
	Sub Total	**6**
	3rd Semester	
ENXX900007	Publication I – International Conference	6
	Sub Total	**6**
	4th Semester	
ENXX900008	Research Result Examination	10
	Sub Total	**10**
	5th Semester	
ENXX900009	Publication II – National Journal	8
	Sub Total	**8**

	6th Semester	
ENXX900011	Publication III – International Journal	**8**
ENXX900012	Promotion Examination	6
	Sub Total	**14**
	Total	**50**

Description of Subjects

Advanced Research Method

ENGE901001
6 SKS

Learning Objective(s): Course participants are expected to: (a) master the scientific work process based on science philosophy, which is the scientific justification aspects, innovative aspects and scientific ethics aspects, (b) able to write a research proposal and or draft of scientific writing related to the student's doctoral topic, (c) can map research result from the latest international journal in their field and understand the state-of-the-art from their research topic, and can determine the knowledge gap yet explored in the international level for further research in their Doctoral Program.

Syllabus: (1) Relationship between philosophy and engineering science; (2) Science Philosophy; (3) Epystemology in Engineering Science; (4) Research Method; (5) Problem formulation and hypothesis; (6) Research and state of the art; (7) Research Evaluation; (8) Design Evaluation and research Stages; (9) Introduction to the analysis of the data processing method; (10) Benchmark on research output and conclusion formulation; (11) Various citation method; (12) Finalization of research proposal draft and /or scientific article draft.

Prerequisite(s): None

Textbooks:

1. Haryono Imam R dan C. Verhaak, Filsafat Ilmu Pengetahuan, Gramedia, Jakarta, 1995
2. Willie Tan, "Practical Research Methods", Prentice Hall, 2002.
3. R. Kumar, *Research Methodology, A Step-by-step Guide for Beginner,* 3rd ed., Sage Pub, 2012

Qualitative and Quantitative Analysis

ENGE902002
4 SKS

Learning Objective(s): Discuss the qualitative and quantitative in data analysis and exploring specific data analysis areas. After participating in this subject which discuss the qualitative and quantitative approach in data analysis in exploring specific areas of data analysis. Students are expected to be able to build the following learning outcome: (1) awareness to situations requiring qualitative data analysis in the inductive paradigm; (2) awareness to situations requiring quantitative data analysis in the deductive paradigm; (3) appreciation toward various approaches; (4) possessing skills in giving critical appraisal; (5) possessing skills in performing qualitative and quantitative data analysis.

Syllabus: Introduction; Qualitative Analysis; Quantitative Analysis; Non-Parametric Analysis; Uncertainty Analysis; Critical Appraisal; Design of Experiment; ANOVA revisit; Multivariate Techniques.

Prerequisite(s): None

Textbooks:

1. Miles M & Huberman M, Qualitative Data Analysis, London Sage Publications, (1994)
2. Montgomery, D.C., & Runger, G.C, Applied Statistics and Probability for Engineers 3rd Ed., John Wiley and Sons, Inc., New York, (2003)
3. Kirkup, L, Experimental Method: An Introduction to the Analysis and Presentation, John Wiley and Sons, Australia, Ltd., Queensland, (1994)
4. Montgomery, D.C, Design and Analysis of Experiments 6th Ed., John Wiley and Sons, Inc., New York, (2005)
5. Hair, J.F., B.Black, B.Babin and R.E Anderson, Multivariate Data Analysis 6th Ed., Pearson Education Inc., New Jersey, (2006)

Special Subject 1

ENXX900001
4 SKS

Special Subject 2

ENXX900002
4 SKS

Special Subject 1 in the 1st first semester (4 SKS) and Special Subject 2 in the 2nd semester (4 SKS) are determined together with the student's Academic Advisor to support the student's research and/or to develop the student's knowledge with information and knowledge from unrelated field. Academic Advisor is also allowed to propose a special content for the student to Head of Department.

The following are the requirements for the implementation of Special Subject 1 and 2:

1. For students who do not have in line Master degree educational background from the Faculty of Engineering Universitas Indonesia, they are allowed to take the similar courses of the related field of study available at the Master Program in FTUI during the running semester.
2. Students are also allowed to take courses from other study programs within the Faculty of

1. Engineering Universitas Indonesia or courses from other faculties in UI as stated in the Guidance Book or the Master/Doctoral Program Catalog.
2. 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
3. In the event where neither conditions is viable for the students, the Academic Advisor is allowed to conduct a class of said course.

Research Group Periodic Seminar
ENXX900003
6 SKS

Research Group Periodic Seminar is an early activity of research in the Doctoral Program in Research where students conduct literature study in relation to the materials for their research. This literature study must be done intensively by mapping out the research results from the latest international journals in related field. The final aim was so that students have a state-of-the-art understanding of their research topic, and can determine the knowledge gap previously unexplored in the international level for further research in their Doctoral Program. The result of this literature study is compiled in a literature study report presented in the Research Group Periodic Seminar to be examined by a panel comprises of future Promoter/ Academic Advisor and Examiners from related field of study. Students will passed this Research Group Periodic Seminar if they received a minimum grade of B.

Research Proposal
ENXX900005
6 SKS

Research Proposal is the continuous activity of the literature study, where after gaining a state-of-the-art knowledge of their research topic, students can formulize the scope of their Doctoral research and determine which research method will be use. The result of this activity is a comprehensive research proposal which include: goals, background and data analysis from early study or experiments done. Included in this research proposal is plan of work for each semester and its publication goals. At this level, it is expected for students to begin experiment activity or early study which can show the direction of their research is feasible and recent in his field. The early experiment or study result, the literature study and the whole research plan is then compiled in a Research Proposal Report to be presented and examined in a Research Proposal Examination. Students will passed this Research Proposal if they received a minimum grade of B.

Research Result Examination
ENXX900008
10 SKS

At this stage, students are expected to have a research output with a minimum of 75% from their research plan. Doctorate candidate are expected to have reach a research outcome which is the main part of the originally planned contribution. The outcome of this research is measured through the Research Output Examination. The examination committee is appointed through the Dean's Decree based on the Head of Department's proposal. These examiners consist of experts related in the field of study of the Doctorate candidate with at least one examiner from an institution outside of Universitas Indonesia. Doctor Candidate will passed this Research Output Examination if they received a minimum grade of B. At this stage, a Doctor Candidate are allowed to design a scientific article framework to be published in an indexed International Journal and determine which International Journal they will send the article to.

Publication – International Conference
ENXX900006
4 SKS

Publication I – International Conference
ENXX900007
6 SKS

At this stage, students are expected to have an experiment result or study to focused on in their research topic and clarify their research direction. The result of the experiment must also show innovation or breakthrough, mastery of knowledge on their stream in relation to their research topic, the depth of their research materials, and the mastery of the state of the art development in their field or research interest, originality, and the contribution towards science and/or its implementation. Once presented in front of their promoter and co-promoter, the whole research result at this stage will be deemed worthy for international conference publication.

Publication II – International Journal
ENXX900009
8 SKS

Publication III – National Journal
ENXX900011
8 SKS

The scientific publication is an integral part of research activity and a prerequisite in participating in a Promotion Examination. International Journal meant here is an English language journal which its

editorial board consists of member from at least three different countries or more. A mandatory publication must have an "Accepted" status before the Promotion Examination. FTUI itself publish their own international journal, the International Journal of Technology (IJTech), which students can utilize as one of the international journal to publish their Doctoral research.

Promotion Examination

ENXX900012
6 SKS

Before deemed fit to participate in a Promotion Examination. Doctor Candidate are required to conduct additional research as a follow up from the Research Output Examination. The inputs and revisions given during the Research Output Examination must be completed and revised through a series of final research. At this stage, the Doctor Candidate must prove the authencity and originality of their research as new contribution to the scientific world. Thus, at this stage, the Doctor Candidate is required to have an "Accepted" for their international Journal, they are also required to complete their dissertation paper ready to be tested during the Promotion Examination.

Dissertation is an academic scientific paper study output and/or in depth research done independently and contained new contribution to issues that are temporary already known the answer or new questions ask on issues that are seen to have been established in the field of science and technology by the Doctor Candidate under the guidance of his Academic Advisor. A Doctor Candidate that has completed the revision of their dissertation are required to submit a completed version of their dissertation in five hard cover books and original approval form that has been signed by their advisors and submitted to PAF FTUI signifying the end of their study. The format for writing and binding the Dissertation should follow the writing and binding guidelines in the Technical Guidelines of Final Project Writing for Students of Universitas Indonesia that can be downloaded at http://www.ui.ac.id/download.

Promotion Examination is a scheduled academic activity as a medium of evaluation for the Doctor Candidate Dissertation as a requirement to obtain the highest academic title, Doctor. The requirements and provision for Promotion Examination are as follow:

- Promotion Examination can be done if all the scientific publication requirements are completed by the Doctor Candidate: a minimum of one publication in an International Scientific Journal (in "Accepted" status) in relation to their dissertation research. The Publication is required to state Faculty of Engineering Universitas Indonesia as one of the affiliation institution.
- Promoter and Co-Promoter gave a written approval on the dissertation as a sign that the dissertation can move forward to the Promotion Examination.
- The Promotion Examination is carried out by the Committee of Promotion Examination which is appointed with a Rector's Decree based on a proposal from the Head of Department and the Dean of the Faculty of Engineering Universitas Indonesia.
- The Committee of the Promotion Examination comprises of: (a) Promoter and Co-Promoter, (b) The Examiners, (c) a minimum of one examiner from outside of Universitas Indonesia.
- Examiners consist of experts from related field of study. In a special circumstances, an expert that is not from the academic community can be invited as part of the examiners team.
- The Promotion Examination is led by the Head of the Examiners Committee that is also a member of the committee outside of the Promoter/ Co-Promoter and outside examiner. If the Head of the Examiners Committee is unavailable, his/her position can be replaced by one of the member of the examiner team.
- The Promotion Examination is held as an open session for a period of maximum three hours divided into two stages: the dissertation presentation given by the Doctor Candidate for 15-30 minutes and a question and answer session for 120-165 minutes.
- The Doctor Candidate will pass the Promotion Examination if they received a minimum grade of B with GPA 3.00.

Facilities for Doctoral Program Students

To make sure that student of FTUI Doctoral Program are able to conduct full time research and produce excellent publications as required, FTUI provides the following facilities:

Doctoral Program Students' Workstation

Compact cubicles in comfortable rooms are available as Doctoral program students' workstation. The locations for these workstations are located on the 2nd and 3rd floor of the Engineering Center Building. Access to these workstations requires a swipe card to guarantee security. A round the clock wi-fi service is also available. To procure a workstation and access card, students are requested to register to the Associate Dean for General Affairs in the Dean's building, 2nd floor, FTUI Depok.

International Journal Article Writing Training

These free of charge trainings for the FTUI Doctoral program students are held several times each year. The information regarding these trainings are communicated through an announcement in SIAK-NG, posters at each Department, Doctoral program mailing list and FTUI website (www.eng.ui.ac.id).

Research Proposal Writing Training

These free of charge trainings for the FTUI Doctoral program students are held several times each year. The information regarding these trainings are communicated through an announcement in SIAK-NG, posters at each Department, Doctoral program mailing list and FTUI website (www.eng.ui.ac.id).

Line Editing Draft for International Journal Article

FTUI provides funds for line editing drafts for International Journal Articles. Requirement for applying for this funds are: the article must include the promoter name as part of the writing team and state FTUI as the main affiliation. To be grant this facility, students only needs to send a draft of their article through email to the FTUI Associate Dean of Academic and Research (risetft@eng.ui.ac.id). The time required for line editing is 2-4 weeks.

Doctoral Program Mailing-List

The Doctoral Program mailing list is used as a communication tool between the Dean's Faculty Heads, the Faculty Center Administration staff and all Doctoral program students in FTUI. Information regarding trainings, seminars, grants or other academic matters is announced through this mailing list. Complaints and suggestions are also accommodated by this mailing list. The mailing list address is: programdoktorft@group.eng.ui.ac.id

Research and Incentive Grants for Master and Doctoral Program

Research funds including consumables and tests for research as part of the thesis and dissertation writing is the responsibility of the student. There are a number of competitive research grants, incentive research grant schemes available from which Master and Doctoral program students may propose to finance his/her research. Complete guidance and research proposal examples are available at the Associate Dean for Research and Community Development secretary at the Dean's Building, 2nd floor or through http://research.eng.ui.ac.id.

International Journal Writing Incentive

This incentives are given to lecturer of State of Private Universities that have published an article in an international journal. Each proposer must be the first writer of the article and include an institution affiliation in Indonesia.

UNIVERSITAS INDONESIA

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