

Institut Teknologi Bandung



Undergraduate Student Handbook 2016



Undergraduate Student Handbook

2016



Institut Teknologi Bandung



March of ITB

Gait thy steps, look forward
ITB, the image of Ganeça,
Surge thy strength, pursue thy dream
Thy devotion for the Country

Be prepared, and poise thy heart
Brace thy perseverance
Paces and endeavours, shall be testified
As Motherland's desire

O son of the nation, man of arena,
Noble tasks ahead of thou
Spirit and perseverance
Ever be cultivated
Bright light shall come into sight

Verse:
Study the science and technology
Art and culture of the nation
Solid is thy disposition and sovereign is thy resolution
To arrive to the glorious era

Broaden thy wings, illuminate thy vision
Enlighten the sons of the Country
Guide Indonesia nation to be
Just, rich, prosperous

Advance, move forward, truthful scout
The cherished alma mater,
May thy be evermore steadily mature
Ever glorious and eternal

Music & lyrics: Drs. Ahmad Setiawan



Welcome to Our University

In Harmonia Progressio ...!

Welcome to Institut Teknologi Bandung, the oldest technical higher education in the Archipelago where the youths dedicate their hopes and ideals for the progress of the country. Thank you for choosing ITB as a stepping stone for your future career.

Since ITB was established in 1920, there have been many scientists, researchers, engineers, businessmen, and even a statesman as well as other prominent activists who also entrusted their undergraduate education here. Hopefully ITB can always meet with the expectations of society as a reliable institution of higher education.

It is useful when at the initial process of study each student had already identified his/her interest and choice of study programme. But the case is often different; some students still do not have a clear picture of what to do during and after their undergraduate educations. This book is expected to help those who still need information about the variety of study programmes offered by ITB, at the same time, it is also expected to give the readers the spirit to achieve the desired goals.

Have a good reading and may your endeavours be fruitful.

Prof. Kadarsah Suryadi
Rector

VISION

To become an outstanding, distinguished, independent, and worldwide recognized university to lead changes toward the prosperity of Indonesia and the world.

MISSION

To discover, share and apply science, technology, art and humanity, as well as to develop outstanding human resources to best serve Indonesia and the world.

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ITB is located in the north of Bandung; a city with a tropical nature which is famous for its relatively cool and pleasant climate. This city is the capital city of West Java province; it is 150 Km from Jakarta, the capital city of Indonesia, and from Jakarta it can be reached by way of the toll-roads in about 2 hours.

This city has an interesting development history. Bandung is a highland at 725m above sea level. It was believed to have been a giant lake which was surrounded by mountains such as Tangkubanparahu, Burangrang, Manglayang, Malabar, and others. These mountains form natural boundaries that surrounding the area. Until the middle of the 19th century, Bandung was still a quiet place known as *een kleine berg dessa* (a tiny mountain village) which had hardly any visitors. Known as Ibu Kota Priangan (the capital city of Priangan) this village gradually continued to develop.

At the end of the 19th century, the early development from a village into a city was marked by the building of the road, Groote Postweg (known as Jl. Asia Afrika) and Anyer- Pamanukan road in 1811. The rapid development of Bandung took place at the end of the 19th century, around 1890. It started with the building of city parks and adding new roads and new buildings with their supporting facilities.

The development of Bandung reached its climax when it received the name Parijs van Java because of its beautiful landscape. In the international conference on Modern Architecture which was held in Switzerland in 1928, Bandung was declared as a city that successfully met the principles of designing a Garden City and Beautiful City which were very popular at that time.



This city, which is surrounded by mountains and hills becomes one of the destinations of nature tourism in Java, Indonesia. It is located at about 600 - 900m above sea level. It makes this city have cool weather with the temperature ranges between 19° – 26°C.

The city with its 2.5 million people has been trying to explore culture-based industries during two decades. At every corner of the city, we can find various community activities which have their own uniqueness. Stores with specific atmosphere, restaurants, cafes, markets, and annual folk festivals make this city a comfortable place to live and study.



Doc. Dhian Damajani



Doc. Dhian Damajani

ITB, Ganesa Campus

When it was built in 1920, Ganesa campus which was 30 ha wide, was located near Cikapundung river banks with green rice fields at Lebak Siliwangi and beautiful scenery of Tangkubanparahu in the north.

This beautiful nature composition inspired the first master planner of this campus – Henri Maclaine Pont - to determine an imaginary axis as a basic binding element of mass and space. This basic concept is continually maintained through generations in developing the campus master plan. Cozy environment with more than a thousand trees in the green campus. Along with hundreds varieties of vegetations, ITB becomes a source of inspiration to explore and deepen knowledge.



Doc. Dhan Damajani



Doc. Dhanana HM

History and the Future

| FUTURE | ITB proceed to Autonomous State University. | ITB as Research, Development and Innovation University: Academic excellence for education, contribution to knowledge, industrial relevance, and community services. |
|-------------|--|---|
| | | 2013 - now : ITB status changed as PTN BH 2012 : ITB stated as PTP 2010 to 2012 : Transition process to PTP |
| 2010 – 2015 | | |
| 2000 – 2010 | Institut Teknologi Bandung as Legal Entity (Autonomous/BHMN) | December 26, 2000, ITB embarked on new status of as legal entity . In 2009, Government of Indonesia Launched UU BHP (UU no 9 tahun 2009). UU BHP was cancelled by Constitution Court, 31 March 2010 |
| 1959 – 1999 | INSTITUT TEKNOLOGI BANDUNG (ITB) As State University/PTN | March 2, 1959, officially declared by Soekarno (the 1 st President of Indonesia)) 1959, The first Rector of ITB was inaugurated 1973, Common Preparatory Level was opened 1979, The first Graduate Programs |
| 1946 – 1959 | Universitas Indonesia | June 21, 1946, officially declared by NICA 1946, Faculteit van Technische Wetenschap was established October 6, 1947, Faculteit van Exacte Wetenschap was established |
| 1945 – 1946 | Sekolah Tinggi Teknik (STT) | 1945, opened 1946, moved to Yogyakarta & named as STT Bandung in Jogja 1946, became Faculty of Engineering, University of Gajah Mada (UGM) |
| 1944 – 1945 | Bandung Kogyo Daigaku (BKD) | April 1, 1944, TH was re-opened & named as BKD by the Japanese govern |
| 1920 – 1942 | Technische Hogeschool (TH) | July 3, 1920, officially declared by the Dutch government July 1, 1924, the first graduates July 3, 1926, the first Indonesian graduates (among others, Ir. Soekarno, the President of Indonesia) |

KEY SUCCESS FACTORS

There are four Key Success factors which will lead to the implementation of ITB vision 2025 :

1. Ability to attract the best talents into ITB community;
2. Ability to fulfill the needs of the best talents in ITB community
3. Ability to invite and empower resources and potency to develop ITB;
4. Being accountable to ITB stakeholder's needs.

Key Success factors that need to be realized by ITB in order to get world class recognition are :

1. Attracts academic and natural best talents, and is able to advance their ability to the maximum.
2. Creates a conducive academic atmosphere to support the development of the internal potential of the best talents.
3. Acquires resources to develop internal and external networking.
4. Responds to external development by participating in the realization of the dreams of Indonesian people.

CAMPUS FACILITIES

In addition to lecture rooms, laboratories, workshops and studios, ITB has an art gallery, sport activities and student activities center. Also near the campus is the Salman Mosque for worship and religious activities of the ITB Muslim community. For implementation of academic and research activities there are seven academic support facilities, namely, the Central Library (with approximately 150,000 books and 1000 journal titles) on campus, Sport Center, Language Center, and The Boscha Observatory (a facility of the Department of Astronomy) in Lembang, 11 kilometers to the north of Bandung.

1. Academic Support

1.1. Bookstores

There are several bookstores inside of campus ITB.

- **Sagung Seto**
It is located in central Library Building 1st floor. The bookstore provides textbooks and popular books, and is open every Monday to Friday, 9:00 am to 5:00 pm and Saturday, 9:00 am to 12:00 pm.
- **Toko Buku ITB**
Toko Buku ITB is the on-campus site for text, reference, and general reading. Toko Buku ITB is located near Aula Barat, and is open Monday to Friday, 8:00 am to 4:30 pm.
- **University Bookstore and Café**
This place offers imported books and ITB publisher, online books order, and campus atmosphere on café. The place is equipped by hotspot services so visitors can access internet easily. It is located on East Campus Center 1st Floor. University bookstore and café are opened Monday to Friday, 8:30 am to 4:30 pm.

1.2. Center of Campus Information Services

This center is located at the main gate of ITB campus. Visitors can get information they need regarding ITB in general and its campus from this center.

1.3. Central Library

The library provides information services to ITB and society. It has about 291,400 book titles and 9,113 magazines collections. The services include lending books, audio visual, ordering copy from other libraries in Indonesia and overseas, and internet services. Central Library's members are lecturers, students, administration staffs, alumnus, American Corner, etc. It is located at Jalan Ganesha 10 Bandung 40132, and phone/fax: +6222-2500089, email: library@itb.ac.id.

1.4 Counseling Center

Students can consult their academic or non-academic problems in Counseling Center, which has stood for since 1982. Counselor team is instructor staff in ITB and has certificate from National Training for Counselling for university.



Doc: Indra Yudha

1.5. Computer Laboratories and IT Facilities

- **Comlabs USD1**
Comlabs provide services for civitas academica such as courses, public access (internet, typing, AI3, students email, print, backup data, download, etc), information technology service (Microsoft Legal Software, AI3 account, hotspot, web hosting, IT consultation), special service (workshop and IT seminar, Free Saturday Lesson, Bulletin IT). It is located on TPB Building 1st floor. Phone/Fax: +62-22-2516760, email: info@itb.ac.id. Access time: Monday to Friday, 8:00 am – 9:00 pm, Saturday 8:00 am to 12:30 pm.
- **Hotspot**
ITB Hotspot is wireless service connection in strategic place in ITB. To use this service, users must have sets of computer equipment, laptop or PDA, which has wireless LAN (Wifi) 802.11b/g. User is asked to enter username password ITB Network Account (INA) as authentication system. And set proxy HTTP on your browser: cache.itb.ac.id with port 8080.
For more information about ITB Network Account (INA) or to get ITB-INA, user can call Information Technology & Systems Directorate office. ITB-INA service also provided in voucher that can be bought and be valid everyday. Hotspot places in ITB:
 - a. Comlabs ITB (inside and outside)
 - b. Eastern Campus Center
 - c. South Gate of ITB

- d. Selasar Labtek III
- e. Selasar Labtek IX B

- IP phone

One of ITB Smart Campus policy program is to build ITB Digital Phone System applied newer communication system of technology (Next Generation Network, NGN), operating on network bases Internet Protocol (IP), as a result development of ITB research. This program has the same aim with Smart Campus Principle, where ITB campus is an applied place and tested of the result of ITB civitas academics.

Digital telephone ITB services:

- a. To get the information, call Customer Service in +62-22-4254121 or website <http://telepondigital.itb.ac.id>
- b. To get technical problems, call telephone Operator in +62-22-4254123.
- Legal Software
ITB provides legal software to avoid piracy in campus. From 2003, ITB start Campus Agreement (CA) programs with Microsoft to buy products license with reached price and subsidy from ITB. License products: Windows XP Professional with Service Pack 2, which is operating system for PC/Pentium, Microsoft Windows Vista Business Upgrade, Microsoft Windows 8, Microsoft Windows 10, Office Professional XP 2007 (Word, Excel, PowerPoint, Access, and Outlook, OneNote), Microsoft Office 2004 for Mac Standard Edition, for others operating system, and Vista Professional 2003, Virtual PC 2004, Emulator

operating system, Encarta Premium 2007 (complete encyclopedia), Project Professional 2003, Visual Studio 2005, Windows Server 2003, Share Point and Other Server Products, for server applications. To get legal software, please call USDI or Comlabs ITB.

1.6. Language Center

ITB Language Center offers courses for ITB students and staff, as well as for groups outside of ITB. ITB language Center specializes in Pre-departure courses, TOEFL Preparation Courses, and Courses in English for Specific Purposes especially in science and technology.

The Language Center offers services:

1. English, Japanese, German and Chinese courses
2. Translation
3. TOEFL-like Test
4. Language Consultant
5. Language Training for English Teachers
6. Indonesian Language Course for Foreigners

1.7. Publisher

ITB publisher is an auxiliary business in the area of printing and publishing books and literatures. This unit gives support to academic program such as giving the opportunity for ITB lecturers to publish their books, lecture notes and publishing foreign literatures in Indonesian. It is located on Central Library Building.

1.8. Students Dormitories

ITB provides 7 buildings for male dormitory and 1 building for female dormitory. The dormitory accommodates 294 students in total, 245 male students and 49 female students. The permission to stay in the dormitory is one year and can be extended if the requirement fulfilled.

- Dormitory H, located at Jalan Cisitua Lama 27, with capacity 23 (twenty three) people, and one room is for 3 (three) people maximum.
- Dormitory Kidang Pananjung, located at Jalan Kidang Pananjung, near asrama H with capacity 300 people, and one room is for 4



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(four) people maximum.

- Dormitory Bumi Ganesha, located at Jalan Cisit Baru No. 35, Bandung 40135, and phone +62-22-2502445, capacity 120 people, one room is for 3 (three) people.
- Dormitory Kanayakan for female, located at Jalan Kanayakan Lama No 61 Bandung 40135, capacity 180 people with one room is for 3 (three) people. Phone +62-22-2512057, email: ap-itb@egroups.com.

In Bandung there are also other dormitories, such as:

- Aceh Students Dormitory, Jl. Belitung 3 dan 7
- Putri Salman Dormitory, Jl. Ganesha 7
- Bali Students Dormitory, Jl. Ciung Wanara 3
- Banu Hampa Dormitory, Jl. Cisit Baru 16
- Bumi Rengganis Dormitory, Jl. Ir. H. Djuanda 438
- Gorontalo Students Dormitory, Jl. Cihampelas 88
- Gunung Kerinci Students Dormitory, Jl. Cihampelas 89
- Jawa Timur "Surya Putra" Dormitory, Jl. Sekeloa Utara I/8
- Kalimantan Selatan "Dermang Lehman" Dormitory, Jl. Cisit Lama 13
- Kaltim "Lamin Mahakam" Dormitory, Jl. Titiran 2
- Lampung Sebuai Dormitory, Jl. Hasanuddin 14
- Ligar Harum Dormitory, Jl. Cihampelas 22A/35B
- Mahasiswa Panca Citra Dormitory, Jl. Ranca Bentang I/45
- Minahasa Students Dormitory, Jl. Banda
- Perhimak Kebumen Dormitory, Jl. Cisit Baru 37
- Putra Kalbar "Kapuas I" Dormitory, Jl. Soka 8
- Putra "Kenanga" Dormitory, Jl. Terusan Halimun 54
- Putri "Budi Istri" Dormitory, Jl. RE. Martadinata 110
- Putri "Kenanga" Dormitory, Jl. Sabar 11
- Putri Kalbar Dormitory, Jl. Haruman 7
- Sul-Sel "Wisma Latimojong" Dormitory, Jl. Lamping 17
- Sum-Sel Students Dormitory, Jl. Purnawarman 57
- Timah Dormitory, Jl. Ir. H. Djuanda 421

1.9. Student Health Service

Primary functions of the service are the diagnosis and treatment of illness, the activation and the maintenance of wellness and the promotion of health education program. Located at Jalan Gelap Nyawang No. 102, and is open on Monday to Friday.

Health services in Bumi Medika Ganesha are provided for publics, especially executive, staff, students, and pension of ITB. They have the right to use health subsidy from ITB.

Health Services in Bumi Medika Ganesha:

- Publics practice
- Dentist
- Specialist

- Family Planning Practical
- Rontgen and EKG
- Healthy Statement Letter (SKS)
- Clinic Laboratory (together with Prodia Clinic)
- Medicine services by Apotek Bumi Medika Ganesha
- Consultation

1.10. Student's Parents Association

Student's Parents Association (IOM) is an organization for associating student's parents of ITB students to construct and keep contact among student's parents. Its function is as a partner of ITB, within constructing of informal education having familiarity. Besides, IOM ITB attempts to collect fund for student's welfare, i.e. scholarship, dormitory and other social aid. The members of IOM are student's parents unparticularly be written state underline to be the member of IOM. Since 2004, secretariat office of IOM ITB has been in Technical Implementation Unit of Library Building, 2nd floor. Phone +62-22-2512401, open Monday through Friday, 9:00 am to 4:00 pm, and Saturday, 9:00 am to 12:00 pm.

2. Career Development

Professional Community and Alumni Development (PCAD) encompass a broad range of programs designed to assist undergraduates, graduate students, and alumni of the University to explore their career options. PCAD acts as job supply (on this case), private or public industry) to maintain students' professionalism both on specific field (by technical training) and generic field (soft skill training). Open at Monday to Friday, 8:00 am to 4:00 pm.

3. Community Services

3.1 Canteens and Restaurants

There are some canteens in ITB:

- Canteen Gedung Kuliah Umum (GKU) Barat
Located on Basement Floor GKU Barat, and is open from Monday to Friday, 7:15 am to 5:00 pm. This canteen provides Indonesian food such as opor ayam, ketoprak, es buah, es sari kelapa, coffee, milk, soft drink, etc.
- Canteen Gedung Kuliah Umum (GKU) Timur
Small canteen which is locate on GKU Timur building 1st Floor, and is open from Monday to Friday, 7:00 am to 5:00 pm. Students often visit this little canteen, because it is near college room, provide snack, coffee, etc.



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- **Canteen Borju**
Located on Labtek V Basement Floor, and is open from Monday to Friday, 7:00 am to 4:00 pm. We can get Indonesian and Western foods here.
- **Canteen Barrac**
It is located near Architecture Department, and is open from Monday to Friday, 8:00am to 4:00 pm.
- **Canteen Salman**
Located on Salma's complex, across campus, and is open everyday, 7:00 am to 9:00 pm. Prasmanan food is provided here.
- **Canteen Barat Laut**
Located on Ex-UPT Olah Raga Building, and is open from Monday to Friday, 8:00 am to 4:00 pm. Name of the canteen appropriate with the location in the North-west. Many kind of food such as fried rice, noodle, capcay, and some Chinese foods can be found here.
- **Canteen Bengkok**
It is located near Chemistry building, and is open from Monday to Friday, 8:00 am to 4:00 pm. This canteen has been built newer compred to others. Previously, Bengkok Building was provided as a secretariat of some students' activity units. This canteen has food and drink variously.
- **Resto Campus Center**
Located on East Campus Center 1st Floor, and is open from Monday to Friday, 8:30 am to 4:30 pm.

3.2. Children Care Bunda Ganesha

ITB provides children care services to help working parents. It accommodates 30 children ages 3 months to 5 years. It is open every working day from 7:00 am to 5:00 pm. It has indoor and outdoor playgrounds, sleeping rooms, and classroom. It also provides pediatrician, psychologist, nutritionist, and educator.

3.3. Sasana Budaya Ganesha (Sabuga)

Sasana Budaya Ganesha is the center for science, technology, and art. It has modern facilities to support academic activities and others such as conferences, symposiums, exhibitions, music concerts, and dance performances. The facilities include a big hall that can accommodate 4.000 people, audio visual room, restaurant, meeting rooms, science and technology gallery, library for special collections, etc. Information of using Sasana Budaya Ganesha can be obtained from organizer, in SABUGA, Jalan Tamansari 73 Bandung, phone +62-22-4212043.

3.4. Sawunggaling Hotel

Sawunggaling Hotel provides services to ITB guests and alumni. It has 17 rooms (4



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Executive Rooms, 12 Standard Rooms, and 1 Standard Corner), 1 meeting room for 15, Business Center, Art Gallery and Café, located in Jalan Sawunggaling No. 13 Bandung. Phone +62-22-4212043

3.5. Shops

Some shops in ITB campus

- **G.10 Shop**
The shop is part of Koperasi Keluarga Pegawai (KKP) ITB. It provides photocopy, digital printing, stationary, food, drinks, souvenir, and glasses. It is located near East Hall and is open from Monday to Friday, 8:00 am to 4:00 pm.
- **TOKEMA**
The shop sells stationary, snack, clothes, drinks, and ITB's souvenir. Located on Ex-UPT Olahraga Building Basement Floor, is open from Monday to Thursday, 9:00 am to 6:00 pm and Friday, 9:00 am to 11:00 am, 1:00 pm to 6:00 pm.

3.6. Soemardja Gallery

The Soemardja Gallery was established in its current location in 1993. As an oldest university gallery in Indonesia, the Soemardja Gallery serves as an educational complement to the Institut Teknologi Bandung (ITB) Department of Fine Art and as a cultural resource for the institute and Bandung arts communities.

Soemardja Gallery is the oldest university gallery in Indonesia and in Bandung. Founded in 1974, the gallery is named after the late Syafe'i Soemardja, one of the founder of art education system in Indonesia. The gallery is located on the north side of Bandung and easily reached by public and private transportation. The gallery building is a part of the Faculty of Fine Art and Design and located near the grass field of the East Hall (Aula Timur), within the campus of ITB. As part of an educational institution, initially the gallery was a place for the academic circles of ITB to exhibit their works. Nowadays, it is a place for contemporary art exhibitions and for the students to learn and study the management of exhibitions and art programs through curatorial and volunteering

works. To stimulate a wider general public on contemporary art issues, Soemardja Gallery also holds art programs such as discussions, seminars and workshops by artists and art experts in the national, regional and international level. The gallery also accommodates other visual art practices, including industrial design, architecture, craft, photography, and visual culture in general. Soemardja Gallery regularly runs art programs and exhibitions in cooperation with local, regional, international artists, various cultural foundation, and art institutions. The exhibition space is approximately 150 m² and is 4 m in height on one side and 2.4 m on the other side. The space is equipped with lighting facilities and portable panels.

4. Common Facilities

4.1. Banks and ATMs

Inside of ITB Campus, there are several bank and ATM that can be used by students, staffs, and others.

- Bank BNI, located on East General Lecture Hall (GKU Timur) Basement Floor and Jalan Tamansari No 80, open every Monday until Friday from 8:00 am to 4:00 pm. There is also ATM BNI. Another ATM BNI is near Aula Barat.
- Bank Bukopin, located beside G.10 Shop, which is in front of ITB campus, open from Monday to Friday from 8:45 am to 3:00 pm, inside the bank, users can find ATM Bukopin.
- Bank Niaga, located on GKU Barat Building. Cashier Service every Monday until Friday from 8.30-15.30, ATM machine service can be accessed every Monday until Friday from 8:30 am to 5:00 pm.
- Bank BRI, located near G.10 Shop, which is in front of ITB campus.
- ATM Mandiri and ATM BCA, both of ATM is near G.10 Shop, in front of ITB campus.



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4.2. Places for Worship

Around ITB, there are some places for worship. As most Indonesian people possess Islamic faith, there is Salman Mosque, which is located near the ITB campus. People who embrace Christians faith can also find a range of churches nearby. There are Catholic, Pentacost, Methodist, and Seventh-day Adventist churches in the city. The nearest Protestant church is GII, located on Jalan Cikapayang. The closest Catholic Church is in the St. Borromeus Hospital complex.

Bandung's St. Peter's Cathedral is only 10 minutes away by public transport from the campus. Hindu temples can be found in Ujungberung and Cimahi, both about 1 hour drives away from ITB. There is a Buddhist temple on Jl. Ir. H. Juanda, just five minutes away by car from the campus. There are numerous other Buddhist temples in the city.

4.3. Sports Center

The Sport Center has Olympic-size swimming pool, kids swimming pool, and diving pool. There are also football field, basketball fields, volleyball fields, tennis courts, jogging track and fitness center within the area. The facilities are mostly used for sport courses of 1st year students. The facilities are also used for other activities such as football school, tennis lesson, jogging club, swimming lesson, and other programs. Information about facilities can be obtained at the office of Sport Department which is located under Swimming Pool – Lebak Siliwangi, phone: +62-22-2500078, ext 8854.

5. Student Activities

In addition to studying and doing other academic activities, ITB maintains that campus organizations are a contributing factor to a student's education. They provide the opportunity to extend classroom experiences into relevant programs that develop social skills and provide leadership opportunities. Therefore, ITB encourages all students to be involved in the non-academic activities such as those in the student associations and students activity units. Throughout the year, more than fifty-three different activity units provide a various activities for students to be involved in.

5.1. Student's Union (KM ITB)

Studentship literally is all of activities held by students due to student's role itself, i.e.

iron stock, agent of change, and guardian of value. For realizing those roles, students need a tool called as students' organization. ITB students have this kind of organization namely Student's Family Bandung Institute of Technology (KM ITB). KM-ITB which was declared on January 20th 1996 has five main bodies, Congress as legislative institute, Cabinet as executive institute, Student's Associations, Student's Activities Units, and aspiration league that is called Badan Koordinasi Satuan Kegiatan (BKS-K).

5.2. Undergraduates Students Activity Units and Associations

There are different activity units which provide a variety of activities for students.

Student's Activities Unit

Arts

- Aceh Cultural Group (UKA)
- Angklung Group (KPA)
- Bali Cultural Group (MGG)
- Borneo Cultural Group (UKB)
- East Java Cultural Group
- Grup Apresiasi Sastra ITB "GAS-ITB"
- Irian Jaya Cultural Group (UKIR)
- Japanese Study Gorup (UKJ)
- Java Cultural Group (PSTK)
- Lampung Cultural Group (UBL)
- Mahasiswa Bumi Sriwijaya (MUSI)
- Marching Band ITB "Waditra Ganesha" (MBWG)
- Minangkabau Cultural Group (UKM)
- Music Appreciation (Apres ITB)
- North Sumatera Cultural Group (UKSU)
- South Sulawesi Cultural Group (UKSS)
- Student's Choir (PSM-ITB)
- Student Theater Group (STEMA)

- Sunda Cultural Group (LSS)

Education

- Amateur Radio Club (ARC)
- Blood Donor Society "KDD"
- Boy Scouts
- Buddhist Student Society "Dhammanano"
- Catholic Student Society "KMK"
- Cendekia ITB
- Christian Student Union "PMK"
- GaneshaTV (GTV)
- Hindu Student Society "KMH"
- Islamic Students Society "GAMAIS"
- Kelompok Analisa dan Komunikasi Islam Strategis
- Kelompok Studi Sejarah Ekonomi dan Politik (KS-SEP)
- Keluarga Mahasiswa Pencinta Alam Ganesha "KMPA"
- Koperasi Kesejahteraan Mahasiswa "KOKESMA"
- Korps Sukarela Palang Merah Indonesia (KSR-PMI)
- Liga Film Mahasiswa "LFM"
- Lingkar Studi Gerakan Mahasiswa Madani (LSGMM)
- Online Game Research Group (OGRG)
- ITB Student Press (Persma)
- Radio Kampus ITB
- Salman ITB (Karisma)
- SICOS: Scientific Collaboration Studies
- Societal Study Union "PSIK"
- Studi Komunikasi Massa ITB
- Student English Forum "SEF"
- Student Regiment Battalion I/ITB (Menwa)
- Student's Tabloid Boulevard
- Unit Kelompok Studi Ekonomi dan Pasar Modal (KSEP)
- Unit Pembinaan Kewirausahaan Mahasiswa "UPKM"

Sports

- Aerokreasi
- Aikido
- Archery (PASOPATI ITB)
- Badminton
- Basketball (UBG-ITB)
- Bela Diri Hikmatul Iman
- Bridge (UAB)
- Chess



- Football ITB (PS ITB)
- Ganesa Bicycles
- Hockey
- Judo ITB
- Kempo
- Kendo ITB
- Karate ITB
- Kyokushinkai
- Pencak Silat Tenaga Dasar Indonesia
- Pendawa Padma
- Perisai Diri
- Satria Nusantara
- Sinar Putih
- Softball
- Table Tennis
- Tae Kwon Do
- Tennis ITB
- Tri Eka Dharma Margaluyu "313"
- Tarung Drajat (Boxer)
- Unit Renang dan Polo Air (URPA)
- Volleyball (UBV)
- Wanadri

Student's Association

- Architecture Students Association "IMAG"
- Art and Design Students Association "KMSR"
- Astronomy Students Association "HIMAS-TRON"
- Biology Students Association "NYMPHEA"
- Chemical Engineering Students Association "HIMATEK"
- Chemistry Students Association "AMISCA"
- City and Regional Planning Students Association "PANGRIPTALOKA"
- Civil Engineering Students Association "HMS"
- Electrical Engineering Students Association "HME"
- Engineering Physics Students Association "HMFT"
- Environmental Engineering Students Association "HMTL"
- Geodesy Students Association "IMG"
- Geology Students Association "GEA"
- Geophysical Engineering Students Association "Terra"
- Geophysics Students Association "HMGF"
- Industrial Engineering Students Association "MTI"
- Informatics Engineering Students Association "HMIF"
- Material Engineering Students Association "MTM"
- Mathematics Students Association "HIMATIKA"
- Mechanical Engineering Students Association "HMM"
- Mining Engineering Students Association "HMT"
- Petroleum Engineering Students Association "PATRA"
- Pharmacy Students Association "Ars Preparandi"
- Physics Students Association "HIMAFI"

DISTANCE EDUCATION and LEARNING TECHNOLOGIES

1. School on Internet (SOI)

SOI ITB is an activity aimed to create a new breakthrough and an improvement for the Indonesian education by using Internet. SOI ITB is an abbreviation of School on Internet Institut Teknologi Bandung. SOI ITB is the continuation of the research about education and internet technologies. SOI ITB tries to make the distance learning becomes more realistic, so the students may feel like they are attending the real class, so that the distance doesn't matter anymore.

'School on Internet' is an educational environment using Internet technologies. Indonesian geographical condition that consists of thousands islands spreading from Sabang to Merauke, is a huge challenges to establish education nationally. The main problem faced by the lecturer is the location of universities in Indonesia, which spreads thorough all over Indonesian territory. It wastes time and money caused by the long distance. By using 'school on internet', those problems vanished. It's a new method to make effective and efficient distance class through coordination among universities using Internet technologies. All of 'School on Internet' activities are done by using internet. The teaching and the lecturing activities are held by using 'video conference' method over the



internet by the lecturer at ITB. The registration and the exercise submission are done through SOI ITB website.

This system is developed to support academic lesson in Institute Teknologi Bandung. Collaboration between lecturers and students is expected more intensive by the system. To use this facility, students have to register first. For further information, email: soi-team@soi.itb.ac.id or

Contact

Information Technology & Systems Directorate

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2. E-Learning

This system is developed to support the academic activities in ITB. The collaboration between lecturers and students is expected to be done intensively by this system. Students should register first to use this online system.



Doc. Indra Yudha





ITB Multicampus

Jatinangor ITB Campus was established in 2011 on the 46 hectares of land owned by west java province's government. The Development of Jatinangor ITB Campus is a part of ITB's Long-Term Strategy to achieve it's vision and mission.

Jatinangor ITB Campus will grow as a meeting point for all stakeholders in order to create the elements of education and research environment. The development agenda includes :

1. Academic Enhancement Programs,
2. Infrastructure Enhancement Program based on an Infrastructure Development Masterplan, and
3. Student Life Enhancement Program. The aim of Jatinangor ITB Campus development program is to support ITB's policy to create education, research and community services center.





Potrait of Ganesa Campus

The Footsteps: from TH to ITB

The Beginning of TH

ITB has a unique history. Just imagine how difficult it was when the founding fathers tried to convince the government of Dutch East Indies—nearly a hundred years ago—that a university should be established in Indonesia. Until 1910, as told in a blue-covered book—*Dari TH ke ITB (From TH to ITB)*—, Indonesian people in general, and Dutch people in particular, believed Indonesia was too unfit to have a university.

It was K.A.R. Bosscha, Kloppe, Ijzerman, and B. Coops the gentlemen who played significant role as the founding fathers of this institute. Planter of Malabar, Panglengan, Bosscha was the appointed chairman of College van Directeuren (Board of Directors); an institution that fitted the needs for campus building and educational undertaking prior to the handover of this university by the government in 1924. Prof. Ir. J. Kloppe—then appointed rector—was the first Magnificus of TH. Along with J.W. Ijzerman, Chairman of Raad van Beheer, Kloppe left of Holland on March 8th, 1919 to undertake the mission.

Kloppe and Ijzerman arrived in Indonesia on April 19th, 1919. By that time it was uncertain where TH would be built—whether in Solo, Yogyakarta, Jakarta, or Bandung. Technisch Onderwijs Commissie (Technical Education Commission) preferred Jakarta, while Bandung Mayor B. Coops explicitly said his city was willing to accept the idea, and he immediately proposed a proper location: a cool area in Northern Bandung which has the beautiful Mount Tangkubanparahu as its background. General Governor Mr. J.P. Graaf van Limburg Stirum approved the proposal.

TH (Technische Hoogeschool/Technical College) was officially started on July 3rd, 1920, refuting the general belief mentioned above. In the following years other universities appeared on the scene, e.g. the Jakarta-based Law College in 1924 and Stovia (School tot Opleiding van Indische Artsen) in 1927.

TH Hand-over

On October 18th, 1924, at the hall of TH campus (the present West Hall “Aula Barat”), a ceremony was held to mark the handover of TH from a private institution to the government of Dutch East Indies. In his speech General Governor Mr. D. Fock said that the event was not unexpected, but was something that had been dreamed for. Since TH had become a state university, some institutions were consequently dissolved. K.A.R. Bosscha, one of the men who had directed TH for four years, was appointed to be President of College van Curatoren. As a tribute to Mr. Bosscha’s contributions, a physics laboratory that officially opened on March 18th, 1922 was named Bosscha Laboratory.



K.A.R. Bosscha



Kloppe



Ijzerman



B. Coops

Bandung Kogyo Daigaku and STT-Bandung

Shortly before Japanese occupation, TH was temporarily closed down for all of its professors had been forced to join the militia. On April 1st, 1944 the Japanese Military government reopened TH under new name: Bandung Kogyo Daigaku. Following the Declaration of Indonesian Independence in 1945, Bandung Kogyo Daigaku came to an end, and the technical university was reopened under the name of Bandung Technical College (STT-Bandung).

Amid the tense atmosphere of the independence revolution, STT-Bandung was moved to Yogyakarta for all of its lecturers and staffs were ordered to take refuge. Due to the attack of Dutch soldiers in Yogyakarta, STT-Bandung was closed down in December 1948 and was reopened in 1949 with only Civil Department operated. Finally, following the establishment of Gadjah Mada University in 1949, STT-Bandung was integrated to it as its technical faculty.

A Branch of UI

Meanwhile, on June 21st, 1946 Nood-Universiteit (Temporary University) was established, and then became Universiteit van Indonesie (University of Indonesia). TH Bandung was also restarted not in the form of an autonomous college, but as a faculty of the university named Faculteit van Technische Wetenschap (Faculty of Technical Science) chaired by Prof. Dr. K. Posthumus.

In 1950 it changed its name as Fakultet Teknik Bandung (Bandung Technical Faculty), then in 1951 it became Fakultet Pengetahuan Teknik (Faculty of Technical Knowledge), and in 1952 it became Fakultet Teknik Bandung, and Fakultas Teknik Bandung in 1956.

On October 6th, 1947 another faculty was established, i.e. Faculteit van Exacte Wetenschap. Since 1950 the faculty has changed its name into Fakultet Ilmu Pasti dan Ilmu Alam (FIPIA) and was led by Prof. H. Th. M. Leeman.



The Birth of ITB

Since 1952 the idea to integrate these Bandung based faculties so that they could constitute an independent university had been thoughtfully considered by some circles. Indonesian Engineer Association (PII) led by Ir. H. Juanda was one of organisations that keenly promoted the idea. A meeting held at Technical Faculty on February 9th, 1957 was the first step in assuring the idea to be come true. In the beginning, the name proposed for the coming university, as been put forward on February 25th, 1957, was Institut Teknologi dan Pengetahuan Alam (Technology and Natural Science Institute).

Under Government Regulation No. 6/1959, which was signed on February 28th, 1959, Institut Teknologi Bandung (ITB) was established. On March 2nd, 1959, in a ceremonious event at the campus to mark its opening, President Soekarno turned the name plate that read 'Fakultas Teknik dan Fakultas Ilmu Pasti dan Ilmu Alam, Universitas Indonesia' over so it showed the new identity: 'Institut Teknologi Bandung'.

In the first year ITB consisted of three departments: Technical Science Department, Exact and Natural Science Department, and Department of Chemistry and Biology. In 1961 it had been developed into seven departments:

1. Faculty of Mathematics and Natural Sciences (FMIPA), consisting of DIPIA and DKB,
2. Faculty of Civil Engineering and Planning (FTSP), consisting of DTS and DPSR,
3. Faculty of Industrial Technology (FTI), consisting of DME, DFTTK, and DTM.

Ganesa Campus at a Flying Glance

Had Bandung Mayor B. Coops not approved to the proposal of Koninklijk Instituut voor Hoger Onderwijs in Nederlands Indie (Royal Institute for Higher Education in Dutch East Indies)—a private organization that initiated and ran TH before 1924—, ITB would not have existed in Bandung. It was he the gentleman who proposed that TH could be built at a corner of the chilly Land of Sunda, though Jakarta was also considered as a feasible location.

What a brilliant decision on the part of Mr. Coops, for he chose an area of about 30 hectares near the brink of the beautiful Cikapundung with its green paddy fields spreading out evenly in the panorama of the charming Mount Tangkubanparahu. It was a perfect natural composition that had inspired Henri Maclaine Pont, the first architect and master planner of this campus, to settle an imaginary line as the basic cord to tie masses and spaces. This basic concept has been preserved by his successors in further master plan development.



Doc. ITB



Old Bandung

A simple account of the city of Bandung prior to the establishment of Ganesha campus seems to be necessary to illustrate the atmosphere of the land of Parahyangan at the time. In the beginning there was the successful establishment of the Groote Postweg (Post Road) (now Jl. Asia-Afrika). Spreading out across Java, from Anyer in the west to Panarukan in the east, the road was built in the reign of Dutch East Indies General Governor Herman Willem Daendels (1808-1811). Bandung was previously a small village in Parahyangan. According to Juliaen de Silva's records, in 1641 it was known as Negorij Bandoeng or West Oedjoeng Broeng with its centre in Karapyak (now Dayeuhkolot), about 11 km south of Post Road (H. Kunto, 1984).

For the benefit of the colonial government, on May 25, 1810 the centre was moved from Krapyak to the present day Bandung Square. Apart from the impact of the Post Road that had connected Bandung to other main cities across Java, the growth of Bandung city was accelerated by the development of railways that connected Bandung to Sukabumi, Buitenzorg (now Bogor), and Batavia (now Jakarta) in 1884.

Since the issuance of wet Suiker (Sugar Law) and wet Agrarische (Agricultural Law) by Dutch parliament in 1870, the population of Bandung has grown rapidly. Investments were growing as well as plantation activities. Her fame as a plantation region of Tatar Sunda has been increasingly grown. Her cool weather and fine geographical conditions are attractive so that Bandung could become a new shelter as the city of Batavia began to be abandoned by Europeans due to environmental problems and poor sanitation. Under these conditions, Bandung had once been expected to become the capital of Dutch East Indies. On 1 April 1906 Bandung became a *Gemeente* (autonomous town) so the development began to be enhanced in large scale. In



1914 the headquarters of the joint military-DOV Departement van Oorlog (Department of Warfare) moved to Bandung.

The campus of ITB (Hoogeschool Technische te Bandoeng/Technical College of Bandung) which was officially opened by the General Governor of Dutch East Indies in July 1920, was part of the whole facilities of Bandung due to the plan made by Dutch colonial government. The establishment of Gedung Sate, by architect Ir. Gerber (Departement van Gouvernementsbedrijven - GB) on January 1, 1921, was also part of the scenario.

Various facilities such as government buildings, post offices, telegraph and telephone offices; trade/commercial centre, weapons manufactory, and many others, were also constructed in the 'development' period that lasted from 1900 to 1940. It is not surprising that in this period Bandung was called 'Laboratory of Architecture'. Bandung was not only well developed with her various infrastruc-

tures, but also was well planned and designed. Hence, the Stads Gemeente Bandung, which as seen as the prototype of Dutch East Indies colonial city, was appointed to the Internationaler Kongress für Neues Bauen in Athens from July 29 to August 31, 1933.



Doc. Harsono Taropratjeka



Doc. Indra Yudha

Preliminary Master Plan of Ganesa Campus

The establishment of ITB campus was initiated by a European/Dutch philanthropic group, which consisted of Priangan planters (Preangerplanters) such as of E.J. Kerkhoven and his nephew K.A.R. Bosscha. In its early years ITB was operated with a curricula that was equivalent to the one of a similar university in Delft, i.e. TU Delft. General Governor of Dutch East Indies Mr. J.P. Graaf van Limburg Stirum (1916-1921) officially opened the campus on July 3, 1920.

ITB campus was originally adjacent to Jl. Ganesha on the south side and Jl. Tamansari on the west and north side; and now it has been expanded to Lebak Siliwangi along Jl.Tamansari.

Based on building register as currently shown at FSRD and FTSP, TH campus originally occupied a wide area, which was divided into two large parts. The group of buildings on the west (FTSP and Department of Civil Engineering buildings) is number 12, while the group of buildings on the east is number 10.

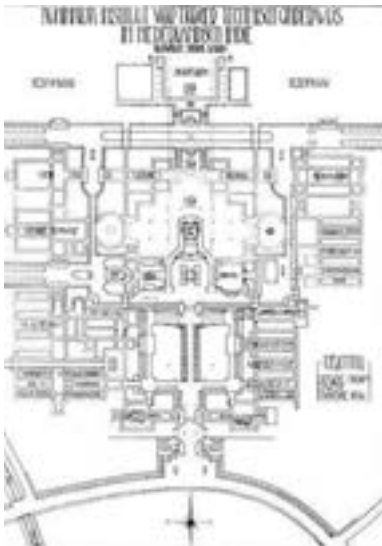
ITB complex was originally comprised of only three units of main building and several units of supporting building. These building units spread out from the southern main entrance, which were connected to each other by a peristyl (hall) that has several columns of river stone. The stones and other materials such as wood, stone walls, exposed paths, and shingle roofs were composed in order to give a natural touch while adapting to the tropical climate.

Ir. Henri Maclaine Pont designed the main campus buildings, namely the West Hall (Aula Barat) and East Hall (Aula Timur). His works experimentally represent the combination of traditional architecture of the archipelago and modern construction techniques. This style is known as Indisch Architecture. Struck by its shingle roofs, Bandung residents used to call the compound Gedong Sirap (Shingle Building).

When the campus master plan was prepared, on the southern side of Jl. Ganesha a park was built as a tribute to Dr. Ir. J.W. Ijzerman, and it was named Ijzerman Park. This park was designed in the form and with the style of Indische Tropische Park; a kind of Priangan tropical landscape promoted by Bandoeng Vooruit group. It was also

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influenced, however, by French and Italian style of late Middle Ages that precede the renaissance.

The present day Ganesha Park was part of TH campus. This oval-shaped and symmetrical garden was equipped with a fountain and a sort of terrace on its higher part. Around its patio stone pillars with typical vines of ITB, *Pyrostegia*, also decorated the park. According to botanist Dr. L. Van der Pijl (1950), this particular vine vegetation was imported from South America through Australia by A. Kerkhoven to decorate the ITB campus (H. Kunto, 1984).



Doc. Indra Yudha



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Further Development

Due to the institutional development that should be in harmony with any recent progress, the needs for new facilities were inevitable. Limited campus area requires a referral as a means of controlling the subsequent development. In general, the pace of ITB campus development can be divided into several stages, each of which has its own characteristics.

1950s

In this era a number of funds provided budget for physical construction of the campus, and it used materials from the spoils of war. It constructed several buildings, i.e. the ones of Department of Architecture, Biology, Geodesy, and Chemistry. These four buildings represented a prototype of prefabricated buildings, such as the ones that at the time was usually functioned as office/barrack of United States army. Apart from department buildings, several other buildings were also built, including Scientific Meeting Hall at Jl. Surapati 1 and the Centre for Housing Research and Development in northern campus, which was then granted to the ITB. Currently School of Business and Management uses the building. Natmeisnig and Kopeinig, Austrian architects that joined Sangkuriang Architects Bureau, designed both buildings (Rahaju BUK, 1996).

1968-1973

In this period ITB had an institution responsible for controlling physical development of the campus, namely Development Bureau of ITB. In the national context, this period was known as Repelita I. In this period, several semi-permanent buildings were built to meet urgent needs. Several departments were forced to do their activities in these buildings, including Department of Pharmacy and Biology. One of the semi-permanent buildings, known as BRT building (Household Bureau), had even moved several times (Rahaju BUK, 1996).



1973-1978

In this period, due to government program in coordinating national development, ITB set out a long-term plan known as Academic Master Plan and Physical Master Plan. Introducing a matriculation to undergraduate students at their first year known as Common Preparation Stage (TPB) changed the academic system of ITB. It therefore needed a common lecturing facility, the use of which did not restricted to one of its departments. Among several buildings that were built at the time were classrooms for studium generale—TVST or Octagon: two separate octagons that were related to each other by a closed TV circuit.

1978-1983

Campus development in this period was focused in providing buildings in order to support common activities, mainly the ones that were related to education and teaching. At north of Department of Environmental Engineering ITB built two lecturing facilities known as Twin Buildings that face to each other. These buildings had in turn been demolished when ITB built several buildings on the previous soccer field. At its western campus it also built General Lecture Building (GKU), which was mainly used for students at TPB.

To meet the need for inauguration, for the benefit of not less than 2000 graduates in every session, ITB built a huge and large building, which was rare at the time. Some teaching staffs of Department of Architecture collectively designed the Gedung Serba Guna (GSG): Goenawan Atmosoetjipto, Raswoto, Tatang S.J., Huthudi, Prabowo, and of Department of Civil Engineering: Budihardjo.

There were other buildings that were not general facilities built in this period, one of which was Labtek IV that was used by several departments at FIKTM. ITB also built Centre for Education in photogrammetric and Cartography at Department of Geodesy, and Solar Laboratory at Department of Mechanics.



Doc. Indra Yudha



1983-1990s

In this period ITB was in need for expanding campus area so that it could be adjacent to Lebak Siliwangi (Siliwangi Valley). So far, the 30 hectares campus had in turn been felt confined, due to the growing development of departments that surely required new facilities. It also had been in need for a sport centre, not only for ITB students but also for general public. Hence, ITB stakeholders supported the idea to develop Lebak Siliwangi without neglecting the importance of preserving its natural feature.

There were also changes in the structure of organization of ITB as the role of Development Bureau was handed over to the authority of Vice Rector of Development. Three important buildings were built in this period, i.e. Main Library that Slamet Wirasonjaya designed its preliminary concept, Centre for Interuniversity Cooperation (PAU), and East General Lecture Building (GKU). There was also a need to redesign northern area of the campus, which was so far treated as merely campus backyard, so an architectural contest was organized in search of a suitable design for redesign Northern Gate. AR-81 student Mohammad Tirta won the contest. His design had been retouched as ITB built a new facility, i.e. Sunken Court, an underground facility that connects Ganesha Campus to Lebak Siliwangi.



1992-2001

In 1992 ITB had made Master Plan of Development (RIP) of ITB for the period 1992-2001 that provided a long-term plan for the next ten years. According to this document, campus development would emphasize its priority on the field of strategic science and technology, which dealt with material and energy, manufacture and process, information and telecommunication, transportation, bioscience and biotechnology, and environment.



Doc. Indra Yudha

In the matter of physical development of this period, ITB had a chance to develop various facilities along with their properties in the very significant volume. Overseas Economic Cooperation Fund, a Japanese government financial institution, provided the Loan OECF IP-401 to support the development in the first stage (1992-1997) and Loan OECF IP-434 for the development in the second stage (1994-2001).

The team led by project manager Mame Sutoko built Labtek V, VI, VII, and VIII in an area that previously was functioned as soccer field, Labtek IX A, IX B, and IX C in south eastern campus, Labtek X and XI, and Sabuga Complex in Lebak Siliwangi. Other facilities that were built with this fund are Plaza Widya Nusantara and Sunken Court.

Labtek V and VI were built for the benefit of some departments and academic supporting units, each of which was 8,750 square metres. Wider buildings of Labtek VII and VIII were also built, each of which was 11,000 square metres. One of the golden chances to relate one building to the other had been met rightfully. These four buildings are related to each other through the open space of Plaza Widya Nusantara, which simultaneously accentuates the imaginary line of the campus. The continuum of this line reaches the farthest northern side of Ganesha Campus that is at an open space between Main Library and Centre for Interuniversity Activities (PAU).

Sunken denotes to an underground space, and yet it has a contact with a higher space. Around the sunken is a space used by student units, which is directly related to the sport centre in Lebak Siliwangi. In the context of urban life, the open space is a prototype of campus underground facilities.

Labtek IX A, IX B, and IX C consist of building compound that is used by some departments, especially at FTSP. These buildings were designed in reference to the structural elements of West and East Halls. Round column of small river stones and unique roofs are main elements of their mass compositions. There is an open space in the form of amphitheatre that usually utilized by students and departments.

Labtek X and XI are entirely different from the legendary West and East Halls. These buildings, each of which is 7,600 square metres, are located in the far west-north side of the campus. Between the two buildings is a common facility, which is 1,200 square metres. For this building is dominated by blue colour, campus community call it the Blue Labtek "Labtek Biru".

One of the buildings developed in this period which is not located in Ganesha Campus is Sasana Budaya Ganesha (Ganesha Cultural Auditorium). It was originally designed to meet the need for a proper and representative place for inauguration. With its main hall that can accommodate 4000 people was first designed by Slamet Wirasonjaya. In the present day urban activities such as exhibitions, shows and performances, and scientific meetings were held at this building. As this facility is connected to sport facilities around, it doesn't only meet the need of ITB but also meet the need of general public.

In addition to be utilized in the development of public facilities and buildings for the benefit of academic activities at ITB departments, the loan from OECF is also utilized in the construction of the Office of ITB Rector. The old building was renovated, and a new building, which is 6,000 square metres was built. This five stories building is functioned as Centre for Academic Information and Data of ITB, which facilitate the activities of ITB bureaus. Inside the building there are several offices, one of which is functioned for student registration. The upper floor of the Annex Building is functioned as auditorium, which is usually utilized for conducting doctoral promotion.



Doc. Indra Yudha



Doc. Indra Yudha



Doc. Indra Yudha







Information of School/Faculty & Study Program



FACULTY OF MATHEMATICS AND NATURAL SCIENCES

At its inception on October 6th, 1947, the Faculty of Mathematics and Natural Sciences (Fakultas Matematika dan Ilmu Pengetahuan Alam, FMIPA) was named as the Faculty of Exact Sciences. Today, as the name bears, the Faculty of Mathematics and Natural Sciences comprises of Mathematics study program, Physics study program, Chemistry study program and Astronomy study program.

Those who opted to study in FMIPA will learn about the natural (physical) sciences (in contrast to biological/life sciences). FMIPA is an exciting choice for students, since they will be given a strong fundamental science and encouraged and taught to apply these fundamental knowledge in solving various challenges in the community.

Each of the study programs in FMIPA has its own area of expertise.

- The study of mathematics in the Mathematics Study Program not only deals with numbers and theorems, but also applied it in modelling and financial problems.
- The Physics Study Program offers a scientific stimulating experience to students with many of its technological applications from a miniscule scale to very large size, such as nano-photonics and micro-electronics, nuclear engineering as well as earth physics surveying.
- Students at the Chemistry Study Program will learn not only about mixing chemicals but far deeper into an understanding of the theoretical background and simulating it with computational chemistry.
- Students at the Astronomy Study Program investigate physical phenomena of the heavenly bodies, from solar flare and the atmosphere of Titan (a moon of Jupiter) to the black hole at the centre of the galaxy.

Dean

: Prof. Dr. Edy Tri Baskoro, M.Sc.

Vice Dean for Academic Affairs

: Prof.Drs. Abdul Waris, M.Eng., Ph.D.

Vice Dean for Resource Planning and Management : Dr. Indra Noviandri, MS

MATHEMATICS

Mathematics is known as the Queen of science and at the same time it is also being called the servant of science. As the Queen of science, Mathematics is the science that draws necessary conclusions about quantity, structure, space and change. For all other branches of science, Mathematics is a tool to formulate a quantitative reasoning of the respective sciences.

Starting from the beginning of our formal education, we are presented with simple yet fundamental mathematical problem and how to solve it. From the application of arithmetic to a simple problem, to solving a more complicated problem using algebraic properties such as commutative, associative and others.

Aside from formulating and exploring new fundamental theoretical knowledge, the study of Mathematics also focus's in quantifying a problem (from everyday life) as a mathematical model that can be solved. In pursuing a degree at the Mathematics Study Program, a student is trained with the skill of mathematical modelling in solving everyday problem. Students are equipped strong fundamental Mathematical knowledge, so that they are able to generalize and extrapolate the Mathematical model of natural and social phenomenon from the simplest case to a more sophisticated model of a complicated problem. One example is the congestion problem encountered in big cities, this problem can be formulated into a mathematical problem (the traffic-light problem), where an optimal solution can be deduced for example by lengthening the red-light time interval.

Fundamental Mathematical sciences are needed in many interesting applications that are investigated in the research groups within the Mathematics Study Program. Graduates from Financial Mathematics studies, with knowledge of statistic and advanced calculus, will have the skill to be an analyst in the finance industry. Studies in advanced Algebra that is used in information technology security system also needs an understanding in Discrete Mathematics and Combinatory studies.

Thus, it is not true that a Mathematics graduate will end up as a Mathematics teacher. The fact is that a lot of Mathematics graduate work in various professions other than education.

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Curriculum of Mathematics

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry I | 3 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1160 | Introduction to Mathematics and Natural Sciences | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1001 | Sports | 2 |

Total Load : 19 credits

Semester II

| | | |
|---------|---|---|
| MA 1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |

Total Load : 17 credits

Semester III

| | | |
|--------|---|---|
| MA2121 | Elementary Linear Algebra | 4 |
| MA2151 | Simulation and Mathematical Computation | 4 |
| MA2181 | Data Analysis | 4 |
| | Elective / ITB Compulsory Courses | 6 |

Total Load : 18 credits

Semester IV

| | | |
|--------|---------------------------------------|---|
| MA2231 | Multivariable Calculus | 4 |
| MA2271 | Introduction to Differential Equation | 4 |
| MA2251 | Discrete Mathematics | 4 |
| | Elective / ITB Compulsory Courses | 6 |

Total Load : 18 credits

Semester V

| | | |
|--------|-----------------------------------|---|
| MA3131 | Introduction to Complex Analysis | 4 |
| MA3171 | Numerical Mathematics | 4 |
| MA3181 | Probability Theory | 4 |
| | Elective / ITB Compulsory Courses | 6 |

Total Load : 18 credits

Semester VI

| | | |
|--------|-----------------------------------|---|
| MA3231 | Introduction to Real Analysis | 4 |
| MA3011 | Career in Mathematics | 2 |
| MA3271 | Mathematical Modeling | 4 |
| | Elective / ITB Compulsory Courses | 8 |

Total Load : 18 credits

Semester VII

| | | |
|--------|-----------------------|----|
| MA4093 | Final Project I | 3 |
| MA4091 | Mathematics Seminar I | 1 |
| | Elective courses | 14 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|------------------------|----|
| MA4094 | Final Project II | 3 |
| MA4092 | Mathematics Seminar II | 1 |
| | Elective courses | 14 |

Total Load : 18 credits

Minor Program

| | | |
|-------------------|--|---|
| MA2121 | Elementary Linear Algebra | 4 |
| MA2231 | Multivariable Calculus | 4 |
| MA2181 | Data Analysis | 4 |
| MA2281 | Non-parametric Statistics | 2 |
| MA2271 | Introduction to Differential Equations | 4 |
| MA2152 | Discrete Mathematics | 4 |
| MA3231 | Introduction to Real Analysis | 4 |
| MA3022 | Linear Algebra | 4 |
| MA3021 | Algebraic Structures | 4 |
| MA3xxx/ MA4xxx | Other mathematics courses | |

Total CREDITS : 12-18 Credits

Elective Courses

| | | | | | |
|--------|---------------------------------------|---|--------|---|---|
| MA2011 | Perspective in Mathematics | 2 | MA4181 | Introduction to Stochastic Processes | 4 |
| MA2021 | Matrices and Vector Spaces | 2 | MA4031 | Real Functions | 4 |
| MA2111 | Introduction to Mathematics | 3 | MA4051 | Combinatorial Optimization | 4 |
| MA2252 | Introduction to Number Theory | 4 | MA4041 | Capita Selecta in Geometry | 4 |
| MA2281 | Non-parametric Statistics | 2 | MA4121 | Capita Selecta in Algebra | 4 |
| MA3021 | Algebraic Structures | 4 | MA4171 | Theory of Linear Control | 4 |
| MA3041 | Introduction to Differential Geometry | 4 | MA4172 | Capita Selecta in Applied Mathematics I | 4 |
| MA3022 | Linear Algebra | 4 | MA4151 | Cryptography | 4 |
| MA3042 | Geometry | 4 | MA4152 | Capita Selecta in Discrete Mathematics I | 4 |
| MA3281 | Mathematical Statistics | 4 | MA4182 | Capita Selecta in Statistics | 4 |
| MA3051 | Introduction to Graph Theory | 4 | MA4183 | Risk Model | 4 |
| MA3071 | Introduction to Optimization | 4 | MA4095 | Internship | 2 |
| MA3072 | Numerical Method | 3 | MA4281 | Multivariate Analysis | 4 |
| MA3012 | Mathematics Learning Theory | 2 | MA4032 | Capita Selecta in Analysis | 4 |
| MA3013 | History of Mathematics | 2 | MA4221 | Capita Selecta in Algebra II | 4 |
| MA3182 | Analysis of Variance and Regression | 2 | MA4272 | Capita Selecta in Applied Mathematics II | 4 |
| MA3261 | Introduction to Financial Mathematics | 4 | MA4251 | Coding Theory | 4 |
| MA3272 | Optimization Method | 4 | MA4252 | Capita Selecta in Discrete Mathematics II | 4 |
| MA3283 | Generalized Linear Model | 3 | MA4282 | Capita Selecta in Statistics II | 4 |

PHYSICS

Physics is one of the fundamental natural sciences that study the physical world around us, matter and its interaction. The Laws of Physics underlie the motion and behavior of everything around. The goal of Physics is to explain on a fundamental level how our environment behaves the way it does. Most of the Physical Laws are deduced from observation, and the objective is to describe large number of “complicated” observations with a few simple ideas.

Physics is one of the fundamental natural sciences that study the physical world around us, matter and its interaction. The Laws of Physics underlie the motion and behavior of everything around. The goal of Physics is to explain on a fundamental level how our environment behaves the way it does. Most of the Physical Laws are deduced from observation, and the objective is to describe large number of “complicated” observations with a few simple ideas. As a fundamental science of the physical world, Physics is the basis of all today’s technology. The application of Physics to the improvement of human welfare has been the main drive of creation of new advanced technology of today, from the invention of transistor and optical communication to the use of magnetic resonance imaging (MRI) in medical diagnostic.

From the start of their education, a Physics student goes through a spiral process of education that educate them with a strong knowledge in the fundamentals of Physics (classical mechanics, electromagnetism, waves and thermodynamics) as well as transferable skills of instrumentation; numerical computation; experimentation and measurement; and written and oral communication as well as presentation. At the final stage of the Physics bachelor education, the student furthered his study into a research study done in the research groups within the Physics Study Program.

There are 5 research groups within the Physics Study Program:

- High Energy Theoretical Physics and Instrumentation Research Group
- Physics of Electronic Materials Research Group
- Physics of Magnetism and Photonics Research Group
- Nuclear Physics and Biophysics Research Group
- Physics of Complex System Research Group

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Curriculum of Physics

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1160 | Introduction to Mathematics and Natural Sciences | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|-------------------------------|---|
| FI2101 | Mathematical Physics IA | 4 |
| FI2102 | Mechanics | 4 |
| FI2103 | Electronics | 4 |
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| | Elective Course | 3 |

Total Load : 19 credits

Semester IV

| | | |
|--------|---|---|
| FI2201 | Mathematical Physics IIA | 4 |
| FI2202 | Electricity and Magnetism | 4 |
| FI2204 | Modern Physics | 3 |
| FI2203 | Measurement Methods and Data Processing | 3 |
| AS2005 | Astronomy and Environment | 2 |
| TL4201 | Environmental Impact Assessment | 3 |

Total Load : 19 credits

Semester V

| | | |
|--------|------------------------|---|
| FI3101 | Waves | 3 |
| FI3102 | Thermal Physics | 4 |
| FI3103 | Quantum Physics | 4 |
| FI3104 | Experimental Physics I | 2 |
| MR4004 | Engineering Management | 2 |
| | Elective Courses | 4 |

Total Load : 19 credits

Semester VI

| | | |
|--------|-------------------------|----|
| FI3201 | Experimental Physics II | 2 |
| FI3202 | Computational Physics | 4 |
| | Elective Courses | 13 |

Total Load : 19 credits

Semester VII

| | | |
|--------|------------------|----|
| FI4091 | Final Project I | 3 |
| FI4101 | Nuclear Physics | 3 |
| | Elective Courses | 10 |

Total Load : 16 credits

Total CREDITS : 145 Credits

Semester VIII

| | | |
|--------|-----------------------|----|
| FI4201 | Solid State Physics | 3 |
| FI4092 | Final Project II | 3 |
| FI4093 | Final Project Seminar | 1 |
| | Elective Courses | 10 |

Total Load : 17 credits

Elective Courses

| | | | | | |
|--------|---|---|--------|---|---|
| FI2112 | Introduction to Einstein Theory of Relativity | 3 | FI3251 | Electrophysiology and Bioenergetics | 3 |
| FI2151 | Biophysics | 2 | FI3252 | Radiotherapy Physics | 2 |
| FI2161 | Earth Physics and Complex Systems | 3 | FI3265 | Physics of Geothermal System | 2 |
| FI2251 | Physics of Radiology | 3 | FI3266 | Econophysics | 2 |
| FI2262 | Environmental Physics and Natural Disaster | 2 | FI3267 | Rock Physics | 2 |
| FI2271 | Instrumentation System | 3 | FI3274 | Microcontroller and Interface Systems | 3 |
| FI2283 | Programming Simulation in Physics | 3 | FI3281 | Statistical Physics | 3 |
| FI3094 | Internship | 2 | FI4096 | Independent Study | 2 |
| FI3141 | Nuclear Application in Industry | 2 | FI4115 | Relativistic Quantum Mechanics | 3 |
| FI3151 | Dosimetry and Radiation Protection | 3 | FI4121 | Materials Characterization Techniques | 3 |
| FI3152 | Radiodiagnostic Physics | 2 | FI4122 | Photonics Theory and Applications | 3 |
| FI3163 | Electromagnetic Methods | 2 | FI4132 | Computational Materials and Quantum Devices | 3 |
| FI3164 | Computational Complex Fluids | 2 | FI4133 | Physics of Energy Materials | 2 |
| FI3173 | Advanced Electronics | 3 | FI4141 | Nuclear Instrumentation | 2 |
| FI3176 | Medical Instrumentation | 2 | FI4175 | Selected Topics on Instrumentation System | 2 |
| FI3179 | Sensor System | 2 | FI4184 | Computation of Physical System | 3 |
| FI3182 | Scientific Communication | 3 | FI4221 | Physical Properties and Functionalization of Matter | 3 |
| FI3211 | Advanced Quantum Physics | 3 | FI4222 | Synthesis and Physical Properties of Soft Matter | 3 |
| FI3213 | Einstein Theory of Relativity | 3 | FI4231 | Physics and Technology of Semiconductors | 2 |
| FI3214 | Group Theory and Symmetry in Physics | 3 | FI4232 | Electronic Materials Processing | 2 |
| FI3221 | Electromagnetic Interaction in Matter | 3 | FI4241 | Nuclear Reaction and Nuclear Data | 2 |
| FI3231 | Fluid Physics | 3 | FI4242 | Special Topics in Nuclear Physics | 2 |
| FI3241 | Reactor Physics | 3 | FI4278 | Computation of Granular Systems | 3 |
| FI3242 | Nuclear Fuel Management | 2 | | | |

CHEMISTRY

Chemistry and chemical materials can be found in all our daily life. From our food, clothing, fuel, medication to construction materials is chemical materials and uses Chemistry. Most of these materials are not available from nature; hence it is produced from chemical process or chemically synthesized.

Classification of matter that is the subject of study within Chemistry is organic, inorganic and biochemistry materials. The investigation of these materials was done using analytical Chemistry developed by Analytical Chemistry research group. Understanding of the chemical-physics properties in terms of chemical composition and its structure as well as the energy contained at atomic and molecular level were studied by the Chemical Physics research group.

The study of chemical compound starts with a separation and purification. Nowadays, separation is done with gas chromatography and liquid chromatography, most recent techniques uses High Performance Liquid Chromatography (HPLC). Spectroscopy techniques and Nuclear Magnetic Resonance (NMR) is used to determine the chemical structure of the compound. For biochemical materials, various techniques and facilities is used to investigate the chemical properties that take part in human cell. For example, how to obtain the genes from bacterial cells, splice the genes and engineered for a special purpose (genetic engineering).

Using the aforementioned facilities and techniques, a Chemist explores and develops Chemistry into new domain of technology, for example nano-technology, bio-technology and material science. For these multidiscipline endeavours, Chemistry needs other sciences, for example in developing bio-technology, Chemist have to work together with Biologist and Medical doctors. Therefore in its research, from time to time, the Chemistry Study Program collaborate with Chemical Engineer example, how to obtain the genes from bacterial cells, splice the genes and engineered for a special purpose (genetic engineering).

Using the aforementioned facilities and techniques, a Chemist explores and develops Chemistry into new domain of technology, for example nano-technology, bio-technology and material science. For these multidiscipline endeavours, Chemistry needs other sciences, for example in developing bio-technology, Chemist have to work together with Biologist and Medical doctors. Therefore in its research, from time to time, the Chemistry Study Program collaborate with Chemical Engineer.

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Curriculum of Chemistry

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1160 | Introduction to Mathematics and Natural Sciences | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--------------------------------------|---|
| KI2121 | Fundamentals of Analytical Chemistry | 4 |
| KU206X | Religion and Ethics | 2 |
| KI2141 | Structure and Binding of Chemistry | 3 |
| KI2151 | Monofunction Organic Compounds | 3 |
| KI2152 | Practical Organic Chemistry | 2 |
| MA2071 | Basic Mathematics for Scientists | |

Total Load : 17 credits

Semester IV

| | | |
|--------|---------------------------------------|---|
| KI2221 | Separation Methods and Electrometry | 4 |
| KI2231 | Structure and Reactivity of Anorganic | 3 |
| KI2241 | Chemistry Energetics | 4 |
| XXMANJ | Management Elective Course | 2 |
| KI2251 | Organic Polyfunctional Compounds | 4 |
| KI2261 | Basic Biological Chemistry | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|--|---|
| KI3121 | Spectrometric Analysis | 4 |
| KU2071 | Pancasila and Civic Education | 2 |
| KI3131 | Chemistry of The Main Group Elements | 3 |
| KI3141 | Chemical Dynamics | 4 |
| KI3151 | Synthesis of Organic | 3 |
| KI3161 | Structure and Function of Biomolecules | 3 |

Total Load : 19 credits

Semester VI

| | | |
|--------|--|---|
| KI3211 | Research Planning | 3 |
| KI3212 | Structure Elucidation | 3 |
| KI3231 | Transition Metals and Coordination Chemistry | 3 |
| XXLING | Environment Elective Course | 2 |
| KI3261 | Metabolism and Genetic Information | 4 |

Total Load : 15 credits

Semester VII

| | | |
|--------|-----------------|---|
| KI4091 | Final Project I | 4 |
|--------|-----------------|---|

Total Load : 4 credits

Total CREDITS : 115 Credits

Semester VIII

| | | |
|--------|--|---|
| KI4092 | Final Project II | 4 |
| KI4093 | Colloquium of Final Project and Bachelor Council | 1 |

Total Load : 5 credits

Elective Courses

| | | | | | |
|--------|---|---|--------|---|---|
| KI3011 | Chemistry Laboratorium Management | 3 | KI5146 | Thermodynamic Chemistry | 3 |
| KI3111 | Introduction to Diffraction Methods | 2 | KI5153 | Natural Compound Organic Chemistry | 3 |
| KI3122 | Introduction to Chemometrics | 2 | KI5154 | Natural Compound Structure Elutidation | 3 |
| KI3142 | Radiochemistry and Radiation | 2 | KI5163 | Molecular Biotechnology | 3 |
| KI3152 | Stereochemistry | 2 | KI5164 | Special Topics in Biochemistry | 3 |
| KI3213 | Environment Chemistry | 3 | KI5165 | Medical Biochemistry | 3 |
| KI3262 | Introduction to Biochemical Research | 2 | KI5212 | Computational Chemistry | 3 |
| KI4111 | Chemistry Principle | 3 | KI5223 | Capita Selecta of Analytical Chemistry | 3 |
| KI4211 | People and Chemistry | 1 | KI5224 | Special Methods in Analytical Chemistry | 3 |
| KI4212 | Work Practice | 2 | KI5225 | Control of Laboratory Quality | 3 |
| KI4213 | Special Project | 2 | KI5233 | Introduction To Inorganic Synthesis | 3 |
| KI4221 | Forensic Chemistry | 3 | KI5234 | Inorganic Material Chemistry | 3 |
| KI4231 | Functional Inorganic Material | 3 | KI5243 | Polymer Degradation | 3 |
| KI4242 | Physical Chemistry of Selected Material | 3 | KI5244 | Solid State Chemistry | 3 |
| KI5112 | Mass Spectrometry and NMR | 3 | KI5245 | Electrochemistry | 3 |
| KI5113 | Introduction To Computational Chemistry | 3 | KI5253 | Physical Organic Chemistry | 3 |
| KI5123 | Applied Analytical Chemistry | 3 | KI5254 | Organometal Chemistry | 3 |
| KI5124 | Sensor and Biosensor | 3 | KI5255 | Organic Chemistry Selected Topics | 3 |
| KI5125 | Environmental Analytical Chemistry | 3 | KI5263 | Food Biochemistry | 3 |
| KI5132 | Inorganic Synthesis | 3 | KI5264 | Computational Biochemistry | 3 |
| KI5133 | Capita Selecta of Inorganic Chemistry | 3 | | | |
| KI5143 | Physical Chemistry Selected Topics | 3 | | | |
| KI5144 | Polymer Chemistry | 3 | | | |
| KI5145 | Surface Chemistry | 3 | | | |

ASTRONOMY

Astronomy is a natural science that study celestial objects, such as stars, planets and galaxies as well as their physical and chemical phenomena (for example the formation of stars and galaxies and the formation of atmosphere). In its study, Astronomy uses Physics and Mathematics. The phenomenon far away in a distant star is modelled and studied using known physical laws and very often the modelling is done with a computer simulation and statistics.

Because the nature of the science of Astronomy, an Astronomy students have to have a strong Physics background. Further, since Astronomy uses high-tech instrumentation for its observation, students are also given knowledge about this advanced Astronomy instrumentation. Aside from that, some practical Astronomy know-how is also taught, for example the calculation and observation of hilal in the Islamic calendar. At the final stage of the bachelor education, an Astronomy student will enter his final project research works in one of the three research groups within the Astronomy Study Program. These research groups are:

- Solar System Research Group
- Star Physics Research Group
- Galaxy and Cosmology Research Group

As the name bears, the Solar System research group studies the sun and its family (planets, asteroids and dwarf planet). Among the solar system studies, is the investigation about planets and moons atmosphere and its possibility that to support life. The study about star evolution (from its birth to its end) was done within the Star Physics research group. The Galaxy and Cosmology research group specializes in the study of galactic structure and its composition; and the evolution of the universe.

As an Astronomy student, you have the whole universe as your laboratory, and hence there is always an opportunity to see new star and its worlds and to boldly explore where no man has explore before. Most observation done by Astronomy students were done at the Bosscha Observatory, in Lembang, although it was build in 1928, from time to time new Astronomical instrument is added.

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Curriculum of Astronomy

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1160 | Introduction to Mathematics and Natural Sciences | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |

| | | |
|--------|--------|---|
| KU1001 | Sports | 2 |
|--------|--------|---|

Total Load : 19 credits

Semester III

| | | |
|--------|-------------------------------------|---|
| FI2102 | Mechanics | 4 |
| AS2101 | Astrophysics | 3 |
| AS2102 | Statistics in Astronomy | 3 |
| AS2103 | Positional Astronomy | 3 |
| AS2104 | Mathematical Methods in Astronomy I | 3 |
| KU206X | Religion and Ethics | 2 |

Total Load : 18 credits

Semester IV

| | | |
|--------|--------------------------------------|---|
| AS2201 | Celestial Mechanics | 3 |
| AS2202 | Basic Astronomy Laboratory I | 3 |
| AS2204 | Mathematical Methods in Astronomy II | 3 |
| FI2202 | Electricity and Magnetism | 4 |
| AS2205 | Computational Astronomy | 3 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|-------------------------------|---|
| FI3102 | Thermal Physics | 4 |
| AS3101 | Basic Astronomy Laboratory II | 3 |
| AS3103 | Solar System | 3 |
| AS3105 | Processes in Astrophysics I | 3 |
| FI3101 | Waves | 3 |

Total Load : 16 credits

Semester VI

| | | |
|--------|------------------------------|---|
| AS3201 | Introduction to Cosmology | 3 |
| AS3202 | Physics of Galaxy | 3 |
| AS3203 | Stellar Physics | 3 |
| AS3204 | Processes in Astrophysics II | 3 |
| XXMANJ | Management Elective Course | 2 |
| XXLING | Environment Elective Course | 2 |

Total Load : 16 credits

Semester VII

| | | |
|--------|-----------------|---|
| AS4091 | Final Project I | 4 |
|--------|-----------------|---|

Total Load : 4 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|------------------|---|
| AS4092 | Final Project II | 4 |
|--------|------------------|---|

Total Load : 4 credits

Elective Courses

| | | | | | |
|--------|-------------------------------------|---|--------|---|---|
| AS2005 | Astronomy and Environment | 2 | AS5115 | Astrochemistry | 2 |
| AS3002 | Astronomical Institution Management | 2 | AS5119 | Space Weather | 2 |
| AS3006 | Calendar System | 3 | AS5120 | Introductory Dynamical Astronomy | 2 |
| AS3007 | Small Solar System Bodies | 3 | AS5121 | Exoplanet | 2 |
| AS4001 | Astronomical Job Training | 2 | AS5122 | High Energy Astrophysics | 2 |
| AS4102 | Stellar System | 3 | AS5123 | Theory of Relativity | 3 |
| AS4103 | Observational Astrophysics | 3 | AS5124 | Introduction to Astronomy Instrumentation | 3 |
| AS4104 | Interstellar Matter | 3 | AS5125 | Stellar Photometry and Spectroscopy | 3 |
| AS4105 | Stellar Evolution | 3 | AS5212 | Extragalaxy | 3 |
| AS4202 | Dynamics of Stellar System | 3 | AS5213 | Relativistic Astrophysics | 3 |
| AS4204 | Satellite Orbits | 3 | AS5214 | Solar Physics | 3 |
| AS5002 | Astronomy A | 2 | AS5215 | Data Mining and Virtual Observatory | 2 |
| AS5005 | Selecta Topic in Astronomy | 3 | AS5217 | Time | 2 |
| AS5111 | Plasma Astrophysics | 2 | AS5218 | The History of Astronomy | 2 |
| AS5112 | Philosophy of Science A | 2 | AS5219 | Astrobiology | 2 |
| AS5113 | Communicating Astronomy | 2 | AS5220 | Earth Moon and Sun Systems | 2 |



SCHOOL OF LIFE SCIENCE AND TECHNOLOGY

School of Life Sciences and Technology (SLST) was established on January 1, 2006, as a development of Department of Biology which was founded for the first time since 1948 under Universitas van Indonesia.

SLST tries to answer the challenges associated with problems of living organism both in society and industries. With the increasing urge from the society for the application of life sciences, SLST strengthens its field by conducting a variety of interdisciplinary studies, especially in collaboration of biological sciences with the field of engineering. For those who choose SLST as a place of study, they will encounter knowledge and expertise in biological aspects of both sciences and engineering to be chosen as the foundation of biotechnology in utilizing tropical bioresources.

SLST consists of six undergraduate study programs. Two programs are in the field of sciences, namely Biology and Microbiology, while four other programs are in the field of engineering, namely Bioengineering, Agricultural Engineering, Forestry Engineering and Post-Harvest Technology.

| | |
|--|-------------------------------|
| Dean | : Dr. I Nyoman Pugeg Aryantha |
| Vice Dean for Academic Affairs | : Dr. Tjandra Anggraeni |
| Vice Dean for Resource Planning and Management | : Dr. Iriawati, M.Sc. |

BIOLOGY

The Undergraduate Program in Biology (UPB) aims to produce highly qualified graduates with sound knowledge of biology and its integrating principles, who are able to solve problems in life sciences using scientific reasoning and the most current methodological approach, and demonstrate supporting competences to compete, develop, and adapt to advances in science and technology, as well as to changes in society at the national and global levels.

The stated objectives are achieved by producing graduates who have the ability to:

- Demonstrate understanding of biology and the conceptual framework to identify its integrating principles.
- Integrate their knowledge, skills, scientific mindset and social competences to solve problems and face challenges related to life sciences.

The UPB is designed as a broad (general) biology degree program to produce well-rounded, trainable biologists. While there is some specialization during the students' final research project, students are expected to graduate as general biologists, distinguished from graduates of other programs by their strong background understanding in core biology concepts and related skills and competences. The Biology body of knowledge encompasses all living systems, all levels of organization, and major integrating principles (e.g., genetic continuity, growth and development, reproduction, interaction and interdependence, evolution). The program educational objectives and learning outcomes are expected to equip graduates with life skills required to develop and adapt to the wide spectrum of possible occupations, and future challenges.

In facing the 21st century, also noted as the century of Biology, a curriculum with a strong basis of molecular biology as an approach and tool is required to see many issues in the field of Biology, thus prompting a higher amount of Cell and Molecular Biology-related subjects within the curriculum. The understanding of new and advancing fields of study such as bio-mimetic, biotechnology and nano-biotechnology also necessitates a novel course, Synthetic Biology, so that the graduates gain the ability to compete within international job market and contribute to new industries in the field of biomedical, agriculture and material development. Their occupational profile includes researcher, teacher/lecturer, entrepreneur, consultant, mass media practitioner etc., and they may work in industry, academia, or government.

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Curriculum of Biology

Semester I

| | | | | | |
|-------------------------|--|---|-------------------------|--|---|
| MA1102 | Mathematics IB | 3 | MA1202 | Mathematics IIB | 3 |
| FI1102 | Elementary Physics IB | 3 | FI1202 | Elementary Physics IIB | 3 |
| KI1101 | Basic Chemistry IA | 3 | KI1202 | Basic Chemistry IIA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 | KU1201 | Introduction to Engineering and Design II | 2 |
| BI1101 | Fundamental Biology | 4 | BI1201 | Introduction to Life Sciences and Technology | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 | KU102X | English | 2 |
| KU1071 | Introduction to Information Technology A | 2 | KU1001 | Sports | 2 |
| Total Load : 19 credits | | | Total Load : 17 credits | | |

Semester III

| | | | | | |
|-------------------------|---------------------------------------|---|-------------------------|---------------------------------|---|
| BI2001 | General Environmental Science | 2 | BI2201 | Animal Development | 3 |
| BI2102 | Animal Anatomy and Physiology | 4 | BI2202 | Plant Structure and Development | 3 |
| BI2103 | Animal Anatomy and Physiology Project | 2 | BI2203 | Plant Physiology | 3 |
| BI2104 | Biosystematics | 4 | BI2204 | Plant Science Project | 2 |
| BI2105 | Genetics | 4 | BI2205 | Cell and Molecular Biology I | 3 |
| KI2051 | Organic Chemistry | 3 | KI3061 | General Biochemistry | 3 |
| Total Load : 19 credits | | | Total Load : 17 credits | | |

Semester V

| | | | | | |
|-------------------------|------------------------------------|---|-------------------------|----------------------|---|
| BI3101 | Ecology | 4 | BI3001 | Research Methodology | 2 |
| BI3102 | Ecology Project | 3 | BI3201 | Behavioural Biology | 4 |
| BI3103 | Cell and Molecular Biology II | 2 | BI3202 | Synthetic Biology | 2 |
| BI3104 | Cell and Molecular Biology Project | 2 | BI3090 | Internship | 3 |
| BI3105 | Evolution | 2 | BM3207 | Microbiology | 4 |
| MA2082 | Biostatistics | 2 | | Elective Course | 3 |
| KU206X | Religion and Ethics | 2 | | | |
| Total Load : 18 credits | | | Total Load : 18 credits | | |

Semester VII

| | | | | | |
|-----------------------------|-------------------------------|---|-------------------------|---|----|
| BI4001 | Bioethics | 2 | BI4098 | Research Project II | 3 |
| BI4002 | Scientific Communication | 2 | BI4099 | Seminar and Final Defense | 2 |
| BI4097 | Research Project 1 | 4 | MB4070 | Bioindustry Management and Entrepreneurship | 3 |
| KU2071 | Pancasila and Civic Education | 2 | | Elective Courses | 10 |
| | Elective Courses | 8 | | | |
| Total Load : 18 credits | | | Total Load : 18 credits | | |
| Total CREDITS : 144 Credits | | | | | |

Elective Courses

| | | |
|--------|--|---|
| BI3106 | Animal Histology | 2 |
| BI3107 | Anatomy and Wood Properties | 3 |
| BI3108 | Marine Ecology | 3 |
| BI3109 | Plant Biotechnology | 2 |
| BI3110 | Plant Microtechnique and Analysis | 2 |
| BI3203 | Animal Biotechnology | 2 |
| BI3204 | Endocrinology | 2 |
| BI3205 | Molecular Phylogenetics | 2 |
| BI3206 | Soil Ecology | 2 |
| BI4101 | Aquaculture | 3 |
| BI4102 | Bioconservation | 3 |
| BI4103 | Immunology | 2 |
| BI4104 | Methodology in Biomedical Analysis | 3 |
| BI4105 | Neurobiology | 2 |
| BI4201 | Environmental Impact Assessment | 3 |
| BI4202 | Landscape Ecology | 3 |
| BI4203 | Management of Tropical Marine and Coastal Ecosystems | 3 |
| BI4204 | Urban Entomology | 2 |
| BI4205 | Basic Toxicology | 2 |
| BI4206 | Ethnobotany | 2 |
| BI4207 | Formulation of Plant Growth Media and Nutrition | 2 |
| BI4208 | Plant Reproduction and Breeding | 2 |
| BI4209 | Biogeography | 2 |
| BI4210 | Aquaculture Genetics | 2 |
| BI4211 | Genomics and Proteomics | 2 |



Doc. Indra Yuelia

MICROBIOLOGY

In accordance with its name, at the Undergraduate Program in Microbiology, students will learn everything related to the microbes. The Undergraduates Program in Microbiology provides basic knowledge and skills related to microbiology. It starts with strengthening the students' basic sciences during the first year of study, and followed by introductory knowledge of microbiology-related sciences in the following year. Students are then exposed to a more-detailed knowledge and skills in microbiology, especially in the food industry, health and environment in the following years through various courses as well as field and company visits and internships. Scientific and social skills exercises are embedded within the courses among the years. At the end of the program, an individual final research project is given, where students are expected to finish their study by giving a seminar, a written report (thesis) and comprehensive final examination.

The learning process will be supported by a variety of exciting activities including laboratory practice, field trips, visits to companies/institutions and related agencies, and others. Laboratory practice is part of the course where students are trained to verify or directly observe the studied phenomena. Field trips help students to directly observe such phenomenon in the field (industries and research). Furthermore, students will gain more perspective and knowledge by conducting visits to the institution or agency that employs microbes in their work processes. The learning process will be far from boredom and certainly enhance students' knowledge of microbes and their utilization.

As a study program that provides services and produces human resources/expertise in microbiological related aspects, Undergraduate Program in Microbiology at ITB has been growing and broadening its scientific and practical scope into the following fields: microbiological science, industrial microbiology (food and petroleum), environmental microbiology, health microbiology, energy, agriculture and forestry. Recently, beside pursuing their post graduate study (master and doctoral degree) at several reputable university abroad, the alumni has already fulfilled job market and employed at many sector such industries (food technology, pharmacy, mining, oil and gas), research centres (health, vaccine, tropical diseases), non-governmental organization (NGO), and other bio-industries.

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Curriculum of Microbiology

Semester I

| | | |
|--------|--|---|
| MA1102 | Mathematics IB | 3 |
| FI1102 | Elementary Physics IB | 3 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| BI1101 | Fundamental Biology | 4 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 19 credits

Semester II

| | | |
|--------|--|---|
| MA1202 | Mathematics IIB | 3 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1202 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| BI1201 | Introduction to Life Sciences and Technology | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester III

| | | |
|--------|-------------------------------|---|
| BI2001 | General Environmental Science | 2 |
| BM2101 | General Microbiology | 3 |
| BM2102 | Project in Microbiology | 2 |
| KI2122 | Analytical Chemistry | 3 |
| KI2051 | Organic Chemistry | 3 |
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 17 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| BM2201 | Cell and Molecular Biology | 4 |
| BM2202 | Quantitative Microbial Physiology | 3 |
| BM2203 | Microbial Ecology and Evolution | 3 |
| KI3061 | General Biochemistry | 3 |
| BM2204 | Projects in Microbial Physiology | 2 |
| BM2205 | Statistics for Microbiology | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|--------------------------------|---|
| BM3101 | Microbial Biosystematics | 3 |
| BM3102 | Enzymology | 2 |
| BM3103 | Environmental Microbiology | 3 |
| BM3104 | Introduction to Bioinformatics | 2 |
| BM3105 | Virology | 3 |
| BM3106 | Microbial Genetic Engineering | 3 |
| | Elective Courses | 2 |

Total Load : 18 credits

Semester VI

| | | |
|--------|---------------------------------------|---|
| BM3001 | Research Methodology | 2 |
| BM3090 | Internship | 3 |
| BM3201 | Metabolomic | 2 |
| BM3202 | Analytical Microbiology | 3 |
| BM3203 | Principles of Fermentation Technology | 4 |
| BI4002 | Scientific Communication | 2 |
| | Elective Courses | 2 |

Total Load : 18 credits

Semester VII

| | | |
|--------|---------------------------------------|---|
| BM4090 | Research Project I | 4 |
| BM4101 | Microbial Pathogenesis and Immunology | 3 |
| BM4102 | Microbial-Based Product Development | 3 |
| BM4103 | Food Microbiology | 2 |
| | Elective Courses | 7 |

Total Load : 19 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|---|---|
| BM4091 | Research Project II | 3 |
| BM4092 | Seminar and Final Defense | 2 |
| BM4070 | Bioindustry Management and Entrepreneurship | 3 |
| BM4201 | Biosafety | 2 |
| | Elective Courses | 8 |

Total Load : 18 credits

Elective Courses

| | | |
|--------|-----------------------------------|---|
| BM3002 | Microbiology Laboratory Assistant | 2 |
| BM3003 | Current Topics on Microbiology | 2 |
| BM3107 | Project in Fungal Technology | 2 |
| BM3108 | Plant-Microbes Interaction | 2 |
| BM3204 | Mycology | 2 |
| BM3205 | Bacteriology | 2 |
| BM3206 | Phycology | 2 |
| BM3207 | Microbiology | 2 |
| BM4104 | Microalgae Cultivation Technique | 3 |
| BM4105 | Biosecurity of Bioproduct | 3 |
| BM4106 | Microbiology of Extremophilic | 2 |
| BM4107 | Cosmetic Microbiology | 2 |
| BM4108 | Bioremediation | 2 |
| BM4109 | Predictive Microbiology | 2 |
| BM4202 | Aquatic Microbial Ecology | 2 |
| BM4203 | Metagenomics | 2 |
| BM4204 | Petroleum Microbiology | 2 |
| BM4205 | Diagnostic Microbiology | 2 |



Doc. Indra Yulha

BIOENGINEERING

Undergraduate Program in Bioengineering was started in 2010 as the first science-engineering based program in SLST-ITB. The program was designed to meet the demand for professional human resources who are competent in engineering biobased production system.

As the first of its kind in Indonesia, the program's main feature is to combine biological science and engineering courses in producing professional bio-engineers who are capable of optimizing biomaterial and bioproduct production efficiency through engineering processes in biosystem (e.g. plant as biosystem).

Undergraduate Program in Bioengineering aims to produce graduates with following competences:

- To demonstrate comprehensive knowledge of biological science and engineering and their applications in engineering plant-based bioproduct production system.
- To design production system in which tropical biological agent, particularly plant, is the main component for bioindustry development.
- To design, test and operate production system in plant-based bioindustry.
- To demonstrate system, quantitative, creative and critical thinking.
- To adapt to the development in science, technology and society.

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Curriculum of Bioengineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|--|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| BI1201 | Introduction to Life Sciences and Technology | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--------------------------------|---|
| BI2106 | Biology Concepts | 3 |
| BE2101 | Introduction to Bioengineering | 2 |
| BE2102 | Basics of Cell Biology | 2 |
| BE2103 | Biological Thermodynamics | 3 |
| BE2104 | Bioengineering Mathematics | 3 |
| BI2001 | General Environmental Science | 2 |
| KI2051 | Organic Chemistry | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|--|---|
| BE2201 | Plant Biology | 4 |
| BE2202 | Mass and Energy Balances in Bioengineering | 3 |
| BE2203 | Plant Biotechnology | 3 |
| BE2204 | Biosystem Unit Operation | 3 |
| KI3061 | General Biochemistry | 3 |
| KU206X | Religion and Ethics | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|---|---|
| BE3101 | Quantitative Approach of Plant Physiology | 3 |
| BE3102 | Dynamic Modeling of Biosystem | 3 |
| BE3103 | Biosystem Sensors and Instrumentation | 3 |
| BE3104 | Bioengineering Lab. Project I | 2 |
| BE3105 | Data Analysis and Interpretation | 2 |
| TI3004 | Engineering Economics | 2 |
| BI4002 | Scientific Communication | 2 |

Total Load : 17 credits

Semester VI

| | | |
|--------|--|---|
| BE3001 | Health and Safety Work in Bioindustry | 2 |
| BE3090 | Internship | 3 |
| BE3201 | Laboratory Experiment of Bioengineering II | 2 |
| BE3202 | Bioreactor Design and Analysis | 3 |
| BE3203 | Introduction to Transport Phenomena in Biosystem | 3 |
| BE3204 | Principles of Bioproduct Separation | 3 |
| | Elective Courses | 3 |

Total Load : 19 credits

Semester VII

| | | |
|--------|----------------------------------|---|
| BE4090 | Final Research Project | 4 |
| KU2071 | Pancasila and Civic Education | 2 |
| BE4001 | Bioproduct and Bioprocess Design | 3 |
| BE4101 | Industrial Ecology | 3 |
| | Elective Courses | 6 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|---|---|
| BE4002 | Final Project: Preliminary Design of Bioproduction System | 5 |
| BE4070 | Entrepreneurship and Bioindustry Management | 3 |
| BE4091 | Seminar and Final Colloquium | 2 |
| | Elective Courses | 8 |

Total Load : 18 credits

Elective Courses

| | | |
|--------|---|---|
| BE3003 | Plant In Vitro Culture Technique | 3 |
| BE3206 | Phytoremediation | 3 |
| BE3207 | Tropical Plant Bioprospecting | 3 |
| BE3208 | Principles of Fermentation Technology | 2 |
| BE3209 | Bioengineering System Optimization | 2 |
| BE4102 | Bioproduct Engineering | 2 |
| BE4103 | Plant Natural Product Metabolism and Analysis | 3 |
| BE4104 | Application of Synthetic Biology | 2 |
| BE4105 | Plant Growth Modelling | 3 |
| BE4106 | Topics in Bioindustry | 3 |
| BE4201 | Scale-up Methods for Bioengineering | 3 |
| BE4202 | Plant as Production System | 3 |
| BE4203 | Biomass Energy Technology | 3 |
| BE4204 | Bioreactor for Plant Culture | 2 |
| BE4205 | Animal Cell Culture Engineering | 2 |
| BE4206 | Metabolic Engineering | 3 |
| BE4207 | Plant Genetic Engineering | 2 |

AGRICULTURAL ENGINEERING

Agricultural Engineering of SLST was formed to respond to the challenge to solve the growing problems in Indonesia Agriculture by integrating knowledge of biological science, engineering, and socioeconomy into one holistic answer. ITB started the Undergraduate Program of Agricultural Engineering at 2012 and considered as the youngest Agricultural Study Program and the first Agricultural Engineering Program in Indonesia when started.

Agricultural Engineering program is designed to provide creative, interdependent, and challenging atmosphere in order to produce innovative, self-motivated, and independent graduates who are able to solve problems in agriculture system by analytical thinking as researchers or engineers, by creating suitable farming system under diverse environmental condition with concern on environment and social system, or establishing new small-medium enterprises through carefully designed bussiness plans.

Agricultural Engineering Undergraduate Program at SLST is a four-year program in which students must complete 144 credit units (CU) of courses, consisting of compulsory and elective course of study program and other study program at ITB. Bachelor degree is attained through activities encompassing classroom lectures, practical works (laboratory and field), internship, final research project, and produce farming system design and bussiness plan based on their research project. Soft skill of students is to develop through student projects, student competition (local, national, and international), public presentation, and student union programs.

Student of Agricultural Engineering Undergraduate Program is expected to be able to design complete farming system of seasonal and annual crops, from planting to market with high consideration on sustainability, cost and energy efficiency, economic visibility, also risk on local social and economic system by integrating knowledge, basic principle, and common concept of biological science, engineering, and socio-economy while adapting to the development in science, technology, and society.

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Curriculum of Agricultural Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|--|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| BI1201 | Introduction to Life Sciences and Technology | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|----------------------------------|---|
| BA2101 | Plant Physiology and Development | 4 |
| ME4036 | Agroclimatology | 2 |
| BA2102 | Agricultural Genetics | 2 |
| BE2104 | Bioengineering Mathematics | 3 |
| BA2103 | Agricultural Chemistry | 3 |
| BI2001 | General Environmental Science | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| BW2201 | Ecological Systems Thermodynamics | 3 |
| BA2201 | Agroecology | 3 |
| BA2202 | Growth Medium | 3 |
| BA2203 | Seed Technology | 3 |
| BA2204 | Statistic for Agriculture | 3 |
| BM4206 | Basic Microbiology | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|---------------------------------------|---|
| BA3101 | Mass and Energy Balances in Biosystem | 3 |
| BW3101 | Transport Phenomena in Biosystem | 3 |
| BA3102 | Biology of Farm Animals | 3 |
| BA3103 | Breeding Techniques | 3 |
| BA3104 | Agriculture Sociology | 2 |
| BA3105 | Integrated Agriculture Protection | 3 |
| KU206X | Religion and Ethics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|-------------------------------------|---|
| BA3201 | Land and Water Resource Engineering | 3 |
| BA3202 | Fluid Mechanics | 3 |
| BA3203 | Integrated Farming System | 3 |
| BW3201 | Integrated Landscape Management | 3 |
| BA3001 | Research Methodology | 2 |
| BA3090 | Internship | 3 |
| | Elective Course | 2 |

Total Load : 19 credits

Semester VII

| | | |
|--------|--|---|
| BA4101 | Agribusiness Management and Entrepreneurship | 2 |
| BA4102 | Agriculture Policy and Regulation | 2 |
| BA4103 | Post-Harvest Handling | 3 |
| BA4097 | Research on Biomass Production | 4 |
| | Elective Courses | 7 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|-----------------------|---|
| BA4001 | Agricultural Ethics | 2 |
| BA4098 | Farming System Design | 4 |
| BA4099 | Colloquium | 1 |
| | Elective Courses | 9 |

Total Load : 16 credits

Elective Courses

| | | |
|--------|--|---|
| BA3204 | Irrigation Technology | 3 |
| BA3205 | Soil Reclamation Technology | 3 |
| BA4104 | Agricultural Machinery | 3 |
| BA4105 | Finance Management of Agribusiness | 2 |
| BA4106 | Agricultural Economics | 2 |
| BA4107 | Soil Microbiology | 3 |
| BA4108 | Management of Farm Business | 3 |
| BA4109 | Seasonal Crop Production Technology | 3 |
| BA4110 | Annual Crop Production Technology | 3 |
| BA4201 | Organic Farming | 2 |
| BA4202 | No-Soil Agriculture Technology | 3 |
| BA4203 | Marine and Coastal Agricultural Technology | 3 |
| BA4204 | Technology of Bio Fertilizer Production | 3 |
| BA4205 | Aquaculture Engineering | 3 |
| BA4206 | Agricultural Biotechnology | 2 |
| BA4207 | Applied Entomology | 2 |

FORESTRY ENGINEERING

Forest as a natural infrastructure provides important environmental services and commodities. On the other hand, this high economic value of forest commodities also leads to critical disturbance on forest sustainability itself. The initial 70% forest coverage in Indonesia has been threatened for decades as the increasing deforestation rate has exceeded one hectare per year. It's also worsened by the inability of the conventional forestry curriculum respond to the latest challenges of an increasingly complex forestry, especially in optimizing the utilization as well as to guarantee the preservation and sustainability of forest resources.

The facts indicate that one of the greatest challenges in the field of forestry education is the provision of human resources that can protect, manipulate, build and manage the forest including all its products and services continuously. Thus we need to build a new paradigm of education that promotes the bioprocess and biosystem engineering in forestry.

Undergraduate Program in Forestry Engineering is expected to answer the problems of sustainable forest management in Indonesia. The program covers several strategic areas, developed based on the 10 (ten) basic concepts: biodiversity, bioregional, sustainable development, natural resources & environmental economics, ecofarming, agribusiness, human ecology, eutropy, biogeochemical cycle and environmental management. These concepts represent a holistic perspective towards environmentally sound and sustainable forest management.

Based on these concepts, SLST – ITB developed an interdisciplinary education that combines forestry science and engineering to be applied for bioprocess and biosystem based engineering for producing professional forest engineers. Students of the program are expected to have the capability in preserving the forest, manipulating forest for sustainable use as well as building/constructing forests.

The curriculum structure of this program consists of 144 CU, which is spread over eight semesters (odd and even semesters). The total number of credits for undergraduate study programs follows regulation from the Minister of Education and Culture (Decree No. 232/U/2000).

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Curriculum of Forestry Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|--|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| BI1201 | Introduction to Life Sciences and Technology | 2 |
| KU102X | English | 2 |

| | | |
|--------|--------|---|
| KU1001 | Sports | 2 |
|--------|--------|---|

Total Load : 19 credits

Semester III

| | | |
|--------|-------------------------------|---|
| BI2001 | General Environmental Science | 2 |
| BW2101 | Animal Taxonomy | 3 |
| BW2102 | Plant Taxonomy | 3 |
| BW2103 | Plant Anatomy and Physiology | 3 |
| BW2104 | Forest Genetics | 2 |
| BW2105 | Statistics for Forestry | 3 |
| BE2104 | Bioengineering Mathematics | 3 |

Total Load : 19 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| BW2201 | Ecological Systems Thermodynamics | 3 |
| BW2202 | Soil Science | 2 |
| BW2203 | Tropical Forest Ecology | 3 |
| BW2204 | Forest Biometric | 3 |
| BW2205 | Field Practices | 3 |
| KU2071 | Pancasila and Civic Education | 2 |
| ME4018 | Climatology | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|---|---|
| BA3101 | Mass and Energy Balances in Biosystem | 3 |
| BW3101 | Transport Phenomena in Bio-system | 3 |
| BW3102 | Geographic Information Systems for Forestry | 3 |
| BW3103 | Forest Protection Security Techniques | 2 |
| BW3104 | Tree Improvement | 2 |
| BW3105 | Silviculture Technique | 4 |
| BW3106 | Forestry Sociology | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|---------------------------------|---|
| BA3202 | Fluid Mechanics | 3 |
| BW3001 | Research Methodology | 2 |
| BW3090 | Internship | 3 |
| BW3201 | Integrated Landscape Management | 3 |
| BW3202 | Forest Biomaterial | 2 |
| BW3203 | Forest Resource Economics | 3 |
| BW3204 | Forest Planning Techniques | 3 |

Total Load : 19 credits

Semester VII

| | | |
|--------|--|---|
| BW4001 | Forest Management Policy | 2 |
| BW4002 | Agribusiness Management and Entrepreneurship | 2 |
| BW4097 | Forest Biosystems Research | 4 |
| KU206X | Religion and Ethics | 2 |
| | Elective Courses | 8 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|-----------------------|---|
| BW4003 | Forester Ethics | 2 |
| BW4098 | Forest Design Project | 5 |
| BW4099 | Final Colloquium | 1 |
| | Elective Courses | 7 |

Total Load : 15 credits

Elective Courses

| | | |
|--------|--|---|
| BW2001 | Biology for Engineers | 3 |
| BW4101 | Conservation Area Management | 2 |
| BW4102 | Wildlife Management | 3 |
| BW4103 | Ecosystem Services Management | 2 |
| BW4104 | Forest Tree Seed Technology and Nursery | 3 |
| BW4105 | Forest Product Processing Biotechnology | 2 |
| BW4106 | Technology of Wood Forest Products Processing | 3 |
| BW4107 | Processing Techniques Non-Timber Forest Products | 3 |
| BW4201 | Private Forest Management | 3 |
| BW4202 | Forest-Product Pest | 3 |
| BW4203 | Forest Valuation | 2 |
| BW4204 | Forestry Microbiology | 3 |
| BW4205 | Urban Forest Engineering | 2 |
| BW4206 | Forest Product Chemistry | 3 |
| BW4207 | Timber Harvesting Techniques | 2 |
| BW4208 | Selected Topic in Forestry | 2 |

POST-HARVEST TECHNOLOGY

Post-harvest technology is one main keys for building local biobased industry. Specifically, Undergraduate Program in Post-Harvest Technology – SLST facilitates students to learn about primary post-harvest processing for agricultural, forestry (silvo) and fisheries comodities as the downstream part of tropical integrated farming in Indonesia.

Undergraduate Program in Post-Harvest Technology is designed to produce reliable and resilient profesional post-harvest engineers with capabilities in handling and processing raw agro-silvo-fisheries materials. The program's graduates should be able to solve problems related to post-harvest loss; products quality and lifetime; bioproducts added value; local based bioindustry development as well as information technology in distribution system and market network.

Post-Harvest Technology is a four year degree program which students must complete 144 credits of courses consisting 129 credits of compulsory courses and 15 credits of elective courses. The degree is completed through classroom lectures, practical laboratory works, internship, final research projects as well as soft skills development.

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Curriculum of Post-Harvest Technology

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|--|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| BI1201 | Introduction to Life Sciences and Technology | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--------------------------------------|---|
| BI2001 | General Environmental Science | 2 |
| Klxxxx | Organic Chemistry | 3 |
| BE2104 | Bioengineering Mathematics | 3 |
| PP2101 | Functional Properties of Bioproducts | 3 |
| TKxxxx | Mass and Energy Balances | 3 |
| TKxxxx | Thermodynamics Process | 3 |
| KU206x | Religion and Ethics | 2 |

Total Load : 19 credits

Semester IV

| | | |
|--------|--|---|
| KI3061 | General Biochemistry | 3 |
| PP2201 | Post-Harvest Microbiology | 3 |
| PP2202 | Post-Harvest Physiology | 3 |
| PP2203 | Post-Harvest Sensor and Instrumentations | 3 |
| PP2204 | Post-Harvest Statistics | 3 |
| TKxxxx | Transport Phenomena | 2 |
| PP2205 | Analysis of Chemical Instrumentation | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|--|---|
| PP3101 | Post-Harvest Operation Unit | 3 |
| PP3102 | Post-Harvest Pests and Pathogens Control | 3 |
| PP3103 | Biorefinery Technology | 3 |
| PP3104 | Post-Harvest Products Depreciation | 2 |
| PP3105 | Preservation Technology | 2 |
| PP3106 | Post-Harvest Laboratory I: Experimental | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 17 credits

Semester VI

| | | |
|--------|--|---|
| PP3201 | Post-Harvest Process System Design | 3 |
| PP3202 | Post-Harvest Products Stogare Technology | 3 |
| PP3203 | Post-Harvest Products Packaging Technology | 3 |
| PP3204 | Post-Harvest Machinery | 2 |
| PP3206 | Post-Harvest Laboratory I: Instrumentation | 2 |
| PP3090 | Internship | 2 |
| | Elective Course | 3 |

Total Load : 18 credits

Semester VII

| | | |
|--------|---|---|
| PP4101 | Control Process of Bioproducts Quality and Safety | 3 |
| PP4102 | Post-Harvest Traditional Knowledge | 2 |
| PP4103 | Scientific Communication | 2 |
| PP4097 | Post-Harvest Research | 4 |
| | Elective Courses | 6 |

Total Load : 17 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|--|---|
| PP4001 | Agribusiness Management and Entrepreneurship | 2 |
| PP4201 | Logistics and Supply-Chain Management | 3 |
| PP4098 | Pre-Design of Post-Harvest System | 5 |
| PP4099 | Seminar & Final Colloquium | 2 |
| | Elective Courses | 6 |

Total Load : 18 credits

Elective Courses

| | | |
|--------|---|---|
| PP3207 | Basic Concepts of Food Science | 2 |
| PP3208 | Wood and Non-Wood Anatomy | 3 |
| PP3209 | Wood and Non-Wood Physical and Mechanical Properties | 3 |
| PP3210 | Certification on Bioproducts | 2 |
| PP4104 | Non-Destructive Evaluation Techniques of Agricultural Materials | 2 |
| PP4105 | Post-Harvest Handling System of Horticultural Products | 3 |
| PP4106 | Post-Harvest Handling System of Grain Products | 3 |
| PP4107 | Drying and Preservation Technology of Forest Products | 3 |
| PP4108 | Post-Harvest Processing of Wood Forest Product | 3 |
| PP4109 | Post-Harvest Processing of Plantation Products | 3 |
| PP4202 | Post-Harvest of Genetically Modified Products | 2 |
| PP4203 | Post-Harvest Processing of Non-Wood Forest Product | 3 |
| PP4204 | Green Marketing | 2 |
| PP4205 | Fish and Shells Production and Processing | 2 |
| PP4206 | Shrimps and Prawns Production and Processing | 2 |
| PP4207 | Seaweed Production and Processing | 2 |



SCHOOL OF PHARMACY

Department of Pharmacy of Institut Teknologi Bandung (ITB) was established on October 6th 1947, under the faculty known as “Faculteit voor Wiskunde en Natuurwetenschappen” (Faculty of Exact and Natural Sciences). At the time, the faculty was a part of University of Indonesia. On February 1st 1949, the faculty changed its name into “Fakultas Ilmu Pasti dan Ilmu Alam (FIPIA)” or Faculty of Exact and Natural Sciences, which was still an entity under University of Indonesia.

Following reorganization at ITB, since 2006 the Department of Pharmacy became “School of Pharmacy”, a faculty-level entity, with two undergraduate study programs, namely Pharmaceutical Sciences and Technology and Clinical and Community Pharmacy. School of Pharmacy also runs graduate (master and doctoral degrees) and professional (apothecary) programs. There are five departments or research groups which support the School of Pharmacy ITB; they are Pharmacochemistry, Pharmaceutical Biology, Pharmaceutics, Pharmacology and Clinical Pharmacy and Sport Sciences.

Dean

: Prof. Dr. Daryono Hadi Tj.Apt.,M.Si

Vice Dean for Academic Affairs

: Dr. Kusnandar Anggadiredja, S.Si., M.Si.

Vice Dean for Resource Planning and Management : Dr. Marlia Singgih Wibowo

PHARMACEUTICAL SCIENCE AND TECHNOLOGY

This program is the continuation of pharmacy program, established since 1947 that focuses on pharmaceutical products that cover not only drugs, but also foods, cosmetics and medical devices.

The program of Pharmaceutical Science and Technology provides opportunity for students to acquire knowledge, skills as well as competencies in scientific and technological aspects of pharmacy. These include pharmaceutical products development from discovery and invention, processing and development of raw material to pharmaceutical dosage forms. Besides product development, quality control of pharmaceutical products is also an area of interest that a graduate from the program can be involved in.

In 2006, along with reorganization of ITB, an international program, with English as official language was opened in the program. In 2008 and 2014 the program was granted recognition by ASEAN University Network – Quality Assurance (AUN-QA) and Malaysian Board of Pharmacy, respectively. Further international recognition was achieved in 2015 when the program was accredited by a European accreditation agency, ASIIN (Accreditation Agency for Degree Programs in Engineering, Informatics/Computer Science, the Natural Sciences and Mathematics).



Doc. Indra Yudha

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Curriculum of Pharmaceutical Science and Technology

Semester I

| | | |
|-------------------------|--|---|
| MA1102 | Mathematics IB | 3 |
| FI1102 | Elementary Physics IB | 3 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1071 | Introduction to Information Technology A | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| FA1101 | Introduction to Pharmacy and Health | 3 |
| Total Load : 18 credits | | |

Semester II

| | | |
|-------------------------|---|---|
| MA1202 | Mathematics IIB | 3 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1001 | Sports | 2 |
| KU102X | English | 2 |
| BI1202 | Cell Biology and Its Application | 3 |
| Total Load : 18 credits | | |

Semester III

| | | |
|-------------------------|-----------------------------------|---|
| FA2111 | Basics of Pharmaceutical Analysis | 2 |
| FA2112 | Pharmaceutical Physical Chemistry | 2 |
| FA2114 | Pharmaceutical Microbiology | 3 |
| FA2113 | Principles of Drug Synthesis | 2 |
| FA2121 | Pharmaceutical Botany | 3 |
| FA2131 | Basic Pharmaceutics | 3 |
| FA2141 | Human Anatomy and Physiology I | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| Total Load : 19 credits | | |

Semester IV

| | | |
|-------------------------|--|---|
| FA2211 | Drug Synthesis | 2 |
| FA2201 | Environmental Pharmacy | 2 |
| FA2212 | Practicum of Organic and Physical Pharmaceutical Chemistry | 2 |
| FA2221 | Pharmacognosy | 2 |
| FA2202 | Pharmaceutical Statistics | 2 |
| FA2231 | Physical Pharmacy | 4 |
| FA2241 | Human Anatomy and Physiology II | 2 |
| KU206X | Religion and Ethics | 2 |
| Total Load : 18 credits | | |

Semester V

| | | |
|-------------------------|--|---|
| FA3111 | Pharmaceutical Biochemistry | 2 |
| FA3112 | Instrumental Pharmaceutical Analysis | 2 |
| FA3113 | Practicum of Instrumental Pharmaceutical Chemistry and Biochemistr | 2 |
| FA3131 | Pharmaceutical Technology of Liquid-Semisolid Dosage Forms | 3 |
| FA3132 | Practicum of Pharmaceutical Technology of Liquid-Semisolid Dosage | 2 |
| FA3141 | Pharmacology and Toxicology I | 2 |
| FA3142 | Immunology | 2 |
| Total Load : 15 credits | | |

Semester VI

| | | |
|-------------------------|--|---|
| FA3201 | Management and Entrepreneurship | 2 |
| FA3211 | Practicum of Analytical Pharmaceutical Chemistry | 2 |
| FA3231 | Pharmaceutical Biotechnology | 3 |
| FA3232 | Pharmacokinetics | 3 |
| FA3241 | Pharmacology and Toxicology II | 2 |
| FA3221 | Analytical Pharmacognosy | 3 |
| Total Load : 15 credits | | |

Semester VII

| | | |
|--------|---|---|
| FA4091 | Final Project I | 1 |
| FA4011 | Medicinal Chemistry | 2 |
| FA4112 | Analysis of Active Compounds | 2 |
| FA4121 | Phytochemistry | 4 |
| FA4131 | Pharmaceutical Technology of Solid Dosage Forms | 3 |
| FA4141 | Pharmacology dan Toxicology III | 2 |
| FA4142 | Practicum of Integrated Pharmacology | 2 |
| FK4141 | Basic Pharmacotherapy | 2 |

Total load : 18 credits

Total CREDITS : 134 Credits

Semester VIII

| | | |
|--------|---------------------------------|---|
| FA4092 | Seminar | 1 |
| FA4093 | Final Project II | 5 |
| FA4094 | Final Comprehensive Examination | 1 |
| FA4221 | Natural Product Technology | 2 |
| FA4231 | Basic Industrial Pharmacy | 2 |
| FA4232 | Biopharmacy | 2 |

Total load : 13 credits

Elective Courses

1. Outside Program ≥ 3
2. Within Program 0
(number of credit is adjusted to a total of 10)

Total Number of Credits of Elective Courses = 10

Elective Courses

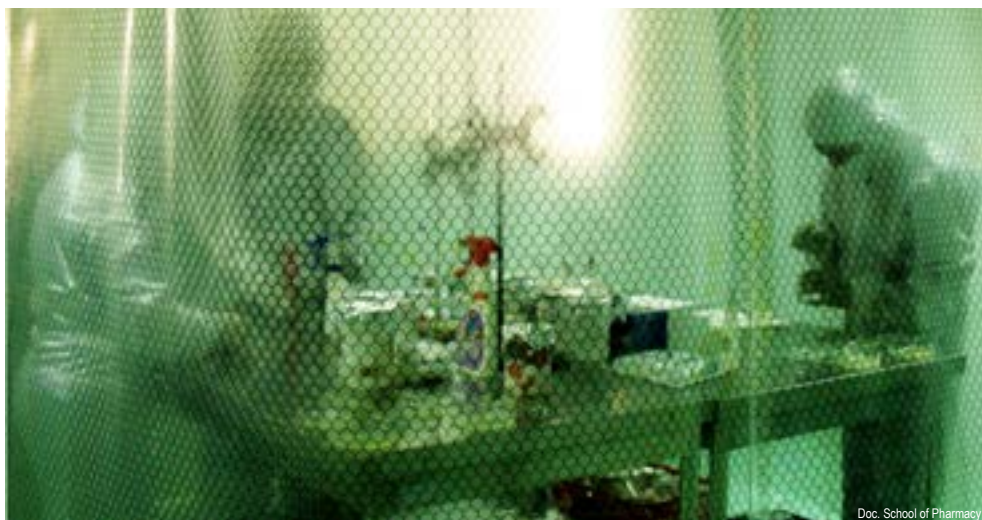
| | | |
|--------|--|---|
| FA3101 | Drug Stability | 2 |
| FA3102 | Chromatography and Electrophoresis | 2 |
| FA3103 | Radiopharmacy | 2 |
| FA3104 | Food Safety Analysis | 2 |
| FA3105 | Marine Pharmacognosy | 2 |
| FA3202 | Pharmaceutical Polymer | 2 |
| FA3203 | Plant Tissue and Cell Culture | 2 |
| FA3204 | Analytical Toxicology | 2 |
| FA3205 | Analytical Microbiology | 2 |
| FA3208 | Cosmetics Technology | 2 |
| FA4102 | Ethnopharmacology | 2 |
| FA4103 | Biomedical Products | 2 |
| FA4201 | Capita Selecta | 2 |
| FA4202 | Crystallography | 2 |
| FA4203 | Veterinary Pharmacy | 2 |
| FA4204 | Development and Validation of Analytical Methods | 2 |
| FA4205 | Biosynthesis of Drug Compounds | 2 |
| FA4206 | Pharmacogenetics | 2 |

CLINICAL AND COMMUNITY PHARMACY

The undergraduate program of Clinical and Community Pharmacy was opened in 2006, in response to an expanded need for pharmacists to also orient towards patients, and not simply to pharmaceutical products.

The program enables students to have the knowledge skills and competencies in pharmaceutical care to implement the concept of clinical pharmacy and management of community pharmacy. This will, eventually, be a support to the provision of qualified health services in managing various pharmaceutical products and medical devices, as a part of primary service to patients. Thus, a graduate of Clinical and Community Pharmacy program can have a career in the field of pharmacy practice, such as at hospital, or community pharmacy.

Along with the undergraduate program in Pharmaceutical Science and Technology, in 2014 the Clinical and Community Pharmacy was recognized by the Malaysian Board of Pharmacy, allowing the program to also open an international program. International accreditation was also received from ASIIN accreditation agency in 2015.



Doc. School of Pharmacy

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Curriculum of Clinical and Community Pharmacy

Semester I

| | | |
|--------|--|---|
| MA1102 | Mathematics IB | 3 |
| FI1102 | Elementary Physics IB | 3 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1071 | Introduction to Information Technology A | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| FA1101 | Introduction to Pharmacy and Health | 3 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1202 | Mathematics IIB | 3 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1001 | Sports | 2 |
| KU102X | English | 2 |
| BI1202 | Cell Biology and Its Application | 3 |

Total Load : 18 credits

Semester III

| | | |
|--------|-------------------------------------|---|
| FK2111 | Pharmaceutical Analytical Chemistry | 2 |
| FK2112 | Medical Microbiology | 3 |
| FA2131 | Basic Pharmaceutics | 3 |
| FK2132 | Basic Physical Pharmacy | 2 |
| FA2141 | Human Anatomy and Physiology I | 2 |
| FA2121 | Pharmaceutical Botany | 3 |
| KU206X | Religion and Ethics | 2 |

Total Load : 17 credits

Semester IV

| | | |
|--------|---|---|
| FA2201 | Environmental Pharmacy | 2 |
| FK2202 | Biostatistics | 2 |
| FK2211 | Organic Chemistry of Drug | 3 |
| FK2231 | Basics of Technology of Pharmaceutical Dosage Forms | 3 |
| FK2241 | Epidemiology and Public Health | 2 |
| FK2242 | Pathophysiology | 2 |
| FA2241 | Human Anatomy and Physiology II | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|--------------------------------------|---|
| FK3112 | Practicum of Drug Analysis | 2 |
| FK3121 | General Pharmacognosy | 3 |
| FK3141 | Basics of Hospital Pharmacy | 2 |
| FA3141 | Pharmacology and Toxicology I | 2 |
| FA3142 | Immunology | 2 |
| FA3112 | Instrumental Pharmaceutical Analysis | 2 |

Total Load : 13 credits

Semester VI

| | | |
|--------|--|---|
| FK3211 | Medical Biochemistry | 2 |
| FK3221 | Phototherapy | 3 |
| FK3213 | Practicum of Medical and Clinical Biochemistry | 2 |
| FK3212 | Clinical Chemistry | 2 |
| FK3231 | Medical Biotechnology | 2 |
| FA3201 | Management and Entrepreneurship | 2 |
| FA3241 | Pharmacology and Toxicology II | 2 |

Total Load : 15 credits

Semester VII

| | | |
|--------|---|---|
| FK4131 | Biopharmacy - Clinical Pharmacokinetics | 4 |
| FK4111 | Analytical Toxicology and Bioanalysis | 2 |
| FK4141 | Basic Pharmacotherapy | 2 |
| FK4142 | Basic Clinical Pharmacy | 4 |
| FK4091 | Final Project I | 1 |
| FA4141 | Pharmacology and Toxicology III | 2 |
| FA4142 | Practicum of Integrated Pharmacology | 2 |

Total load : 17 credits

Total CREDITS : 132 Credits

Semester VIII

| | | |
|--------|---------------------------------|---|
| FK4092 | Final Project II | 5 |
| FK4093 | Seminar | 1 |
| FK4094 | Final Comprehensive Examination | 1 |
| FK4241 | Pharmacotherapy | 3 |
| FK4242 | Counseling and Drug Information | 2 |
| FA4011 | Medicinal Chemistry | 2 |
| FK4243 | Psychology and Communication | 2 |

Total load : 16 credits

Elective Courses

1. Outside Program ≥3

2. Within Program

(number of credit is adjusted to a total of 12)

Total Number of Credits of Elective Courses = 12

Elective Courses

| | | |
|--------|---|---|
| FK3101 | Sport Physiology | 2 |
| FK3102 | Medical Nutrition Therapy | 2 |
| FK3103 | Pharmacological and Toxicological Methods | 2 |
| FK3201 | Parasitology and Virology | 2 |
| FK3202 | Pharmacogeography and Ethnopharmacognosy | 2 |
| FK3203 | Hematology | 2 |
| FK4101 | Immunotherapy | 2 |
| FK4102 | Clinical Toxicology | 2 |
| FK4202 | Pharmacoeconomics | 2 |
| FK4203 | Evaluation of Drug Efficacy and Safety | 2 |



FACULTY OF EARTH SCIENCES AND TECHNOLOGY

The Faculty of Geological Science and Technology (FITB) is a faculty established in 2007. However, this field of knowledge has long existed in Bandung Institute of Technology. Together with the Faculty of Mining and Petroleum Engineering (FTTM), FITB is part of the previous Faculty of Earth Sciences and Mineral Technology (FIKTM). The division was based on the scientific specialties studied. While studies in FTTM focus more on the scientific applications - as how to explore the natural resources - studies in FITB more focus on the science of earth itself. In addition, developments in science and technology had also led the study programs in FIKTM to become increasingly specified.

FITB comprises four study programs, namely Geological Engineering, Geodesy and Geomatics Engineering, Meteorology, and Oceanography. Looking at the distinctiveness of each science, we may conclude that grouping of the study program into FITB was heavily related as the academic study with the earth as its object, and how human may be able to best understand the phenomena that occur on the Earth, and the best utilize them. In this faculty, in addition to learning various scientific theories, one will also obtain the opportunity to apply them through simulations related to the studied field.

The faculty always implement the Three-Mission of Higher Education, known as "Tridharma", consisting of education, research and community empowerment. Education at the FITB is geared toward producing capable graduates who have strong competitive edges, environmentally aware and technologically driven, to serve the earth sciences and technology, and related fields. Research carried out at the faculty also takes into account the unique condition of the Indonesian archipelago or maritime continent. One of the research aims is to support and enrich educational curricula and enhance the quality of FITB graduates. Community empowerment and services to the industry by the faculty members are based on their professional expertise. The faculty members are encouraged to carry out consulting and training to the industry and community, to apply their expertise in the broader society for the benefit of all.

The philosophic underpinning of curriculum are: Life-long Learning, Knowledge-based Learning, Student Centered Learning.

Dean

: Prof. Ir. Hasanuddin Z. Abidin, M.Sc., Ph.D.

Vice Dean for Academic Affairs

: Ir. Benyamin Sapiie, Ph.D.

Vice Dean for Resource Planning and Management : Dr. Ir. Dina Anggreni Sarsito, MT

GEOLOGICAL ENGINEERING

The science of Geology covers a huge spectrum of studies concerning the Earth, especially in the processes on and within the Earth, its past and future evolution, the distribution of mineral and energy resources, and our environment. Therefore, Geology has many sub disciplines, such as petrology, sedimentology, geochemistry, geophysics, paleontology, volcanology, marine geology, etc. They apply the principles of basic sciences such as biology, chemistry, mathematics, and physics, which will be parts of first-year courses.

The Geological Engineering Study Program provides students with a multi-disciplinary approach to study the Earth. Our curriculum is designed to provide second-and third year student with firm foundation in petrology, paleontology, stratigraphy, sedimentology and structural geology. Moreover, our curriculum provides courses for third and fourth year student interested in studies in petroleum and coal exploration economic geology, geothermal, engineering geology, environmental geology, natural hazard mitigation, and water exploration. The curriculum also has activities that are designed to develop soft skills, such as communication, team work, leadership, and loyalty. The Study Program runs several one day field trips as part of regular courses and also a four-week field camp student's soft skill.

Outside the area of formal classroom and laboratory activities, a wide range of student activities is provided by the undergraduate student association in Study Program. It organizes social, academic and informational event, and provides a link between formal Study Program officials and the student body. Student association is also a good place for further development student's soft skill.

Career prospects in national and international levels for our geology graduates are very favorable. Our graduates are ready for employment in areas such as petroleum, coal and mineral exploration companies, engineering and environmental consulting companies, and in various provincial or national government agencies. Our programs provide a strong foundation to pursue advanced studies at the graduate level, and careers in research and development, or teaching.

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Email : geology@gc.itb.ac.id



Curriculum of Geological Engineering

Semester I

| | | |
|--------|---|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1163 | Introduction to Earth Sciences and Technology | 2 |
| | KU1001 Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|---------------------------------------|---|
| GL2111 | Physical Geology | 3 |
| GL2141 | Chrystalography and Mineralogy | 3 |
| GL2151 | Sedimentology | 3 |
| GL2171 | Palaeontology | 3 |
| GL2131 | General Geochemistry | 2 |
| GL2101 | Mathematics and Statistic for Geology | 2 |
| | GL2212 Structural Geology | 3 |
| | GL2242 Petrology | 3 |
| | TG2111 General Geophysics | 2 |
| | GL2261 Micropalaeontology | 3 |
| | GL2213 Tectonophysics | 2 |
| | GL2252 Principal Stratigraphy | 2 |
| | GL2281 Geofluida | 2 |

Total Load : 16 credits

Semester IV

| | | |
|--------|------------------------|---|
| GL2212 | Structural Geology | 3 |
| GL2242 | Petrology | 3 |
| TG2111 | General Geophysics | 2 |
| GL2261 | Micropalaeontology | 3 |
| GL2213 | Tectonophysics | 2 |
| GL2252 | Principal Stratigraphy | 2 |
| GL2281 | Geofluida | 2 |

Total Load : 17 credits

Semester V

| | | |
|--------|--------------------------------------|---|
| GL3141 | Optical Mineralogy and Petrography | 3 |
| GL3101 | Computational Geology | 3 |
| GL3142 | Volcanology dan Geothermal | 2 |
| GL3181 | General Hydrogeology | 3 |
| GL3191 | Reference Study | 2 |
| GL3111 | Geomorphology | 3 |
| GL3002 | Marine Geology | 2 |
| | GL3203 Geology of Indonesia | 2 |
| | GL3204 Field Geology* | 4 |
| | GL3251 Petroleum Geology | 3 |
| | GL3221 Engineering Geology | 3 |
| | GL3205 Geological Information System | 3 |
| | GL3271 Historical Geology | 2 |
| | GL3243 Mineral Deposits | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|-------------------------------|---|
| GL3203 | Geology of Indonesia | 2 |
| GL3204 | Field Geology* | 4 |
| GL3251 | Petroleum Geology | 3 |
| GL3221 | Engineering Geology | 3 |
| GL3205 | Geological Information System | 3 |
| GL3271 | Historical Geology | 2 |
| GL3243 | Mineral Deposits | 3 |

Total Load : 20 credits

Semester VII

| | | |
|--------|--|---|
| GL4101 | Methods on Geological Exploration | 3 |
| GL4151 | Coal Geology | 2 |
| GL4102 | Management and Mineral Economic | 3 |
| GL4103 | Law and Regulation on Earth Management | 2 |
| GL4121 | Environmental Geology | 3 |
| | Elective Courses | 6 |

Total Load : 19 credits

Semester VIII

| | | |
|--------|------------------|--------|
| GL4098 | Final Project A | 5 |
| GL4099 | Final Project B | 3 |
| | Elective Courses | 9 (11) |

Total Load : 17/19 credits

Total CREDITS : 143/145 Credits

Elective Courses

| | | | | | |
|--------|--|---|--------|--|---|
| GL2021 | Introduction to Geological Environmental | 2 | GL4072 | Invertebrate Palaeontology | 2 |
| GL3021 | Geological Hazard Analysis | 2 | GL4073 | Geoarchaeology | 2 |
| GL3102 | Geostatistics | 2 | GL4096 | Practical Training | 2 |
| GL3053 | Sedimentology dan Stratigraphy | 3 | GL4097 | Special Assignment of Geology | 2 |
| GL3044 | Petrogenesis | 2 | GL4274 | Science in Geoarchaeology | 2 |
| GL3045 | Mineralogy of Rock Forming Minerals | 2 | GL4081 | Geopressure | 2 |
| GL3054 | Introduction to Petroleum Geology | 3 | GL4045 | Mineral and Ore Deposits | 3 |
| GL3061 | Micropaleontology dan Biostratigraphy | 3 | GL4011 | Petrological Structure | 2 |
| GL3122 | Introduction to Engineering Geology | 2 | GL4012 | Active Tectonics | 2 |
| GL3023 | Geology of Bandung Basin | 2 | GL4013 | Geomechanics | 2 |
| GL3024 | Geotourism | 2 | GL4014 | Geological Structure Application | 2 |
| GL4022 | Introduction to Rock Engineering | 2 | GL4015 | Geology Remote Sensing | 2 |
| GL4031 | Petroleum Geochemistry | 2 | GL4032 | Exploration Geochemistry | 2 |
| GL4041 | Geology of Industry Materials | 2 | GL4033 | Introduction to Geochemistry Soil | 2 |
| GL4042 | Geothermal Geology | 2 | GL4046 | Sedimentary Petrology | 3 |
| GL4043 | Geology of Construction Materials | 2 | GL4053 | Non-conventional Oil and Gas Geology | 2 |
| GL4044 | Hydrothermal Mineral Deposits | 2 | GL4054 | Introduction to Stratigraphy Sequences | 2 |
| GL4051 | Stratigraphical Analysis | 2 | GL4061 | Quantitative Stratigraphy | 2 |
| GL4052 | Well Logging Geology | 2 | GL4062 | Applied Microfossil | 2 |
| GL4071 | Vertebrate Palaeontology | 2 | GL4074 | Geochronology | 2 |



Doc. Faculty of Geological Science and Technology

GEODESY AND GEOMATIC ENGINEERING

Geodesy is the science of determining the size and shape of the earth and its gravity field. The science of geodesy becomes the foundation not only of surveying and mapping but also of geomatics. Whereas the geomatics is a new term which incorporates the science, engineering, and art involved in collecting and managing geo-referenced information.

Geodesy and geomatics engineering integrates the science of geodesy and earth observation technologies to generate and to utilize geospatial information for various applications. These cover numerous sub-disciplines such as Global Navigation Satellite System (GNSS), remote sensing, photogrammetry, Geographic Information System (GIS), surveying, hydrography, and many others.

In accordance with Indonesian national contexts, the above sub-disciplines face a new era in contributing more towards earth's dynamics and life layer problems. Applications in land development and management, surveying and mapping, and infrastructure developments still remain among of graduates career paths. Challenges in dealing with spatial planning, natural resources management, maritime development, and mitigation of natural hazard are becoming novel field of contributions of our graduates in our national context. In the pace of these widening fields of involvements, graduates from Geodesy and Geomatics Engineering Study Program are exposed to complex and challenging environments in higher education and professional contributions.

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Curriculum of Geodetic and Geomatic Engineering

Semester I

| | | |
|--------|---|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1163 | Introduction to Earth Sciences and Technology | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

| | | |
|--------|--|---|
| KU1072 | Introduction to Information Technology B | 2 |
|--------|--|---|

Total Load : 19 credits

Semester III

| | | |
|--------|--------------------------------|---|
| GD2101 | Positioning I | 3 |
| GD2102 | Geometric Geodesy | 4 |
| GD2103 | Statistics Geodesy | 3 |
| GD2104 | Aljabar Linier I | 3 |
| GD2105 | Introduction to Spatial System | 2 |
| GD2106 | Geospatial Expedition | 2 |
| KU206X | Religion and Ethics | 2 |

Total Load : 19 credits

Semester IV

| | | |
|--------|-------------------------------|---|
| GD2201 | Positioning II | 3 |
| GD2202 | Geometric Reference System | 3 |
| GD2203 | Estimation and Approximation | 3 |
| GD2204 | Geodetic Computation II | 3 |
| GD2205 | Satellite Geodesy | 2 |
| GD2206 | Law and Regulation | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|---------------------|---|
| GD3101 | Terrestrial Mapping | 3 |
| GD3102 | Hydrography I | 3 |
| GD3103 | Photogrammetry I | 3 |
| GD3104 | Spatial Data Base | 3 |
| GD3105 | GNSS Surveying | 3 |
| | Elective Course | 2 |

Total Load : 17 credits

Semester VI

| | | |
|--------|-------------------|---|
| GD3201 | Cartography | 3 |
| GD3202 | Hydrography II | 3 |
| GD3203 | Photogrammetry II | 3 |
| GD3204 | Thematic Mapping | 3 |
| GD3205 | Remote Sensing | 4 |
| GD3206 | Field Camp | 3 |

Total Load : 19 credits

Semester VII

| | | |
|--------|-------------------------------|---|
| GD4101 | Geographic Information System | 3 |
| GD4102 | Cadastral System | 4 |
| GD4103 | Environmental Geography | 2 |
| GD4001 | Internship | 2 |
| | Elective Course | 3 |
| | Elective Course | 3 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|---------------------------------|---|
| GD4201 | Geospatial Information Industry | 2 |
| GD4202 | Quality Management | 2 |
| GD4002 | Undergraduate Thesis | 6 |
| | Elective Course | 2 |
| | Elective Course | 3 |
| | Elective Course | 3 |

Total Load : 18 credits

Study program options 12 credits

Options from other study programs 4 credits

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|---|---|
| GD2001 | Introduction to Surveying | 2 |
| GD2002 | Introduction to Geographic Information System | 2 |
| GD2003 | Introduction to Mapping | 3 |
| GD3106 | Introduction to Physical Geodesy | 2 |
| GD4104 | Environmental Remote Sensing | 3 |
| GD4105 | Hydroinformatics | 3 |
| GD4106 | Construction Surveying | 3 |
| GD4107 | Capita Selecta | 3 |
| GD4203 | Quantity Surveying | 3 |
| GD4204 | Deformation | 3 |
| GD4205 | Maritime Boundaries | 3 |
| GD4206 | Geographic Information System Engineering | 3 |
| GD4207 | Marine Geodesy | 2 |



Doc. Indra Yudha

METEOROLOGY

Meteorology is the science that studies the earth and its signs which are associated with components of the earth in the form of gas or so-called air.

We are often confused and clueless of the reasons behind sudden changes in the weather, from hot to raining, or why it is snowing, and so forth. This will be studied at the study programme of Meteorology. Weather and climate significantly affect human lives. One example is the estimation of the harvest season by observing the weather and climate, a knowledge that has been possessed for thousand years but was yet to be scientifically explained. With the science of meteorology, it can now be explained. The other signs of nature such as the hurricane, storm, and others will also be studied at the study programme of Meteorology. One will not only learn why such natural disasters occur, but also what can be done to address and minimize the impact of such natural disasters.

The study of meteorology also has relevance to other studies, for example with the study of architecture. Helped by knowledge of meteorologists, the architects can design buildings according to climate conditions. For example, in areas that are subject to frequent storm and snow, the building roof is designed with a drastic slope so that the snow will not have the chance to be piled on the top, but instead quickly slid down. Another example is the house designs in Japan that have been adjusted with their local climate and weather conditions. Because of frequent earthquakes, the best material to be used is wood, because wood material tends to be more flexible. In addition, at the study programme of Meteorology, one will also become familiar with several softwares that are capable of predicting weather, and also the related sciences.

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Curriculum of Meteorology

Semester I

| | | |
|--------|---|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1163 | Introduction to Earth Sciences and Technology | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

| | | |
|--------|--|---|
| KU1072 | Introduction to Information Technology B | 2 |
|--------|--|---|

Total Load : 19 credits

Semester III

| | | |
|--------|---|---|
| ME2111 | Introduction to Meteorology and Climatology | 3 |
| ME2120 | Computational Meteorology | 3 |
| ME2121 | Continuum Mechanics | 3 |
| FI2181 | Mathematical Physics IB | 3 |
| KU206X | Religion and Ethics | 2 |
| MA2021 | Matrices and Vector Spaces | 3 |

Total Load : 17 credits

Semester IV

| | | |
|--------|----------------------------------|---|
| ME2211 | Meteorological Observations | 3 |
| ME2221 | Physical Meteorology | 3 |
| ME2222 | Dynamical Meteorology I | 3 |
| ME2223 | Numerical Methods in Meteorology | 3 |
| MA2081 | Elementary Statistics | 3 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 17 credits

Semester V

| | | |
|--------|---------------------------------------|---|
| ME3111 | Meteorological Data Analysis I | 3 |
| ME3112 | Meteorological Information System | 3 |
| ME3123 | Dynamical Meteorology II | 3 |
| ME3124 | Numerical Weather Prediction Method I | 3 |

Total Load : 12 credits

Semester VI

| | | |
|--------|--|---|
| ME3221 | Meteorological Data Analysis II | 3 |
| ME3222 | Satellite Meteorology | 3 |
| ME3223 | Hydrometeorology | 2 |
| ME3224 | Environmental Meteorology | 3 |
| ME3225 | Numerical Weather Prediction Method II | 3 |

Total Load : 14 credits

Semester VII

| | | |
|--------|--|---|
| ME4010 | Colloquium in Meteorology | 2 |
| ME4111 | Tropical Meteorology | 3 |
| ME4112 | Boundary Layer Meteorology | 3 |
| ME4121 | Synoptics Meteorology and Weather Analysis | 3 |
| ME4132 | Hydrometeorological Modeling | 2 |

Total Load : 13 credits

Total CREDITS : 121 Credits

Semester VIII

| | | |
|--------|--|---|
| ME4021 | Special Topics in Meteorology | 3 |
| ME4022 | Weather and Climate Information Management | 3 |
| ME4099 | Final Project | 6 |

Total Load : 12 credits

Elective Courses

| | | | | | |
|--------|--|---|--------|---------------------------|---|
| ME3023 | Meteorological Instrumentations | 3 | ME4031 | Mesoscale Meteorology | 3 |
| ME3024 | Atmospheric Teledetection | 3 | ME4032 | Engineering Meteorology | 3 |
| ME3033 | Weather Modification | 3 | ME4033 | Air Pollution Meteorology | 2 |
| ME3036 | Climate Change | 3 | ME4034 | Climate Policy | 3 |
| ME4013 | Introduction to Atmosphere Ocean Interaction | 3 | ME4035 | Agrometeorology | 3 |
| ME4014 | Wind and Solar Energy | 2 | ME4036 | Agroclimatology | 3 |
| ME4018 | Climatology | 2 | ME4092 | Field Work | 3 |
| ME4024 | Water Resource Management | 3 | ME4093 | Practical Work | 2 |

Elective Courses in Other Department

| | | | | | |
|--------|---|---|--------|-------------------------------------|---|
| DK2109 | Communication Process | 2 | OS3204 | The Oceanography of Indonesian Seas | 2 |
| GD2002 | Introduction to Geographic Information System | 2 | SB5101 | Earth System | 3 |
| GD2105 | Introduction of Spatial System | 2 | SB5121 | Hidrogeometeorologi | 2 |
| GD4101 | Geographic Information System | 3 | SB5221 | Atmosphere Dynamics | 3 |
| GD4104 | Environmental Remote Sensing | 3 | SI2131 | Fluid Mechanics and Hidraulics | 3 |
| GL2212 | Structural Geology | 3 | SI2231 | Hydrology Engineering | 3 |
| GL3142 | Volcanology and Geothermal | 2 | SI4131 | Water Resources Development | 3 |
| GL3181 | General Hydrogeology | 3 | SI4232 | River Engineering | 3 |
| GL4121 | Environmental Geology | 3 | TL2105 | Environmental Health | 3 |
| KI2121 | Fundamentals of Analytical Chemistry | 4 | TL4122 | Air Pollution Monitoring | 2 |
| OS2101 | Introduction to Oceanography | 3 | | | |
| OS3001 | Environmental Oceanography | 2 | | | |

Minor Courses

| | | | | | |
|-------------------------------------|--|---|---|---------------------------|---|
| Minor Program : Atmospheric Science | | | Minor Program : Environmental Meteorology | | |
| ME3024 | Atmospheric Teledetection | 3 | ME3036 | Climate Change | 3 |
| ME4013 | Introduction to Atmosphere Ocean Interaction | 2 | ME4033 | Air Pollution Meteorology | 3 |
| ME4031 | Mesoscale Meteorology | 3 | ME4035 | Agrometeorology | 3 |
| Total : 8 credits | | | Total : 9 credits | | |

Minor Program : Engineering Meteorology

| | | |
|-------------------|---------------------------------|---|
| ME3023 | Meteorological Instrumentations | 3 |
| ME4014 | Wind and Solar Energy | 3 |
| ME4032 | Engineering Meteorology | 3 |
| Total : 9 credits | | |

OCEANOGRAPHY

Lately, we become more familiar with the word “tsunami”, storm waves, as well as global warming and its effects on sea level rise. Especially since the tsunami disaster in Aceh (December 2004), as well as storm surge disaster that struck the Java Sea (January 2007) that disrupted the water transportation, and also caused several accidents. Storm waves that hit western coast of Sumatra, southern coast of Java-Bali to East Nusa Tenggara (May 2007) have also devastated the coastal environment and socio-economic life of its inhabitants. No less important were the events of small island that sank due sea level rise.

Indonesian region is known as maritime continent because of its geographical location and unique geological conditions. Graduate of Oceanography has a great potential to develop various fields of studies that can support the national development. Ocean and environmental disasters (storm surge, oil spill and waste pollution in the ocean, tsunami, etc) that occur during the last two decades and the need for alternative energy as well as a substitute for petroleum have grown awareness of the importance of ocean field studies both for the public and government. Especially in the energy sector, by conducting research on ocean-originated alternative energy source, i.e. sea tides, waves, and Ocean Thermal Energy Conservation (OTEC). We might not know why the tsunami, storm surge, and sea level rise could occur, and how to predict and minimize their impacts. Such matters are in one of the areas that will be studied in the study program of Oceanography.

Oceanography is study of physical phenomena and the dynamics of ocean water that can be applied to other fields, such as engineering, environment, fishery, ocean disasters, and mitigation (management and prevention). More than 62% of Indonesia archipelago consists of oceans, and nearly 70% of the world is oceans as well. We can imagine how widespread the land for occupation and the opportunity for job are for an oceanographer with a degree.

In lectures, the students will be provided with basic concept of ocean sciences covering the aspects of physics, chemistry, biology, and geology, as well as equipped with the basics of ocean dynamics, surveys, and ocean mapping. Sea as the object of study are reviewed starting from the physical and chemical properties of sea water, the movement in the forms of currents, waves, and tides, seabed sediments, tectonic plate revolution (particularly the oceanic plate), until the process of erosion and sedimentation in coastal areas.

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Curriculum of Oceanography

Semester I

| | | |
|--------|---|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1163 | Introduction to Earth Sciences and Technology | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

| | | |
|--------|--|---|
| KU1072 | Introduction to Information Technology B | 2 |
|--------|--|---|

Total Load : 19 credits

Semester III

| | | |
|--------|------------------------------|---|
| FI2181 | Mathematical Physics IB | 3 |
| FI2104 | Mechanics B | 3 |
| OS2101 | Introduction to Oceanography | 3 |
| OS2102 | Fluid Mechanics | 3 |
| OS2103 | Computational Oceanography | 3 |
| OS2104 | Biological Oceanography | 2 |
| KU206X | Religion and Ethics | 2 |

Total Load : 19 credits

Semester IV

| | | |
|--------|----------------------------------|---|
| FI2205 | Thermodynamics | 3 |
| FI2281 | Mathematical Physics IIB | 3 |
| MA2081 | Elementary Statistics | 3 |
| OS2201 | Hydrodynamics | 3 |
| OS2202 | Numerical Method in Oceanography | 3 |
| OS2203 | Chemical Oceanography | 2 |
| OS2204 | Signal Analysis and Time Series | 3 |

Total Load : 20 credits

Semester V

| | | |
|--------|---------------------------------------|---|
| OS3101 | Geological Oceanography | 2 |
| OS3102 | Analysis of Oceanographic Survey Data | 3 |
| OS3103 | Ocean Wave | 3 |
| OS3104 | Oceanography Modelling I | 3 |
| OS3105 | Ocean Tide | 3 |
| OS3106 | Ocean Current Circulation | 3 |

Total Load : 17 credits

Semester VI

| | | |
|--------|-------------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| OS3001 | Environmental Oceanography | 2 |
| OS3202 | Diving and Marine Navigation | 3 |
| OS3203 | Hydro-Oceanographic Survey | 3 |
| OS3204 | The Oceanography of Indonesian Seas | 2 |
| OS3205 | Coastal Management | 2 |

Total Load : 14 credits

Semester VII

| | | |
|--------|------------|---|
| OS4091 | Colloquium | 2 |
|--------|------------|---|

Total Load : 2 credits

Total CREDITS : 112 Credits

Semester VIII

| | | |
|--------|---------------|---|
| OS4099 | Final Project | 4 |
|--------|---------------|---|

Total Load : 4 credits

Elective Courses

| | | |
|--------|---|---|
| OS3003 | Sea Disaster and Mitigation | 2 |
| OS3004 | Ocean Remote Sensing | 3 |
| OS3005 | Marine Water Quality Management | 3 |
| OS3006 | Fisheries Oceanography | 2 |
| OS3007 | Marine Meteorology | 2 |
| OS3008 | Introduction Sea Biochemistry | 2 |
| OS3009 | Marine Oceanography | 2 |
| OS4003 | Coastal Oceanography | 2 |
| OS4004 | Oceanography Modelling II | 3 |
| OS4005 | Introduction of Ocean Environmental Modelling | 3 |
| OS4006 | Sediment Transport and Coastal Dynamics | 3 |
| OS4007 | Tsunami (Seismic Tidal Waves) | 2 |
| OS4008 | Non-conventional Ocean Energy | 2 |
| OS4009 | Capita Selecta | 2 |
| OS4010 | Scientific Diving | 2 |
| OS4011 | Long Wave and Tidal Dynamics | 3 |
| OS4012 | Introduction to Sea Air Interaction | 2 |
| OS4013 | Estuarine | 2 |
| OS4014 | Wave Analysis and Forecasting | 3 |
| OS4090 | Field Works | 2 |



Doc. Faculty of Geological Science and Technology



FACULTY OF MINING AND PETROLEUM ENGINEERING

Faculty of Mining and Petroleum Engineering (FTTM) studies and develops sciences for the processing of natural resources. More specifically, it deals with the science of exploration technology and utilization of natural resources, including minerals, coal, oil, gas, and geothermal, based on the concept of eco-friendly conservation.

FTTM consists of Mining Engineering, Petroleum Engineering, Geophysical Engineering, and Metallurgical Engineering study programs. Observing the distinctiveness of each study program, it can be said that the grouping is very closely related to the implementation mechanism of the efficient and effective natural resources extracting processes. In Mining Engineering and Petroleum Engineering the referred natural resources are coal, minerals (including precious metals such as gold, platinum, etc.), crude oil, natural gas, and geothermal.

Geophysical Engineering offers courses related to the existing properties in nature, such as gravity, elasticity, geomagnetic, etc. Meanwhile, Mining Engineering teaches economical natural resources extraction. As for the Petroleum Engineering, it offers courses related to petroleum, natural gas, and geothermal. Metallurgical Engineering studies how to process the obtained natural resources so that they could be used by manufacturing industries.

| | |
|--|---|
| Dean | : Prof. Sri Widiyantoro, M.Sc., Ph.D |
| Vice Dean for Academic Affairs | : Prof. Ir. Ridho Kresna Wattimena, MT, Ph.D. |
| Vice Dean for Resource Planning and Management | : Dr. Susanti Alawiyah, ST, MT |

MINING ENGINEERING

The study program of Mining Engineering produces high competitive and excellent mine engineers to utilize and establish the conservation on coal and mineral resources with considering environmental insight in order to challenge the global competition.

When finding out a coal or mineral deposit, mine engineer has to have knowledge on how to evaluate, excavate, and utilize it technically and economically to satisfy the human needs. Therefore, at this study program, the students also learn the economical aspect related to the mineral resources development.

In this study program, there are two options where the students have to select since fifth semester: Exploration Mining and Mining Engineering. Exploration Mining Option aims to educate the students to be reliable mining engineer who has knowledge and skill on earth resources exploration, and able to develop or implement earth resources exploration technology and able to perform tasks efficiently and effectively, both in terms of time, cost and risk.

Mining Engineering Option aims to educate the students to be reliable mining engineer who has knowledge and skill to work on the working conditions of mining and natural resource conditions (in Indonesia) where in the future will be more severe and complex, partly due to the less quality of deposits, deeper location of deposits, problem of overlapping land uses, environmental conservation issues, and the increasing competition in the market share because of open and free international trade system.

In general mining engineers from study program of Mining Engineering ITB in the future must have good skill to deal with advanced and modern technology, and able to compete with graduates from other university both in Indonesia and abroad. To achieve that goal, the study program is completed with seven laboratories: Exploration Techniques and Evaluation of Mineral Deposit; Minerology, Microscopy and Geochemistry; Hydrogeology and Hydrogeochemistry; Geomechanics and Mine Equipments; Mine Planning and Valuation; Mine Environment; Mineral Economics and Computation.

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Curriculum of Mining Engineering

Semester I

| | | | | | |
|--------|--|---|--------|---|---|
| MA1101 | Mathematics IA | 4 | MA1201 | Mathematics IIA | 4 |
| FI1101 | Elementary Physics IA | 4 | FI1201 | Elementary Physics IIA | 4 |
| KI1101 | Basic Chemistry IA | 3 | KI1201 | Basic Chemistry IIA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 | KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 | KU1072 | Introduction to Information Technology B | 2 |
| KU1164 | Introduction to Mineral and Energy Resources | 2 | KU102x | English : Critical Reading Skills | 2 |
| | | | KU1001 | Sports | 2 |

Total Load : 17 credits

Total Load : 19 credits

Semester III

| | | | | | |
|--------|--------------------------------|---|--------|---------------------------------------|---|
| MA2021 | Matrices and Vector Spaces | 3 | MA2081 | Elementary Statistics | 3 |
| GL2111 | Physical Geology | 3 | GL2213 | Tectonophysics | 2 |
| GD2003 | Introduction to Mapping | 3 | GL2242 | Petrology | 3 |
| TA2101 | Crystallography and Mineralogy | 3 | SI2121 | Introduction to Soil Mechanics | 2 |
| TA2102 | Mining System | 2 | TA2202 | Mine Equipment and Material Handling | 3 |
| TA2103 | Engineering Mechanics | 2 | TA2201 | Numerical Method | 2 |
| TA2104 | Fluid Mechanics | 2 | TA2203 | Thermodynamics for Mining Engineering | 2 |

Total Load : 18 credits

Total Load : 17 credits

Mining Exploration Option Semester V

| | | | | | |
|--------|---|---|--------|---|---|
| GL2212 | Structural Geology | 3 | MG3017 | Mineral Processing | 3 |
| TA3101 | Genesis of Mineral Deposits | 3 | TA3201 | Geostatistics for Resources Modeling | 3 |
| TA3102 | Rock Mechanics | 3 | TA3202 | Mining Geotechnics | 2 |
| TA3103 | Principle of Reserve Estimation Methods | 2 | TA3203 | Mine Valuation | 2 |
| TA3104 | Mine Investment Analysis | 2 | TA3211 | Exploration Mapping | 2 |
| TA3111 | Mining Exploration Technique | 2 | TA3212 | Geophysics of Mineral Deposit-1 | 2 |
| KU2071 | Pancasila and Civic Education | 2 | TA3213 | Exploration Geochemistry and Ore Analysis | 2 |

Total Load : 17 credits

Semester VI

| | | |
|--------|---------------------|---|
| KU206X | Religion and Ethics | 2 |
|--------|---------------------|---|

Total Load : 18 credits

Mining Engineering Option
Semester V

| | | |
|--------|---|---|
| GL2212 | Structural Geology | 3 |
| TA3101 | Genesis of Mineral Deposits | 3 |
| TA3102 | Rock Mechanics | 3 |
| TA3103 | Principle of Reserve Estimation Methods | 2 |
| TA3104 | Mine Investment Analysis | 2 |
| TA3121 | Mine Ventilation | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 17 credits

Semester VI

| | | |
|--------|--------------------------------------|---|
| MG3017 | Mineral Processing | 3 |
| TA3201 | Geostatistics for Resources Modeling | 3 |
| TA3202 | Mining Geotechnics | 2 |
| TA3203 | Mine Valuation | 2 |
| TA3221 | Explosives & Blasting Technique | 2 |
| TA3222 | Drilling and Excavation | 2 |
| TA3223 | Mine Drainage System | 2 |
| KU206X | Religion and Ethics | 2 |

Total Load : 18 credits

Mining Exploration Option
Semester VII

| | | |
|--------|---------------------------------|---|
| TA4101 | Mine Planning | 4 |
| TA4102 | Mineral Economics | 3 |
| TA4103 | Mining Environment | 3 |
| TA4111 | Geophysics of Mineral Deposit-2 | 2 |
| TA4112 | Management of Exploration | 2 |
| | Elective Courses | 6 |

Total Load : 20 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|---|---|
| TA4201 | Occupational Health, Safety and Human Resources | 2 |
| TA4202 | Mining Policy | 2 |
| TA4099 | Final Assignment | 5 |
| | Elective Courses | 9 |

Total Load : 18 credits

Mining Engineering Option
Semester VII

| | | |
|--------|-----------------------|---|
| TA4101 | Mine Planning | 4 |
| TA4102 | Mineral Economics | 3 |
| TA4103 | Mining Environment | 3 |
| TA4121 | Underground Stability | 2 |
| TA4122 | Mine Management | 2 |
| | Elective Courses | 6 |

Total Load : 20 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|--|---|
| TA4201 | Occupational Health and Safety and Human Resources | 2 |
| TA4202 | Mining Policy | 2 |
| TA4099 | Final Assignment | 5 |
| | Elective Courses | 9 |

Total Load : 18 credits

Selected Elective Courses

| | | |
|--------|---|---|
| TA4001 | Mining Hydrogeology | 2 |
| TA4011 | Exploration and Evaluation of Geothermal | 2 |
| TA4012 | Geotechnical Site Investigation | 2 |
| TA4090 | International Internship | 2 |
| TA4113 | Organic Petrology | 2 |
| TA4114 | Unconventional Energy Resources | 2 |
| TA4115 | Statistical Evaluation in Mineral Exploration | 2 |
| TA4123 | Coal and Its Utilization | 2 |
| TA4211 | Groundwater Resources | 3 |
| TA4212 | Coal Genesis and Coal Exploration | 3 |
| TA4213 | Mineragraphy | 3 |
| TA4221 | Tunneling Technique | 2 |
| TA4222 | Mine Maintenance Management | 2 |

Elective Courses

| | | |
|--------|------------------------------------|---|
| KU4079 | Anti Corruption Education | 2 |
| MG3011 | General Metallurgy | 2 |
| MS2042 | Prime Movers | 2 |
| EP2274 | Electrical Power Engineering | 2 |
| MG3114 | Benefication of Industrial Mineral | 2 |
| GL3024 | Geotourism | 2 |
| TI2001 | Operations Research I | 3 |

Minor Courses

Minor Program: Mining Engineering

| | | |
|--------|--|---|
| TA2102 | Mining System | 2 |
| TA2202 | Mine Equipment and Material Handling | 3 |
| TA3101 | Genesis of Mineral Deposits | 3 |
| TA3104 | Mine Investment Analysis | 2 |
| TA4102 | Mineral Economics | 3 |
| TA4201 | Occupational Health and Safety and Human Resources | 2 |
| TA4202 | Mining Policy | 2 |

Total : 17 credits

Minor Program

| | |
|-----|---------------------------|
| 120 | Geological Engineering |
| 122 | Petroleum Engineering |
| 123 | Geophysical Engineering |
| 125 | Metallurgical Engineering |

PETROLEUM ENGINEERING

The Petroleum Engineering study program is part of FTMM that serve the students about knowledge in the petroleum and natural gas. For the two areas that are explained, various aspects that are studied are including: reservoir engineering, drilling engineering, production engineering, surface facilities including the management of an oil and gas. Since Indonesia has the biggest geothermal potential in the world, Petroleum Engineering study program also provides the students with geothermal engineering course as a strong recommendation for elective course.

Petroleum Engineering Undergraduate Study Program begins with the strengthening fundamental sciences: mathematics, chemistry and physics, followed by an introduction to the general technology of upstream petroleum production system. The students are then introduced to the basic petroleum engineering sciences namely basic geology, petroleum geology, reservoir fluids, petrophysics, thermodynamics and fluid mechanics. The students are also equipped with some basic knowledge and skills needed in engineering practices such as numerical methods, computer programming, statistics, and material of construction. The students will learn to apply the basic engineering sciences in drilling design and operations, well completion, well logging, well testing, reservoir engineering, and production design and operation. The student's laboratory experiment skills are developed through laboratory courses: reservoir fluids analyses, petrophysics, and drilling mud and cement.

The students are required to take courses from different study programs such as Geological Engineering, Geophysical Engineering, Electrical Engineering, Mathematics, Physics, Chemistry, and Information Engineering. In the future, a petroleum engineer will be working in the teams, therefore it is recommended that students also take courses from Socio-technology Research Group (SOSTEK), i.e. Social Psychology, Communication, and Anthropology, which can give initial skill to interact with the surrounding community.

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Doc. Indra Yudha

Curriculum of Petroleum Engineering

Semester I

| | | | | | |
|--------|--|---|--------|---|---|
| MA1101 | Mathematics IA | 4 | MA1201 | Mathematics IIA | 4 |
| FI1101 | Elementary Physics IA | 4 | FI1201 | Elementary Physics IIA | 4 |
| KI1101 | Basic Chemistry IA | 3 | KI1201 | Basic Chemistry IIA | 3 |
| KU1101 | Introduction to Engineering & Design I | 2 | KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 | KU1072 | Introduction to Information Technology B | 2 |
| KU1164 | Introduction to Mineral and Energy Resources | 2 | KU102X | English | 2 |
| | | | KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

Total Load : 19 credits

Semester III

| | | | | | |
|--------|--|---|--------|---------------------------------------|---|
| TM2108 | Fluid Properties Lab | 3 | MA3072 | Numerical Methods | 3 |
| TM2121 | Partial Differential Equations for Petroleum Engineering | 3 | GL3053 | Sedimentology and Stratigraphy | 3 |
| MA2081 | Elementary Statics | 3 | TK3082 | Introduction to Transport Phenomena A | 3 |
| TK3081 | Elementary Thermodynamics A | 3 | TM2209 | Petrophysics Lab | 3 |
| GL2111 | Physical Geology | 3 | MS2011 | Fundamental of Engineering Mechanics | 3 |
| IF2132 | Computer Programming | 3 | EL2043 | Industrial Electronics | 3 |
| | | | | | |

Total Load : 18 credits

Total Load : 18 credits

Semester V

| | | | | | |
|--------|-------------------------------|---|--------|---------------------------------------|---|
| TM3110 | Reservoir Engineering I | 3 | TM3211 | Reservoir Engineering II | 3 |
| TM3104 | Production Engineering | 3 | TM3202 | Drilling Engineering II | 3 |
| TM3101 | Drilling Engineering I Lab | 3 | TM3205 | Surface Facilities and Transportation | 3 |
| TM3113 | Well Testing | 3 | TM3206 | Artificial Lift Well Design | 3 |
| GL3251 | Petroleum Geology | 3 | TM3207 | Well Completion and Workover | 3 |
| KU206X | Religion and Ethics | 2 | TM3000 | Practical Training and Report Writing | 1 |
| KU2071 | Pancasila and Civic Education | 2 | TM3214 | Well Log Analysis | 3 |
| | | | | | |

Total Load : 19 credits

Total Load : 19 credits

Semester VII

| | | | | | |
|--------|---|---|--------|--|---|
| TM4112 | Reservoir Characterization and Modeling | 3 | TM4235 | Environmental Control in Petroleum Operation | 2 |
| TM4116 | Improvement of Oil Recovery | 3 | TM4215 | Petroleum Economic and Project Management | 3 |
| TM4107 | Well Stimulation | 2 | TM4217 | Natural Gas Engineering | 3 |
| | Elective Courses | 9 | TM4099 | Final Project | 3 |
| | | | | Elective Courses | 6 |

Total Load : 17 credits

Total Load : 17 credits

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|--|---|
| TM4019 | Geothermal Engineering | 3 |
| TM4020 | Unconventional Hydrocarbon Recovery | 3 |
| TM4021 | Energy Economics | 3 |
| TM4022 | Carbonate and Naturally Fractured Reservoirs | 3 |
| TM4023 | Field Plan of Development | 3 |
| TM4024 | Reservoir Data Analysis | 3 |
| TM4025 | Oil and Gas Field Development Optimization | 3 |
| TM4026 | Geothermal Field Development | 3 |
| TM4028 | Horizontal Drilling System | 3 |
| TM4029 | Special Topics in Drilling Engineering | 3 |
| TM4030 | Production Problematic | 3 |
| TM4031 | Petroleum Artificial Intelligence | 3 |
| TM4032 | Regulation of Petroleum Industry | 3 |
| TM4033 | Production Logging | 3 |
| TM4034 | Petroleum Geostatistics | 3 |

Minor Courses

| | | |
|--------------------------------------|-------------------------|---|
| Minor Program: Reservoir Engineering | | |
| TM2108 | Fluid Properties Lab | 3 |
| TM2209 | Petrophysics Lab | 3 |
| TM3110 | Reservoir Engineering I | 3 |
| TM3113 | Formation Testing | 3 |
| TM3211 | Reservoir Engineering | 3 |
| Total : 15 credits | | |

Minor Courses

| | | |
|---------------------------------------|---------------------------------------|---|
| Minor Program: Production Engineering | | |
| TM3104 | Production Engineering | 3 |
| TM3205 | Surface Facilities and Transportation | 3 |
| TM3206 | Artificial Lift Well Design | 3 |
| TM4107 | Well Stimulation | 3 |
| Total : 12 credits | | |

Minor Program

| | |
|-----|-------------------------|
| 120 | Geological Engineering |
| 123 | Geophysical Engineering |
| 130 | Chemical Engineering |
| 131 | Mechanical Engineering |
| 132 | Electrical Engineering |

Minor Courses

| | | |
|-------------------------------------|-----------------------------|---|
| Minor Program: Drilling Engineering | | |
| TM3101 | Drilling Engineering I Lab | 3 |
| TM3202 | Drilling Engineering II Lab | 3 |
| Total : 6 credits | | |

GEOPHYSICAL ENGINEERING

Geophysical Engineering is the science which studies the physical and dynamic aspects of the earth, which covers the activities of measurements and data processing of natural phenomena. In addition, the utilization of technology for earth resources management and natural disaster mitigation are also studied. In the Geophysical Engineering study program there are four major study groups, namely the earth resources exploration, reservoir imaging, and data processing (for example in oil, gas, geothermal, minerals resources exploration, etc.), as well as engineering and the environment.

Various interesting things often happen on parts the earth without us realizing it. For instance, the plates which formed the earth are not static, but moving and shifting slowly. We do not realize it because the shift is very subtle, yet every year there is a change of position. Then why are some areas on earth are prone to earthquakes and some are not? How is the spread of the areas that are prone to earthquake? In Geophysical Engineering such subjects are studied.

In addition to learning the theory in classes, the student will also spend time in the laboratory. In principle, the sciences to be studied are everything related to earth and its solid parts. The lecture processes also make use of several kinds of software that will be helpful in modelling the phenomena occurring in the earth.

When natural disasters such as earthquakes, landslides, and broken the slabs of the earth's crust occur, a graduate of the Geophysical Engineering is one that is most sought after because with his knowledge, he will be able to determine the mitigation of such natural disasters. Mitigation is the prevention and efforts to minimize the negative impacts of natural disasters and the means of obtaining their supporting facilities to minimize their impact.

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Curriculum of Geophysical Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1164 | Introduction to mineral and energy resources | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |

| | | |
|--------|--------|---|
| KU1001 | Sports | 2 |
|--------|--------|---|

Total Load : 19 credits

Semester III

| | | |
|--------|--------------------------------|---|
| TG2111 | General Geophysics | 2 |
| TG2101 | Geomathematics I | 3 |
| TG2102 | Geophysical Electronic | 3 |
| GL2141 | Crystallography and Mineralogy | 3 |
| GL2151 | Sedimentology | 3 |
| GL2111 | Physical Geology | 3 |

Total Load : 17 credits

Semester IV

| | | |
|--------|---------------------------|---|
| TG2205 | Wave in Geophysics | 3 |
| TG2203 | Geomathematics II | 3 |
| TG2204 | Potential Theory | 2 |
| TG2240 | Computing in Geophysics | 3 |
| GD2001 | Introduction to Surveying | 2 |
| KU206X | Religion and Ethics | 2 |

Total Load : 15 credits

Semester V

| | | |
|--------|--|---|
| TG3109 | Refraction Seismic | 3 |
| TG3110 | Geophysical Signal Processing | 2 |
| TG3120 | Seismology | 3 |
| TG3106 | Geophysical Instrumentation | 3 |
| TG3108 | Geophysical Thermodynamics and Fluid Dynamic | 3 |

| | | |
|--------|-------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
|--------|-------------------------------|---|

Total Load : 16 credits

Semester VI

| | | |
|--------|--------------------------|---|
| TG3241 | Geo-electromagnetism | 3 |
| TG3222 | Geodynamics | 2 |
| TG3262 | Geo-Statistics | 3 |
| TG3290 | Fieldwork | 3 |
| TG3261 | Seismic Data Acquisition | 3 |

| | | |
|--------|-----------------------|---|
| TG3260 | Gravity and Magnetism | 3 |
|--------|-----------------------|---|

Total Load : 17 credits

Semester VII

| | | |
|--------|--|---|
| TG4162 | Seismic Interpretation | 3 |
| TG4116 | Communication in Geophysics | 2 |
| TG4169 | Earth Crust Mechanics | 2 |
| TG4142 | Engineering and Environmental Geophysics | 3 |
| TG4092 | Final Project I | 2 |

Total Load : 12 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|--|---|
| TG4243 | Volcanology and Geothermal Exploration | 3 |
| TG4091 | Final Project II | 3 |

Total Load : 6 credits

Elective Courses

| | | |
|--------|--|---|
| TG3113 | Geophysical Inversion | 3 |
| TG4028 | Geophysical Exploration | 2 |
| TG4029 | Capita of Selecta in Geophysics | 2 |
| TG4063 | Special Topic in Geophysics | 2 |
| TG4067 | Job training | 2 |
| TG4128 | Geotomography | 3 |
| TG4166 | Rock Physics | 2 |
| TG4168 | Seismic Statigraphy | 2 |
| TG4223 | Numerical Simulation of the Earthquake | 3 |
| TG4225 | Applied Seismology | 2 |
| TG4226 | Physics of the Earth's Interior | 2 |
| TG4227 | Fault Mechanics | 2 |
| TG4264 | Seismic Inversions for Reservoir | 3 |
| TG4265 | Seismic Attributes for Reservoir | 2 |
| TG4269 | Economical Geophysics and Management | 2 |

Elective Courses offered by other Program

| | | |
|--------|------------------------|---|
| GL2212 | Structural Geology | 3 |
| GL2213 | Tectonophysics | 2 |
| GL2242 | Petrology | 3 |
| GL2252 | Principal Stratigraphy | 2 |
| GL3251 | Petroleum Geology | 3 |
| GL4052 | Well Log Analysis | 2 |
| TA4102 | Mineral Economics | 3 |
| TG5133 | Hidrogeophysics | 2 |
| TG5149 | Microseismic | 2 |
| TG5245 | Geothermal Exploration | 2 |
| TG6042 | Mining Geophysics | 2 |



METALLURGICAL ENGINEERING

Metallurgical Engineering is a field of science and engineering that uses scientific principles of physics, mathematics, and chemistry as well as engineering processes to explain in detail and depth the phenomena of mineral processing, coal beneficiation, metal extraction and manufacturing of alloys, the relationship of the metal mechanical properties with its structures, the phenomena of metal reinforcement processes as well as the phenomena of failure and degradation of metal. Three basic sciences used in developing the three basic sectors in the Metallurgical Body of Knowledge include Chemical Metallurgy, Physical Metallurgy, and Process Engineering.

To give practical basic knowledge in the industrial world, in the study period a student will be given the opportunity of at least two times to do industry visitations, conducted after completing the second year and the third year. The course is called Industry Visitation, and by the end of the third year there is Industrial Practice course.

In the Industry Visitation course, the students will have the opportunity to be familiar with industrial activities in a relatively short time, i.e. within two days. Meanwhile in the Industrial Practice course, the students are expected to observe more of a real job in the industry by being directly involved in the industrial activities for approximately one and a half months. While doing several courses, the students will also have the opportunity to carry out excursions to particular industries related to the subject taught. For example, the excursion to the metal casting industry during the Metal Casting course and visit to the cement industry during the course of Industrial Utilization of Minerals.

To enhance the knowledge about the activities in the industry or enterprise, to give entrepreneurship insights, as well as soft skills, the students will also attend sessions given by guest lecturers who are industrial practitioners periodically organized by The Department. In these lectures, the materials given are related not only to engineering operations and processes in industry, but also to management, work ethics, organization, asset management, economics, business, marketing, work safety, environmental management, and others.

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Curriculum of Metallurgical Engineering

Semester I

| | | |
|-------------------------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1164 | Introduction to mineral and energy resources | 2 |
| Total Load : 17 Credits | | |

Semester II

| | | |
|-------------------------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic of Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102x | English | 2 |
| KU1001 | Sports | 2 |
| Total Load : 19 Credits | | |

Semester III

| | | |
|-------------------------|--------------------------------|---|
| MG2111 | Unit Operations in Metallurgy | 3 |
| MG2112 | Metallurgical Thermodynamics | 3 |
| MG2113 | Applied Mathematics | 3 |
| MG2114 | Strength of Material | 3 |
| TA2101 | Crystallography and Mineralogy | 3 |
| EP2274 | Electrical Power Engineering | 2 |
| KI2142 | Physical Chemistry | 3 |
| Total Load : 20 credits | | |

Semester IV

| | | |
|-------------------------|--|---|
| MG2211 | Numerical Method | 2 |
| MG2212 | Metallurgical Transport Phenomena | 3 |
| MG2213 | Mineral Processing | 4 |
| MG2214 | Metallurgical Kinetics | 3 |
| MG2215 | Calculation in Metallurgical Processes | 4 |
| MG2216 | Physical Metallurgy | 4 |
| Total Load : 20 credits | | |

Semester V

| | | |
|-------------------------|---|---|
| MG3111 | Pyrometallurgy | 3 |
| MG3112 | Fuel and Furnaces | 2 |
| MG3113 | Phase Transformation and Heat Treatment | 4 |
| MG3114 | Beneficiation of Industrial Mineral | 2 |
| TI3004 | Engineering Economics | 2 |
| MR4004 | Engineering Management | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| Total Load : 17 credits | | |

Semester VI

| | | |
|-------------------------|--|---|
| MG3211 | Materials Characterization | 3 |
| MG3212 | Flotation Concentration | 3 |
| MG3213 | Iron and Steel Making | 3 |
| MG3214 | Hydro-Electrometallurgy | 3 |
| MG3215 | Metal Casting | 3 |
| MG3216 | Metal Corrosion Prevention and Control | 3 |
| MG3090 | Practical Work | 1 |
| Total Load : 19 credits | | |

Semester VII

| | | |
|------------------------|--|---|
| MG4111 | Metallurgy of Metal Shaping | 3 |
| MG4112 | Safety and Health in Work and Metallurgical Environments | 3 |
| Total Load : 6 credits | | |

Semester VIII

| | | |
|-------------------------|-----------------------------------|---|
| MG4090 | Final Assignment | 6 |
| MG4211 | Coal Processing and Beneficiation | 3 |
| KU206x | Religion and Ethics | 2 |
| Total Load : 11 credits | | |

Total CREDITS : 129 Credits

Elective Courses

| | | |
|--------|--|---|
| MG3011 | General Metallurgy | 2 |
| MG3017 | Mineral Processing | 3 |
| MG4012 | Biohydrometallurgy and Bioremediation | 2 |
| MG4013 | Biocorrosion and Biodeterioration | 2 |
| MG4014 | Fracture Mechanics | 2 |
| MG4015 | Powder Metallurgy | 2 |
| MG4016 | Metallurgical Failure Analysis | 2 |
| MG4017 | Experimental Design and Analysis | 3 |
| MG4018 | Process Control | 2 |
| MG4019 | Metallurgy of Rare Earth Metals | 3 |
| MG4020 | Welding Metallurgy | 2 |
| MG4021 | Ceramic Engineering | 2 |
| MG4114 | Mill Plant Design | 3 |
| MG4115 | Design of Extractive Metallurgical Plant | 3 |
| MG4116 | Alloy Design | 3 |

Elective Courses Offered by Other Program

| | | |
|--------|------------------------|---|
| EL2043 | Industrial Electronics | 3 |
| MR3005 | Project Management | 3 |
| TA4102 | Mineral Economics | 3 |
| TA4202 | Mining Policy | 2 |

Minor Program

| | |
|-----|-------------------------|
| 101 | Mathematics |
| 102 | Physics |
| 105 | Chemistry |
| 121 | Mining Engineering |
| 130 | Chemical Engineering |
| 133 | Engineering Physics |
| 134 | Industrial Engineering |
| 135 | Informatics Engineering |

Minor Courses

| | | |
|-----------------------------------|-------------------------------------|---|
| Minor Program: Mineral Processing | | |
| MG2111 | Unit Operations in Metallurgy | 3 |
| MG2213 | Mineral Processing | 4 |
| MG3114 | Beneficiation of Industrial Mineral | 2 |
| MG3212 | Flotation Concentration | 3 |
| MG4211 | Coal Process and Beneficiation | 3 |
| Total : 15 credits | | |

Minor Courses

| Minor Program: Extractive Metallurgy | | |
|--------------------------------------|--|---|
| MG2215 | Calculation in Metallurgical Processes | 4 |
| MG3111 | Pyrometallurgy | 3 |
| MG3112 | Fuel and Furnaces | 2 |
| MG3213 | Iron and Steel Making | 3 |
| MG3214 | Hydro-electrometallurgy | 3 |





FACULTY OF INDUSTRIAL TECHNOLOGY

Faculty of Industrial Technology (FTI) was established in 1973, but the study programs under this faculty have started their academic activities long before the faculty was established. With new policies in ITB, the number of study programs under the faculty was reduced. Several study programs initially put under the faculty were taken out and built into separate schools/faculties. These changes were carried out for the similarity in their respective fields of study. Electrical Engineering and Informatics Engineering study programs are now unified in School of Electrical and Informatics Engineering (STEI). On the other hand, Mechanical Engineering, Aerospace Engineering, and Material Engineering are now established under Faculty of Mechanical and Aerospace Engineering (FTMD)

FTI is comprised of four study programs, i.e Chemical Engineering, Engineering Physics, Industrial Engineering and Engineering Management. Knowledge in this faculty is deeply connected with technical and engineering topics. In this faculty, not only students will acquire practical and technical knowledge, but also learn more strategic skills while building a broader and more systematic mindset. These are the key matters which distinguish an engineer from mechanic.

Dean

: Prof. Dr. Ir. Deddy Kurniadi, M.Eng.

Vice Dean for Academic Affairs

: Dr. Tjokorde Walmiki Samadhi, ST, MT.

Vice Dean for Resource Planning and Management : Suprayogi, ST, MT, Ph.D.

CHEMICAL ENGINEERING

Chemical Engineering is an engineering discipline, which studies the design and operation of commercial-scale chemical processes in safe, sustainable, and profitable manners. These processes encompass various processing steps utilizing chemical and biochemical reactions, and changes in physical and chemical properties of materials to convert their physical state, energy content, and/or chemical compositions, resulting in various commercially valuable products. Practical everyday life is virtually impossible without the use of products generated by various chemicals processing worldwide. These products include the materials we use for our clothing, the fuel we use to power our cars and motorcycles, various petrochemicals that are used for farmland fertilizers, plastics, explosives, and plenty more; various pharmaceutical products we consume to maintain our health, and even the very foods that we consume everyday to sustain ourselves.

In the design of chemical processes, Chemical Engineers transform laboratory-scale chemical reactions into commercial-scale production processes by determining the sequencing of major process operations, calculating the materials and energy flow between these operations, selecting the proper type and size of equipment to perform these operations, calculating the requirements for process utilities – cooling water, fuel, steam, electricity, and so on – necessary to support the operation of the entire process, and developing a layout of the processing facility. Chemical Engineers also make effective use of economic principles to evaluate the profitability of a processing facility.

In the operation of chemical processes, Chemical Engineers use their knowledge in thermodynamics, heat transfer, mass transfer, fluid mechanics, and process control to understand the steady and dynamic behavior of the processes. This understanding enables them to safely operate the processing facility using various process instruments and control systems, to evaluate the performance of existing processes, and to modify existing processes to ensure that they remain competitive and reliable.

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Companies and institutions that employ Chemical Engineering graduates include Engineering-Procurement-Construction (EPC) companies, bulk and fine chemicals producers, upstream oil and gas production and services, petroleum refineries, fast-moving consumer goods (FMCG) corporations, pharmaceutical companies, food industries, chemical trading companies, research laboratories, and others. In these lines of businesses, Chemical Engineering graduates are typically employed as design and/or operations process engineers, product development engineers, supply-chain engineers, process safety engineers, and sales engineers. Chemical Engineering graduates' unique process- and balance-oriented logic of reasoning enables them to be effectively employed in areas or professions not directly related to chemical processing facilities. These include engineering and business consulting firms, financial institutions such as banks and investment securities companies, government agencies, and many more. Ultimately, the well-rounded transferable skills learned by Chemical Engineering graduates complement their engineering and scientific knowledge in enabling them to start and foster their own businesses.

The Chemical Engineering Undergraduate Program at ITB is the oldest Chemical Engineering higher education institution in Indonesia, being established in 1941. It is also the first Chemical Engineering undergraduate program in Indonesia to receive international accreditation. The Chemical Engineering Undergraduate Program at ITB is a 4-year, 144 credits total course load program leading to the Sarjana Teknik (ST, equivalent to BS or B.Eng) degree.

The curriculum and learning process in the Chemical Engineering Undergraduate Program at ITB are designed to instill strong scientific and professional character in our graduates, which shall serve as competence basis to enable them to achieve the following objectives:

1. Progressing in their chosen profession through the practice of Chemical Engineering principles and methods in technical, managerial, other relevant career paths.
2. Becoming effective constructive team members in their chosen profession by applying and developing their own communications and leadership skills.
3. Having the desire and capacity to continuously improve themselves through advanced-degree studies, professional certifications, and/or active involvement in professional development activities in their employment.

Curriculum of Chemical Technology Subprogram (Required)

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102x | English | 2 |
| KU1267 | Engineering Drawing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--|---|
| TK2101 | Introduction to Chemical Engineering | 2 |
| TK2102 | Measurement and Analytical Methods | 3 |
| TK2103 | Chemical Engineering Thermodynamics | 3 |
| TK2104 | Chemical Engineering Mathematical Analysis | 2 |
| TK2105 | Chemical Engineering Statistics | 2 |
| TK2106 | Chemical Engineering Computation | 3 |
| TK2107 | Fluid and Particle Mechanics | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|---------------------------------|---|
| KI2051 | Organic Chemistry | 3 |
| TK2201 | Mass and Energy Balances | 3 |
| TK2202 | Chemical Reaction Engineering I | 3 |
| TK2203 | Heat Transfer Operations | 3 |

Total Load : 12 credits

Semester V

| | | |
|--------|--|---|
| TK3101 | Separation Processes | 3 |
| TK3102 | Process Utility Systems | 3 |
| TK3103 | Chemical Reaction Engineering II | 3 |
| TK3001 | Chemical Engineering Elementary Laboratory | 3 |
| KU206x | Religion and Ethics | 2 |

Total Load : 14 credits

Semester VI

| | | |
|--------|---|---|
| TK3201 | Transport Phenomena | 3 |
| TK3202 | Process Control | 3 |
| TK3203 | Environment Management in Chemical Industry | 2 |
| TK3204 | Engineering Materials | 3 |
| TK3205 | Industrial Chemical Processes | 2 |
| TK3002 | Process Technology Laboratory | 2 |

Total Load : 15 credits

Semester VII

| | | |
|--------|---|---|
| TK4090 | Industrial Internship | 2 |
| TK4091 | Interdisciplinary Project for Chemical Engineering | 2 |
| TK4092 | Chemical Engineering Research I | 2 |
| TK4101 | Process Design | 3 |
| TK4102 | Process Performance Evaluation | 2 |
| TK4103 | Chemical Engineering Economics and Project Management | 3 |
| TK4104 | Chemical Product Design | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester VIII

| | | |
|--------|---|---|
| TK4201 | Chemical Engineering Professional Seminar | 1 |
| TK4202 | Process Plant Safety | 3 |
| TK4203 | Process Equipment | 3 |
| TK4093 | Chemical Engineering Research II | 3 |
| TK4094 | Chemical Plant Design | 4 |
| TK4099 | Comprehensive Examination | 1 |

Total Load : 14 credits

Total CREDITS : 127 Credits

Curriculum of Bioprocess Technology Subprogram (Required)

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102x | English | 2 |
| KU1267 | Engineering Drawing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--|---|
| TK2101 | Introduction to Chemical Engineering | 2 |
| TK2102 | Measurement and Analytical Methods | 3 |
| TK2103 | Chemical Engineering Thermodynamics | 3 |
| TK2104 | Chemical Engineering Mathematical Analysis | 2 |
| TK2105 | Chemical Engineering Statistics | 2 |
| TK2106 | Chemical Engineering Computation | 3 |
| TK2107 | Fluid and Particle Mechanics | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|----------------------------------|---|
| KI2051 | Organic Chemistry | 3 |
| TK2201 | Mass and Energy Balances | 3 |
| TK2202 | Chemical Reaction Engineering I | 3 |
| TK2203 | Heat Transfer Operations | 3 |
| TK2204 | Industrial Microbiology | 2 |
| TK2205 | Biomolecules in Cellular Systems | 3 |

Total Load : 17 credits

Semester V

| | | |
|--------|--|---|
| TK3101 | Separation Processes | 3 |
| TK3102 | Process Utility Systems | 3 |
| TK3104 | Fundamentals of Bioprocess Technology | 3 |
| TK3001 | Chemical Engineering Elementary Laboratory | 3 |
| KU206x | Religion and Ethics | 2 |

Total Load : 14 credits

Semester VI

| | | |
|--------|---|---|
| TK3201 | Transport Phenomena | 3 |
| TK3202 | Process Control | 3 |
| TK3203 | Environment Management in Chemical Industry | 2 |
| TK3206 | Bioreactor Design and Analysis | 3 |
| TK3207 | Enzyme Technology | 2 |
| TK3002 | Process Technology Laboratory | 2 |

Total Load : 15 credits

Semester VII

| | | |
|--------|---|---|
| TK4090 | Industrial Internship | 2 |
| TK4091 | Interdisciplinary Project for Chemical Engineering | 2 |
| TK4092 | Chemical Engineering Research I | 2 |
| TK4101 | Process Design | 3 |
| TK4102 | Process Performance Evaluation | 2 |
| TK4103 | Chemical Engineering Economics and Project Management | 3 |
| TK4104 | Chemical Product Design | 2 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester VIII

| | | |
|--------|---|---|
| TK4201 | Chemical Engineering Professional Seminar | 1 |
| TK4202 | Process Plant Safety | 3 |
| TK4093 | Chemical Engineering Research II | 3 |
| TK4095 | Bioprocess Plant Design | 4 |
| TK4099 | Comprehensive Examination | 1 |

Total Load : 12 credits

Total CREDITS : 130 Credits

Elective Courses

| | | | | | |
|--------|---|---|--------|--|---|
| TK2081 | Elementary Thermodynamics B | 2 | TK4043 | Selected Topics in Process Design B | 3 |
| TK3081 | Elementary Thermodynamics A | 3 | TK4044 | Thermal Systems in Analysis B | 3 |
| TK3082 | Introduction to Transport Phenomena A | 3 | TK4045 | Biomass Refinery Technology | 3 |
| TK3083 | Chemical Industries | 3 | TK4046 | Fundamentals of Process Metallurgy | 3 |
| TK4001 | Chemical Engineering Independent Study A | 2 | TK4047 | Energy Storage Systems Engineering | 3 |
| TK4002 | Chemical Engineering Independent Study B | 1 | TK4048 | Metabolite Product Processing | 3 |
| TK4003 | Starch Processing Technology | 3 | TK4049 | Composite Materials Processing Technology | 3 |
| TK4004 | Plantation Crop Processing Technology | 3 | TK4050 | Water Production Technology | 3 |
| TK4005 | Aquatic Food Resources | 3 | TK4051 | LNG and LPG Technologies | 3 |
| TK4006 | Selected Topics on Engineering Economics | 3 | TK4052 | Solid State Bioreactor Technology | 3 |
| TK4007 | Microbial Metabolism | 3 | TK4053 | Renewable Fuels Technology | 3 |
| TK4008 | Downstream Processing in Bioprocess Industries | 3 | TK4054 | Vegetable Oil and Lipid Processing | 3 |
| TK4009 | Industrial Bioprocesses | 3 | TK4055 | Cogeneration System Technology | 3 |
| TK4010 | Food Products Packaging Technology | 3 | TK4056 | Selected Topics in Separation Processes B | 3 |
| TK4011 | Food System Hydrocolloid Technology | 3 | TK4057 | Chemical Engineering Systems Optimization B | 3 |
| TK4012 | Project Feasibility Evaluation | 3 | TK4058 | Selected Topics in Chemical Reaction Engineering B | 3 |
| TK4013 | Biopolymer Technology | 3 | TK4059 | Analysis and Troubleshooting of Process Systems B | 3 |
| TK4014 | Chemical Engineering Business Development | 2 | TK4060 | Plasma Processing Technology | 3 |
| TK4015 | Chemical Process Development | 3 | TK4061 | Energy Management B | 3 |
| TK4020 | Chemical Process Project Management | 3 | TK4062 | Process Systems Dynamic Modeling B | 3 |
| TK4021 | Food, Energy, Water and the Society | 3 | TK4063 | Selected Topics in Process Computation B | 3 |
| TK4022 | Industrial Applications of Plant-Based Proteins | 3 | TK4064 | Multiphase Flow B | 3 |
| TK4023 | Chemurgy Process Technology | 3 | TK4065 | Food Product Development B | 3 |
| TK4024 | Polymer Engineering Technology | 3 | TK4066 | Selected Topics on Chemical Product Design B | 3 |
| TK4025 | Process Nanotechnology | 3 | TK4067 | Selected Topics on Waste Processing B | 3 |
| TK4026 | Particulate Processing Technology | 3 | TK4068 | Microsystems Process Technology | 3 |
| TK4027 | Coal Chemistry and Technology | 3 | TK4069 | Selected Topics in Bioprocess Engineering B | 3 |
| TK4028 | Plastic Waste Processing Technology | 3 | TK4070 | Radiative Heat Transfer B | 3 |
| TK4029 | Industrial Membrane Process | 3 | TK4071 | Selected Topics on Process Equipment B | 3 |

| | | | | | |
|--------|--|---|--------|---|---|
| TK4030 | Industrial Electrochemical Technology | 3 | TK4072 | Selected Topics on Process Safety B | 3 |
| TK4031 | Corrosion Prevention Technology | 3 | TK4073 | Polymer Processing Technology B | 3 |
| TK4032 | Sustainable Process Technology | 3 | TK4074 | Renewable Energy Technology B | 3 |
| TK4033 | Petroleum and Natural Gas Upstream Processes | 3 | TK4075 | Product Life Cycle Analysis B | 3 |
| TK4034 | Petroleum Refining Processes | 3 | TK4076 | Statistical Experiment Design | 3 |
| TK4035 | Catalysts and Catalysts B | 3 | TK4077 | Gas-Liquid Reactor Design B | 3 |
| TK4036 | Gas Processing Technology B | 3 | TK4078 | National Industrial Policy B | 3 |
| TK4037 | Environmental Biotechnology B | 3 | TK4079 | Selected Topics on Bioenergy Technology B | 3 |
| TK4038 | Process Statistics | 3 | TK4080 | Cryogenic Technology B | 3 |
| TK4039 | Combustion Technology | 3 | TK4081 | Elementary Process Technology | 3 |
| TK4040 | Process Intensification Technology | 3 | TK4082 | Chemical Product Development | 3 |
| TK4041 | Elementary Ceramic Technology | 3 | TK4083 | Chemical Process Development | 3 |
| TK4042 | Industrial Furnace Technology | 3 | TK4084 | Reactor Mechanical Design B | 3 |

Minor Courses

Minor Program : General

| | | |
|--------|---------------------------------------|---|
| TK2103 | Mass Energy and Balances | 3 |
| TK2104 | Chemical Engineering Thermodynamics 1 | 2 |
| TK2106 | Fluid and Particle Mechanics | 3 |
| TK2202 | Heat Transfer | 3 |
| TK3101 | Separation Processes 1 | 3 |
| TK3102 | Chemical Reaction Engineering | 3 |
| TK3103 | Utility Systems | 3 |
| TK3204 | Chemical Process Industries | 2 |

Total : 22 credits

Minor Program

| | |
|-----|------------------------|
| 105 | Chemistry |
| 131 | Mechanical Engineering |
| 133 | Engineering Physics |
| 134 | Industrial Engineering |



Doc. Faculty of Industrial Technology

ENGINEERING PHYSICS

Engineering Physics (Teknik Fisika) is a program to ace the state-of-the-art science and technology in physics and to excel the multi-disciplinary engineering challenges. The program core competences authorize its graduates to become influential engineers, consultants, system integrators, innovators, researchers, and technopreneurs. Over 2000 alumni have achieved prominent careers in the fields of industrial control & automation; medical instrumentation; intelligent building with integrated air conditioning; lighting, acoustics, and energy conservation; as well as advanced material processing & nanotechnology design. Many of the Engineering Physics alumni lead national and multi-national corporates, including oil & gas companies, electrical plants, process & manufacturing industries, engineering design and contractors.

To achieve such an inspiring educational objectives, the Engineering Physics curriculum cements a strong fundamental engineering knowledge and successively develop specific engineering expertises. The engineering subjects comprise mechanics, fluid mechanics, thermodynamics; electric, magnetic and digital systems; up to energy and wave, quantum physics, and applied maths. These broad and cutting-edge knowledge ensures Engineering Physics graduates to adeptly lead multi-disciplinary team and to innovate on new and & emerging technologies.

In response to the current industrial advancement, the Engineering Physics Program establishes eminence fields of expertise on instrumentation & control; built environment & energy system; and advanced material design and processing. Computer modeling and programming are extensively carried out in the classroom courses, harmoniously with hands on engineering experiences in instructional and research laboratories. This approach maximizes the student capacities in implementing advanced engineering design and innovating creative engineering solutions.

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The Engineering Physics curriculum is designed to craft the graduate competencies to meet industrial proficiencies, as well as to pursue graduate studies. Strong foundation in math, physics and chemistry are covered in the first year, along with an introduction to engineering design to nurture student interest in engineering issues. In the second year, students immerse in broad fundamental engineering subjects. This prepare them to develop engineering expertises in the third year, such as measurement methods, signal processing, automatic control, acoustics, thermal analysis, and physics of materials.

In conjunction, the skill of Engineering Physics students is honed by a series of laboratory works. From the third to the fifth semester, students are trained to develop electronics circuits, microprocessor & embedded systems, and instrumentation devices. At the sixth semester, students may experiment with lighting & acoustics in buildings, refrigerator & air conditioning, and industrial control systems. The wide knowledge and thorough skills of the Engineering Physics program have given immediate advantages to the students, as they have been successfully participating in various competitions on applied science as well as innovative technology.

The final year in Engineering physics is the shaping stage of the students. To harbor the professionalism, each student has to experience a 2 months industrial job training, and then conduct a multidisciplinary project by working together with the students of other programs in the Faculty of Industrial Technology. Meanwhile, they also given the freedom to take at least four elective courses to sharpen their specialization. Lastly for graduating, a team of two students is required to finish the Design and Experimental Method course, followed by the Final Project in two semesters, thus giving them the opportunity to conduct a long research and development process. After all of these endeavour, the students should be ready to work toward a professional engineer, or to pursue higher degree of education.

We now live in the age of technological convergence. Industries with specialized narrow business are shrinking down because innovations grow at the intersect of those industries. Engineering Physics program just has the right curriculum for excelling in this era since people who are the "jacks of all trades, masters of some", will be better suited to harness these 21st-century opportunities.



Curriculum of Engineering Physics

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |
| KU1267 | Engineering Drawing | 2 |

Total Load : 19 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 17 credits

Semester III

| | | |
|--------|-----------------------------------|---|
| TF2101 | Engineering Mathematics I | 3 |
| TF2102 | Probability and Statistics | 3 |
| TF2103 | Mechanic of Materials | 2 |
| TF2104 | Thermodynamics | 3 |
| TF2105 | Electric Circuits and Electronics | 4 |
| TF2106 | Electromagnetics | 3 |
| TF2107 | Engineering Physics Laboratory I | 1 |

Total Load : 19 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| TF2201 | Engineering Mathematics II | 3 |
| TF2202 | Engineering Computation | 2 |
| TF2203 | Digital and Logic Systems | 3 |
| TF2204 | Fluid Mechanics | 3 |
| TF2205 | Wave Phenomena | 3 |
| TF2206 | Energy Conversion | 3 |
| TF2207 | Engineering Physics Laboratory II | 1 |

Total Load : 18 credits

Semester V

| | | |
|--------|------------------------------------|---|
| TF3101 | System Dynamics and Simulation | 2 |
| TF3102 | Measurement Methods | 3 |
| TF3103 | Quantum Mechanics | 3 |
| TF3104 | Sensor and Actuator | 3 |
| TF3105 | Heat and Mass Transfer | 3 |
| TF3106 | Engineering Physics Laboratory III | 1 |
| TF3107 | Signal Processing | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|-----------------------------------|---|
| TF3201 | Physics of Materials | 3 |
| TF3202 | Environment and Energy | 2 |
| TF3203 | Automatic Control | 3 |
| TF3204 | Acoustics | 3 |
| TF3205 | Thermal Systems Design | 3 |
| TF3206 | Engineering Physics Laboratory IV | 1 |

Total Load : 15 credits

Semester VII

| | | |
|--------|--|---|
| TF4001 | Engineering Ethics and Industrial Job Training | 2 |
| TF4101 | Engineering Physics Multi Disciplinary Project | 2 |
| MR4004 | Engineering Management | 2 |
| TF4091 | Design and Experimental Methods | 2 |
| KU206X | Religion and Ethics | 2 |
| | Elective Courses | 6 |

Total Load : 16 credits

Total CREDITS : 134 Credits

Semester VIII

| | | |
|--------|---|---|
| TF4002 | Capita Selecta of Engineering Physics | 1 |
| TF4092 | Final Project and Comprehensive Examination | 3 |
| KU2071 | Pancasila and Civic Education | 2 |
| | Elective Courses | 6 |

Total Load : 12 credits

Elective Courses

| | | | | | |
|--------|--|---|--------|--|---|
| TF4010 | Building Physics | 3 | IK5001 | Medical Instrumentation | 3 |
| TF4011 | Thermal Environmental Engineering | 3 | IK5002 | Acoustic Instrumentation | 3 |
| TF4012 | Lighting Engineering | 3 | IK5003 | Safety Instrumented System | 3 |
| TF4013 | Energy Conservation | 3 | IK5004 | Process Control | 3 |
| TF4014 | Energy System | 3 | IK5005 | Intelligent Computation | 3 |
| TF4020 | Lasers and Fiber Optics | 3 | IK5006 | Communication and Network System | 3 |
| TF4021 | Optics | 3 | IK5007 | Mechatronics and Robotics | 3 |
| TF4022 | Medical Physics | 3 | TF5011 | Noise Control | 3 |
| TF4023 | Industrial Instrumentation and Control | 3 | TF5012 | Sound System Design | 3 |
| TF4024 | Imaging Techniques | 3 | TF5013 | Room Acoustic Design | 3 |
| TF4025 | Ultrasonics | 3 | TF5014 | Lighting Design | 3 |
| TF4026 | Modern Control | 3 | TF5015 | Design of Thermal Environmental System | 3 |
| TF4027 | Digital Control | 3 | TF5021 | Nano Science and Nano Technology | 3 |
| TF4028 | Intelligent Control Systems | 3 | TF5022 | Electronic Materials | 3 |
| TF4029 | Robust Hybrid Control | 3 | TF5023 | Ceramic Materials | 3 |
| TF4030 | Materials Processing Technology | 3 | TF5024 | Thermodynamic of Materials | 3 |
| TF4031 | Materials Characterization Techniques | 3 | TF5025 | Molecular Dynamics Simulation | 3 |
| TF4032 | Computational Material Science | 3 | TF5026 | Simulation and Computational Materials | 3 |
| TF4033 | Statistical Thermodynamics | 3 | TF5031 | SCADA Systems | 3 |
| TF4041 | Special Topic A | 3 | TF5032 | Plant Automation | 3 |
| TF4042 | Special Topic B | 3 | TF5033 | Plant Information Systems | 3 |
| | | | TF5034 | Building Management Systems | 3 |

Minor Department

| | |
|-----|------------------------|
| 130 | Chemical Engineering |
| 132 | Electrical Engineering |
| 134 | Industrial Engineering |



INDUSTRIAL ENGINEERING

Industrial Engineering is the science in which studies knowledge, approaches, principles, mindset, and skills rooted in engineering sciences and designing processes. The object designed in this field of study is not a physical objects such as building, engine or airplanes, but an integrated system consists of human, machines, materials, energy, and information.

The main focus in this particular system design is in optimizing operational performance, in an effective, efficient, and productive way. Elimination of waste from operation performance is a key to be more efficient and productive. Recently the waste is not only regarding time, costs, and energy but also includes waste to environment that end up with the issues of green and sustainable manufacturing system. The rapid development of information technology such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Enterprise Resource Planning (ERP), e-Business, and others information technology and information system, provides a new way to optimize operational performance for industrial engineers which also reflected in the practices of industrial engineers.

The term industry in industrial engineering encompasses not only manufacturing industries, but also banks, hospital, trading companies, and various others. Keeping this in mind, the graduates of the Industrial Engineering are able to work in both manufacturing and services industries although the education process uses manufacturing system as model for learning industrial engineering knowledge and skills.

In this study program students will also learn topics of management and social sciences such as industrial psychology, organization behavior, economy, and cost accounting. These sciences are necessary to support the design process of an integrated system. Keep in mind that one main elements of integrated system is human. That particular knowledge, besides of Human Factors Engineering, is important and serves as a particular valuable competency since the science of Industrial Engineering bridges the technical aspects with human aspects, financial aspects, organizational aspects, and more. This knowledge is also supported by educational methods which encourage students to think critically with actual and up-to-date examples as well as series of group design projects. This series of group design projects includes process planning, work system design, assembly line design, production control design, quality control system design, information system design, organization design, and facility layout design.

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Curriculum of Industrial Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design 1 | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1267 | Engineering Drawing | 2 |
| KU1072 | Introduction to Information Technology | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--|---|
| MS2150 | Engineering Material | 2 |
| TI2101 | Introduction to Industrial Engineering | 2 |
| TI2102 | Probability Theory | 2 |
| TI2103 | Introduction to Economics | 2 |
| TI2104 | Database System | 3 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 19 credits

Semester IV

| | | |
|--------|-------------------------------------|---|
| MR2103 | Industrial Electronics | 2 |
| TI2201 | Industrial Statistics | 3 |
| TI2001 | Operational Research I | 3 |
| TI2202 | Ergonomics | 2 |
| TI2203 | Industrial Psychology | 2 |
| TI2204 | Manufacturing Process | 2 |
| TI2002 | Integrated System Design Practice I | 1 |

Total Load : 17 credits

Semester V

| | | |
|--------|--------------------------------------|---|
| TI3101 | Cost Analysis | 3 |
| TI3102 | Operational Research II | 3 |
| TI3103 | System Modeling | 3 |
| TI3001 | Production Planning and Control | 2 |
| TI3104 | Quality Assurance and Control | 3 |
| TI3002 | Work System Engineering | 2 |
| TI3105 | Production Automation | 2 |
| TI3003 | Integrated System Design Practice II | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|---|---|
| TI3004 | Engineering Economics | 2 |
| TI3201 | Occupational Health, Safety and Environment | 2 |
| TI3202 | Production System | 2 |
| TI3005 | Industrial Enterprise Management and Organization | 2 |
| TI3203 | Computer Simulation | 3 |
| TI3006 | Information System Analysis and Design | 3 |
| TI3007 | Integrated System Design Practice III | 2 |
| KU206x | Religion and Ethics | 2 |

Total Load : 20 credits

Semester VII

| | | |
|--------|---|---|
| TI4001 | Interdisciplinary Engineering Project | 2 |
| TI4090 | Industrial Engineering Internship | 2 |
| TI4101 | Facility Layout Design | 3 |
| TI4104 | Entrepreneurship and Enterprise Development | 3 |
| TI4105 | ERP System | 2 |
| TI4002 | Integrated System Design Practice IV | 1 |
| TI4091 | Final Project I | 2 |
| | Elective Course | 3 |

Total Load : 18 credits

Total CREDITS : 146 Credits

Semester VIII

| | | |
|--------|------------------|----|
| TI4092 | Final Project II | 5 |
| | Elective Courses | 12 |

Total Load : 17 credits

Elective Courses

| | | |
|--------|--|---|
| TI2003 | Cost Estimation | 3 |
| TI4004 | Industrial Management B | 2 |
| TI4004 | Industrial Management A | 3 |
| TI4106 | Multivariate Analysis | 3 |
| TI4107 | Stochastic Modeling | 3 |
| TI4108 | Capita Selecta of Industrial Engineering | 3 |
| TI4109 | Financial Management | 3 |
| TI4110 | Jig and Fixture | 3 |
| TI4201 | Experimental Design | 3 |
| TI4202 | Decision Support System | 3 |
| TI4203 | Marketing Management | 3 |
| TI4204 | Human Resource Management | 3 |
| TI4205 | Flexible Manufacturing System | 3 |

Minor Program Course

| | | |
|--------|---|---|
| TI2001 | Operational Research I | 3 |
| TI3001 | Production Planning & Control | 2 |
| TI3002 | Work System Design | 2 |
| TI4104 | Enterprise Development and Entrepreneurship | 3 |
| TI3004 | Engineering Economics | 2 |
| TI3006 | Information System Analysis and Design | 3 |

Minor Program

| |
|----------------------------|
| Mechanical Engineering |
| Informatics |
| Product Design |
| Regional and City Planning |

ENGINEERING MANAGEMENT

Engineering Management is dealing with leading and managing organizational change due to adoption of new technology as well as market competition. The science is rooted in engineering analysis and design, management of technology, products and processes, as well as economic, organizational and management.

Every industrial business who wants to continue to survive and thrive requires a process of renewal on technology and other aspects related to systems engineering. This renewal process follows a different process from the process of operational management. Operational management process focused on productivity and efficiency, while the renewal process focused on increasing the competitiveness and the creation of added value of different approaches.

The renewal process include, among others, implementation of new technologies both from the company owned research and development and by obtaining license or transferring technology, the application of new methods, such as Enterprise Resource Planning (ERP), CAD-CAM, etc., development of new products or new production processes, market expansion and application of methods of distribution/marketing of new, and so on. The renewal process is the result of a rational decision based on a sound analysis of the situation on market competition and the advancement of related technology in order to maintain the competitiveness of the company.

The current industry environment is very dynamic and turbulent marked with shorter product life cycle, rapid technological change, demand for products and services that are increasingly diverse, global and a very tight competition. All of these increasingly require systematic management process of renewal so that it can maintain business continuity industry. This development raises the need for experts who understand the context of the renewal of engineering and correspondent management systems issues and are able to manage projects and risks of renewal and preparing the organization to changes properly.

In Indonesia, the need is increasingly deemed along with the development and ongoing renewal of the industry. Development and renewal of the industry is essentially the formation of new industries that are competitive and meet the needs of the market. Development and renewal requires mastery of engineering management in order to transform the organization properly. Therefore, in the work market, the engineering management graduates are suitable for the position of business development and also the position of technical sales people, management consultant and system engineers.

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Curriculum of Engineering Management

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesia Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102X | English | 2 |
| KU1267 | Engineering Drawing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--|---|
| MR2101 | Introduction to Engineering Management | 2 |
| MR2102 | Statistics I | 2 |
| MR2103 | Industrial Electronics | 2 |
| TI2003 | Cost Estimation | 3 |
| TI3004 | Engineering Economics | 2 |
| TK2081 | Elementary Thermodynamics B | 2 |

Total Load : 13 credits

Semester IV

| | | |
|--------|--|---|
| MR2201 | Statistics II | 3 |
| MR2202 | Quantitative Method I | 2 |
| TI2204 | Manufacturing Process | 2 |
| MR2203 | Planning Theory and Methodology | 3 |
| MR2204 | Innovation System and Entrepreneurship | 3 |
| MR2205 | Managerial Economics | 3 |
| MR2001 | Engineering Management Practice I | 1 |

Total Load : 17 credits

Semester V

| | | |
|--------|---|---|
| MR3101 | Quantitative Method II | 2 |
| MR3102 | Introduction to Human Factors Engineering | 3 |
| MR3001 | Marketing Research | 3 |
| MR3002 | Management Technology | 3 |
| MR3003 | Planning and Product Development | 3 |
| MR3103 | System Supply Chain | 2 |
| MR3004 | Engineering Management Practice II | 2 |

Total Load : 18 credits

Semester VI

| | | |
|--------|--|---|
| MR3201 | Business Process and Organization Design | 3 |
| MR3202 | Quality Engineering | 3 |
| MR3203 | Information Systems Planning | 3 |
| MR3005 | Project Management | 3 |
| MR3006 | Engineering Management Practice III | 2 |
| | Elective Courses | 4 |

Total Load : 18 credits

Semester VII

| | | |
|--------|---|---|
| MR4001 | Interdisciplinary Engineering Project | 2 |
| MR4090 | Engineering Management Internship | 2 |
| MR4101 | Occupational Health, Safety and Environment | 2 |
| MR4102 | Risk Analysis and Feasibility | 3 |
| MR4103 | Project Financing | 3 |
| MR4092 | Final Project I | 2 |
| MR4003 | Practicum Engineering Management IV | 1 |
| | Elective Courses | 3 |

Total Load : 18 credits

Total CREDITS : 145 Credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| TI4093 | Final Project II | 5 |
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| | Elective Courses | 5 |

Total Load : 14 credits

Elective Courses

| | | |
|--------|---|---|
| MR4004 | Engineering Management | 2 |
| MR4104 | Market Intelligence | 3 |
| MR4105 | Technology Forecast | 3 |
| MR4106 | Value Engineering | 3 |
| MR4107 | Contract Management | 3 |
| MR4203 | Marketing Strategy | 3 |
| MR4204 | Decision Analysis | 3 |
| MR4205 | Procurement and Outsourcing | 3 |
| MR4206 | Engineering Management Capita Selection | 3 |

Minor Program Course

| | | |
|--------|----------------------------------|---|
| MR2205 | Managerial Economics | 3 |
| MR3001 | Marketing Research | 3 |
| MR3002 | Management Technology | 3 |
| MR3003 | Product Planning and Development | 3 |
| MR4102 | Risk Analysis and Feasibility | 3 |

Minor Program

Mechanical Engineering

Chemical Engineering

Product Design

BIOENERGY & CHEMURGY ENGINEERING

Bioenergy and Chemurgy Engineering program is established with the goal that Indonesian's next generation could gain benefit from the nation's natural resources to lead Indonesia economy with bio-based resources. The students will be taught and trained with the knowledges of the industrial productions of bioenergy fuels and bio-chemical products.

Due to the scarcity of the fossil fuel with the hight cost economy, there is a need to set up the new economy way using bio-based products as commodities. This study program prepares the students to be as the doers for the bio-based economy in the future with the knowlege and the competence in the production of bioenergy and bio-chemical products.

Bioenergy and Chemurgy Engineering curriculum is structured by

- Courses with 144 total credits
- 4 years or 8 semesters program
- First common year program ITB
- Second year with class courses and laboratory courses
- Third year with Bioenergy and Chemurgy Engineering Laboratory duties and industrial internship
- Fourth year with food plant design, food product design, food research and comprehensive examination as considered to be heavy activities

Bioenergy and Chemurgy Engineering program is an engineering study that has the same family with the Chemical Engineering program. This program aims to play a role in tackling national issues and prepare the nation to face the global competition. Bioenergy and Chemurgy Engineering graduates are expected to become experts and being competent in the field of Bioenergy and Chemurgy technology, being able to innovate in a very competitive post-harvest system globally, and to contribute on the scientific developments nationally and internationally.

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Curriculum of Bioenergy & Chemurgy Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102x | English | 2 |
| KU1267 | Engineering Drawing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--|---|
| TB2101 | Process Engineering Mathematical Analysis | 2 |
| TB2102 | Bioenergy and Chemurgy Processing Thermodynamics | 3 |
| TB2104 | Basics Microbiology | 3 |
| TB2202 | Reaction and Enzyme Kinetics | 3 |
| TK2102 | Analytical and Measurement Methods | 3 |
| KI2051 | Organic Chemistry | 3 |
| KI21xx | Natural Products Chemistry | 2 |

Total Load : 19 credits

Semester IV

| | | |
|--------|---|---|
| TB2103 | Bioenergy and Chemurgy Processing Computation | 3 |
| TB2203 | Fluid and Heat Transfer Operations | 3 |
| TB2204 | Bioresources Production Technology | 2 |
| TB2205 | Introduction of Renewable Electricity | 2 |
| TK2105 | Chemical Engineering Statistics | 2 |
| TK2201 | Mass and Energy Balance | 3 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 17 credits

Semester V

| | | |
|--------|-------------------------------------|---|
| TB3001 | Bioenergy Engineering Laboratory | 2 |
| TB3101 | Diffusional Process Separation | 3 |
| TB3102 | Bioenergy and Chemurgy Technology 1 | 3 |
| TB3103 | Fermentation Technology | 2 |
| TB4102 | Waste Management in Industry | 2 |
| TK3104 | Chemical Reaction Engineering | 3 |
| | Elective Course | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|-------------------------------------|---|
| TB3002 | Chemurgy Technology Laboratory | 2 |
| TB3201 | Cogeneration Technology | 2 |
| TB3202 | Bioenergy and Chemurgy Technology 2 | 3 |
| TB3203 | Bio-based Chemical Products | 3 |
| TB3204 | Sustainable Bioenergy | 2 |
| TK3201 | Transport Phenomena | 3 |
| TK3202 | Process Control | 3 |

Total Load : 18 credits

Semester VII

| | | |
|--------|--|---|
| TB4090 | Industrial Internship | 2 |
| TB4091 | Bioenergy and Chemurgy Engineering Interdisciplinary Project | 2 |
| TB4092 | Bioenergy and Chemurgy Engineering Research 1 | 2 |
| TB4101 | Bioenergy and Chemurgy Process Design | 3 |
| TB4103 | Bioenergy and Chemurgy Processing Economics and Management | 3 |
| TB4104 | Bio-based Polymer and Composite | 2 |
| TB4105 | Products Life Cycle Analysis | 3 |

Total Load : 17 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|---|---|
| TB4093 | Bioenergy and Chemurgy Engineering Research 2 | 3 |
| TB4094 | Bioenergy and Chemurgy Plant Design | 4 |
| TB4098 | Comprehensive Examination | 1 |
| KU206X | Religion and Ethics | 2 |
| | Elective Courses | 9 |

Total Load : 19 credits

Elective Courses Bioenergy & Chemurgy Engineering

| | | |
|--------|---|---|
| PG40XX | Foods and Beverages Technology | 3 |
| PG40XX | Sugar and Sweetener | 3 |
| PG40XX | Carbohydrates Bioconversion Technology | 3 |
| PG40XX | Industrial Oleochemical | 3 |
| PG40XX | Downstream Processing in Dairy Products | 3 |
| PG40XX | Aquatic Food Technology | 3 |
| PG40XX | Cacao Processing and Confectionary | 3 |

FOOD ENGINEERING

Food Engineering program FIT ITB is an engineering discipline that combines food science, microbiology, and engineering sciences. This engineering branch applies practical technique sfor the food formulation, production, packaging, storage, and distribution to betasty, hygienic quality, safe, nutritious and consumer convenience. Food Engineering FIT ITB is delivered with heavy concentration on Food Process Plant Design and Food Product Development. This was derived from the Chemical Engineering core that FIT ITB has developed to the mature stage. Food Engineering must be linked strongly to thefood industries.

This program aims to educate and train students to have knowledge, skills and abilities in the field of the food process engineering. The graduates are expected to have innovative ways on the food product and engineering businesses leading to the Bio-Based Economy for Indonesia.

Food Engineering curriculum is structured with :

- Courses with 144 total credits,
- 4 (years) or 8 (semesters) program,
- First common year program ITB,
- Second year with class courses and laboratory courses,
- Third year with Food Engineering Laboratory duties and industrial internship
- Fourth year with food plant design, food product design, food research and comprehensive examination as considered to be heavy activities

Food engineering program is an engineering study that has the same family with the chemical engineering program. This program aims to play a role in tackling national issues and prepare the nation to face global competition. Food engineering graduates are expected to become experts in the field of food technology, competent in the field of technology, able to innovate in a very competitive post-harvest systems globally, and to follow scientific developments internationally.

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Curriculum of Food Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1001 | Sports | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU102x | English | 2 |
| KU1267 | Engineering Drawing | 2 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|---|---|
| PG2101 | Process Engineering Mathematical Analysis | 2 |
| PG2102 | Food Processing Thermodynamics | 3 |
| PG2104 | Food Microbiology | 3 |
| TK2102 | Analytical and Measurement Methods | 3 |
| TB2202 | Reaction and Enzyme Kinetics | 2 |
| KI2051 | Organic Chemistry | 3 |
| KI21xx | Food Chemistry | 3 |

Total Load : 19 credits

Semester IV

| | | |
|--------|--|---|
| PG2103 | Food Processing Computation | 3 |
| PG2202 | Food Extraction Technology | 3 |
| PG2201 | Functional Properties of Food Components | 3 |
| TK2105 | Chemical Engineering Statistics | 2 |
| TK2201 | Mass and Energy Balance | 3 |
| KI22xx | Colloid Chemistry | 3 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|---------------------------------------|---|
| PG3001 | Food Engineering Laboratory 1 | 2 |
| PG3101 | Unit Operations in Food Engineering 1 | 3 |
| PG3102 | Chemical Reaction in Food Processing | 3 |
| PG3103 | Food Packaging | 2 |
| PG3104 | Food Physics | 3 |
| TK3102 | Utility System | 3 |
| | Elective Course | 3 |

Total Load : 19 credits

Semester VI

| | | |
|--------|---------------------------------------|---|
| PG3002 | Food Engineering Laboratory 2 | 2 |
| PG3201 | Hydrocolloid Technology | 3 |
| PG3202 | Food Quality Control | 2 |
| PG3203 | Fermented Foods | 3 |
| PG3204 | Unit Operations in Food Engineering 2 | 3 |
| TK3201 | Transport Phenomena | 3 |
| FA32xx | Food Safety and Sanitation | 2 |

Total Load : 18 credits

Semester VII

| | | |
|--------|--|---|
| PG4090 | Industrial Internship | 2 |
| PG4091 | Food Engineering Interdisciplinary Project | 2 |
| PG4092 | Food Engineering Research 1 | 2 |
| PG40xx | Food Additives Chemistry and Technology | 3 |
| PG4101 | Food Process Design | 3 |
| PG4102 | Waste Management in Food Industry | 2 |
| PG4103 | Food Processing Economics and Management | 3 |

Total Load : 17 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|------------------------------|---|
| PG4093 | Food Engineering Research 2 | 3 |
| PG4094 | Food Processing Plant Design | 4 |
| PG4098 | Comprehensive Examination | 1 |
| KU206X | Religion and Ethics | 2 |
| | Elective Courses | 6 |

Total Load : 16 credits

Elective Courses Food Engineering

| | | |
|--------|---|---|
| PG40XX | Foods and Beverages Technology | 3 |
| PG40XX | Sugar and Sweetener | 3 |
| PG40XX | Carbohydrates Bioconversion Technology | 3 |
| PG40XX | Industrial Oleochemical | 3 |
| PG40XX | Downstream Processing in Dairy Products | 3 |
| PG40XX | Aquatic Food Technology | 3 |
| PG40XX | Cacao Processing and Confectionary | 3 |



FACULTY OF MECHANICAL AND AEROSPACE ENGINEERING

Faculty of Mechanical and Aerospace Engineering (Fakultas Teknik Mesin dan Dirgantara - FTMD) is a new faculty established on January 1st, 2008. This faculty was part of Faculty of Industrial Technology until December 2007. At present, FTMD offers undergraduate, master, and doctoral programs in Mechanical Engineering, Aeronautics and Astronautics, and Materials Engineering.

Fields of study in FTMD is centered on mechanical sciences. FTMD students will learn basic mechanical sciences in their second year such as dynamics (study of relation between force and motion), thermodynamics (relations among energy, heat, and power), material science (concerning with the function and properties of materials), and manufacturing (study of production engineering). Their knowledge are also supported by basic sciences such as mathematics and physics obtained in the first year. To keep up-to-date in knowledge and technology in mechanical, aerospace, and materials engineering; research and development activities are conducted. This is one of the missions of FTMD. The academic and research programs as well as collaborative research activities at FTMD are supported by various facilities and expertise of its academic staffs. An academic staff of FTMD belongs to one of the seven research groups. These groups, which are based on research interest, are:

1. Mechanical Design
2. Energy Conversion
3. Mechanical Production Engineering
4. Aircraft Design, Operation, and Maintenance
5. Flight Physics
6. Lightweight Structure
7. Materials Science and Engineering

In addition to the regular program, FTMD offers fast-track program that allows academically qualified students to pursue Bachelor-Master degrees within five years. Students are also involved in industrial internship for one month during their study. This program allows students to have a first-hand experience in the industry to enhance their hard and soft skills in real working experience and apply their knowledge obtained from course works. In the final year, undergraduate students are directed towards more specialized field to complete a final project as a requirement to obtain their degrees. Students may choose apprenticeship in industry/ research institutions as an alternate to final project and elective courses where they will spend 6 – 12 months working as an employer. Through this program, students will learn the necessary skills, knowledge, and attitudes.

| | |
|--|---|
| Dean | : Ir. Hari Muhammad, Ph.D |
| Vice Dean for Academic Affairs | : Prof.Dr.Ir. Zainal Abidin |
| Vice Dean for Resource Planning and Management | : Dr. Ir. Ignatius Pulung Nurprasetyo, MSME |

MECHANICAL ENGINEERING

Mechanical engineering departement ITB was founded in 1942, as the third oldest department of ITB. The students of the Mechanical engineering will study about mechanical design and analysis, manufacturing and operation & maintenance of mechanical systems. The subjects of mechanical engineering are not only about mechanical systems but also the energy conversions and conservations, environment aspects of mechanical systems, as well as electric and control systems.

The program structure of mechanical engineering can be described as below:

1. 1st year (common first year (TPB)). Students of FMAE will study the basic concept of engineering, including: Mathematics, Physics, Chemistry, Introduction to Engineering and Design, and Structure. Students also taught by supporting area such as Sports, English, Scientific Writing, and Programming. The total course is 36 credits.
2. 2nd – 4th year. Students will study the mechanical engineering sciences, including energy conversion, mechanical design, production engineering, control, and maintenance. The compulsory course is 96 credits. Some course accompanied by laboratory activity to deepen the understanding of the course such as material engineering, manufacturing, mechatronics, and engineering design. Some compulsory course should be taken by the student in total 15 credits. Students able to choose based on their interest of the field study.
3. Final project. In the final year, students should finished the final project by conducting research in each areas of interest. In the Program, there are 4 research area which can be selected by the students, they are: Mechanical Design, Energy Conversion, Production Engineering, and Mechatronics. Each of the research area supported by laboratories and faculty staffs. The objective of the final project is to synthesize the mechanical engineering science, apply the scientific method to do the problem solving and obtain the research objective, and deepen the understanding of student in the current research areas.

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Job markets available to the mechanical engineering graduates are very wide and various areas, and the demand of mechanical engineers is still very high. Some job market areas for the mechanical engineering graduates are Manufacturing Industries, Automotives, Power Generation, Constructions, Mining, Oil and Gas, Transportation (Land, Sea and Air). The students of mechanical engineering can take part of various activities such as students association, national and international competition on mechanical design, robotics, industry exposures and automotive services.



Curriculum of Mechanical Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1102 | Elementary Physics IB | 4 |
| KI1102 | Basic Chemistry IB | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1001 | Sports | 2 |
| KU102X | English | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| MS1100 | Introduction to Mechanical, Material and Aerospace Engineering | 1 |

Total Load : 20 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1202 | Elementary Physics IIB | 4 |
| KI1202 | Basic Chemistry IIB | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| MS1200 | Engineering Drawing | 2 |
| MS1210 | Statics | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|--------------------------------------|---|
| MS2100 | Basic Engineering Analysis | 2 |
| MS2101 | Mechanical Drawing CAD Lab | 2 |
| MS2111 | Strength of Materials | 3 |
| MS2112 | Kinematics and Dynamics of Machinery | 4 |
| MS2130 | Engineering Thermodynamics I | 3 |
| MS2150 | Engineering Materials | 2 |
| KU206x | Religion and Ethics | 2 |

Total Load : 18 credits

Semester IV

| | | |
|--------|---------------------------------------|---|
| MS2200 | Electrical Drive System Lab | 3 |
| MS2210 | System Dynamics | 2 |
| MS2211 | Design of Machine Elements I | 3 |
| MS2230 | Engineering Thermodynamics II | 2 |
| MS2231 | Fluid Mechanics I | 3 |
| MS2250 | Structure and Properties of Materials | 2 |
| MS2260 | Manufacturing Processes I | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|-------------------------------------|---|
| MS3100 | Engineering Measurements | 2 |
| MS3110 | Basic Mechanical Vibration | 2 |
| MS3111 | Design of Machine Elements II | 3 |
| MS3130 | Heat Transfer I | 2 |
| MS3131 | Fluid Mechanics II | 2 |
| MS3150 | Materials Engineering Laboratory | 1 |
| MS3160 | Manufacturing Processes II | 2 |
| MS3161 | Industrial Metrology and Statistics | 4 |

Total Load : 18 credits

Semester VI

| | | |
|--------|--------------------------------------|---|
| MS3200 | Numerical Analysis | 3 |
| MS3201 | Engineering Economics and Management | 2 |
| MS3202 | Mechanical Engineering Lab I | 1 |
| MS3203 | Introduction to Control Systems | 3 |
| MS3204 | Mechatronics I | 2 |
| MS3205 | Engineering Design I | 3 |
| MS3230 | Heat Transfer II | 2 |
| MS3231 | Energy Conversion Systems I | 3 |

Total Load : 19 credits

Semester VII

| | | |
|--------|---|---|
| MS4101 | Environmental Aspects in Mechanical Engineering | 2 |
| MS4102 | Mechanical Engineering Lab II | 1 |
| MS4103 | Maintenance Engineering | 3 |
| MS4104 | Mechatronics II | 2 |
| MS4105 | Engineering Design II | 2 |
| MS4131 | Energy Conversion Systems II | 2 |
| | Elective Courses | 6 |

Total Load : 18 credits

Total CREDITS : 147 Credits

Semester VIII

| | | |
|--------|---------------------------|---|
| MS4090 | Job Training | 1 |
| MS4094 | Comprehensive Examination | 1 |
| MS4095 | Final Project | 4 |
| KU2071 | Pancasila and Civics | 2 |
| | Elective Courses | 9 |

Total Load : 17 credits

Elective Courses

| | | | | | |
|--------|--|---|--------|--|---|
| MS4010 | Theory of Ground Vehicles | 3 | MS4062 | Nonconventional Machining Process | 3 |
| MS4011 | Finite Element Method | 3 | MS4063 | CAD/CAM | 3 |
| MS4012 | Process Industries Equipment | 3 | MS4064 | Object Oriented Programming | 3 |
| MS4013 | Hoisting, Conveying and Heavy Equipment | 3 | MS4065 | Reverse Engineering | 3 |
| MS4014 | Design and Construction of Piping System | 3 | MS4066 | Dies and Mold | 3 |
| MS4015 | Applied Control Engineering | 3 | MS4067 | NC Programming | 3 |
| MS4016 | Vibration Signature of Machinery Faults | 3 | MS4068 | Quality Control Design | 3 |
| MS4017 | Risk and Safety of Mechanical Equipment | 3 | MS4070 | Introduction to Robotics | 3 |
| MS4030 | Steam Power Generation System | 3 | MS4071 | Computer Aided Control System Design | 3 |
| MS4031 | Design of Fluid System | 3 | MS4001 | Special Topics in Mechanical Engineering A | 3 |
| MS4032 | Refrigeration and Cryogenic System | 3 | MS4002 | Special Topics in Mechanical Engineering B | 3 |
| MS4033 | Internal Combustion Engines | 3 | MS4003 | Special Topics in Mechanical Engineering C | 3 |
| MS4034 | Gas Turbines | 3 | MS4004 | Special Topics in Mechanical Engineering D | 3 |
| MS4035 | Heat Exchanger | 3 | MS4005 | Special Topics in Mechanical Engineering E | 3 |
| MS4036 | Fuel and Combustion | 3 | MS4091 | Engineering Profession Development A | 3 |
| MS4050 | Metal Forming | 3 | MS4092 | Engineering Profession Development B | 3 |
| MS4051 | Welding Technology | 3 | MS4093 | Engineering Profession Development C | 3 |
| MS4052 | Foundry Technology | 3 | | | |
| MS4060 | Production System | 3 | | | |
| MS4061 | Jig and Fixture | 3 | | | |

AERONAUTICS AND ASTRONAUTICS

Aeronautics and Astronautics, or also known as Aerospace Engineering (AE), is the branch of engineering behind the design, construction, and science of aircraft and space craft. It is broken into two major and overlapping branches: aeronautics and astronautics. Aeronautics deals with crafts that stay within the Earth's atmosphere, while astronautics deals with crafts that operate outside the atmosphere.

Aerospace engineers design, develop, and test aircraft, missiles, and space vehicle and supervise their production. They often specialize in one kind of vehicle, such as passenger planes, helicopters, or rockets. Most aerospace engineers work in the aircraft industry. This industry includes companies that make engines, communications systems, electronic devices, and many other parts used in aircraft. Many also work for companies that are under government contract to produce equipment needed for missiles and spacecraft. Since the science and technology of AE are essentially the same globally, AE engineers can also work for commercial airline companies, research and development organizations, and consulting firms, as well as for colleges and universities all over the world.

Aerospace engineering is a broad field. It overlaps with areas of other engineering fields, including mechanical, materials, chemical, and electrical/electronics. There are also several areas of specialization within the field. Some aerospace engineers concentrate on structures. They test the structure's ability to resist heat, pressure, and other forms of stress. This helps to develop strong and durable aircraft and other vehicles. Other aerospace engineers work on the aircraft guidance and control systems. These systems include automatic navigation equipment and Instrument Landing System (ILS) which allow aircraft to land at night and in bad weather. Other special fields in aerospace engineering include propulsion, fluid mechanics, thermodynamics, celestial mechanics, and acoustics. In addition, some aerospace engineers specialize in one phase of a process during which new equipment is developed, produced, and operated. For example, they may concentrate on design, production, sales or maintenance. Others may specialize in a particular type of aerospace product, such as commercial aircraft, military fighter jets, helicopters, spacecraft, or missiles and rockets. They may become experts in aerodynamics, fracture mechanics, satellite's orbit, flight mechanics, propulsion, or guidance and control systems.

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Undergraduate students in Aeronautics and Astronautics learn basic aeronautics science such as aerodynamics, structural design, materials, airplane performance, stability and control, and also astrodynamics. They also obtain supporting knowledge in the field of electronics, programming, and strong basics in applied mathematics. In the final year of study, students have to take Aircraft Design Subject where they are distributed into groups to design an aircraft that meets given requirements which is different from year to year. Students are faced into a problem of aircraft engineering design which contradictory requirements. For example, a strong but light structure is one that needs strict compromise of optimization. Laboratory in Aeronautics and Astronautics Department includes aerodynamics, lightweight structure, flight simulation, flight physics laboratory, aircraft design studio, etc. Research topics such as 3-D reconstruction of Industrial Components using simulated CT-Scan and Photography and Laser-based velocity measurement system are the example of latest up-to-date research conducted in Aeronautics and Astronautics Department.

Aeronautics and Astronautics students are participating in numerous national and international competitions. They snatched a number of awards in several contests in Taiwan and Japan. Team from Aeronautics and Astronautics students also won the first place in Rocket Payload Competition held by LAPAN in 2008. To promote and establish a vision of the future of Indonesian aerospace, ITB Aeronautics and Astronautics Students organized the Indonesian Indoor Aerial Robot Contest (IIARC) since 2008. Basically, it is a national contest for university and senior high school students in which they are challenged to create aerial (flying) robot to conduct a specific mission. Another activity is the Aero Expo, a regular exhibition to cultivate interest and gain support for the development of Indonesia's aerospace.



Curriculum of Aeronautics and Astronautics

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1102 | Elementary Physics IB | 3 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |
| MS1100 | Introduction to Mechanical, Materials and Aeronautics & Astronautics Engineering | 1 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1202 | Basic Chemistry IB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| MS1200 | Engineering Drawing | 2 |
| MS1210 | Statics | 3 |

Total Load : 18 credits

Semester III

| | | |
|--------|--|---|
| AE2100 | Introduction to Aerospace Engineering | 2 |
| AE2101 | Engineering Mathematics I | 3 |
| AE2102 | Thermal Engineering | 4 |
| AE2103 | Kinematics and Dynamics | 3 |
| AE2150 | Aircraft Materials and Manufacturing Methods I | 3 |
| MS2111 | Strength of Materials | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|---|---|
| AE2200 | Engineering Mathematics II | 3 |
| AE2201 | Statistics | 2 |
| AE2202 | Instrumentation, Measurement & Experiment | 3 |
| AE2210 | Fluid Mechanics | 3 |
| AE2211 | Aerodynamic and Flight Performance Analysis I | 2 |
| AE2230 | Astrodynamics | 3 |
| AE2250 | Aircraft Materials and Manufacturing Methods II | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|--|---|
| AE3100 | Technical Analysis & Numerical Methods | 3 |
| AE3110 | Aerodynamics I | 3 |
| AE3111 | Aerodynamic and Flight Performance Analysis II | 3 |
| AE3140 | Mechanical Vibration | 3 |
| AE3141 | Analysis and Design of Aircraft Structures I | 3 |
| AE3180 | Aircraft Systems I | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|---|---|
| AE3210 | Aerodynamics II | 3 |
| AE3220 | Flight Dynamics | 3 |
| AE3240 | Analysis & Design of Aircraft Structures II | 3 |
| AE3270 | Air Transportation System | 3 |
| AE3280 | Aircraft Propulsion | 3 |
| AE3281 | Aircraft Systems II | 2 |

Total = 17 credits

Semester VII

| | | |
|--------|----------------------------------|---|
| AE4100 | Aero-Environmental | 2 |
| AE4120 | Control Theory | 3 |
| AE4160 | Aircraft Design | 3 |
| AE4170 | Aircraft Maintenance Engineering | 2 |
| KU206X | Religion and Ethics | 2 |
| | Elective Course | 3 |
| | Elective Course | 3 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| AE4090 | Industrial Apprenticeship | 1 |
| AE4091 | Final Project | 5 |
| KU2071 | Pancasila and Civic Education | 2 |
| TI4004 | Industrial Management | 2 |
| | Elective Course | 3 |
| | Elective Course | 3 |
| | Elective Course | 3 |

Total Load : 19 credits

Elective Courses

| | | |
|--------|--|---|
| AE4010 | Computational Aerodynamics | 3 |
| AE4011 | Boundary Layer Theory | 3 |
| AE4012 | Special Problems in Aerodynamics and Propulsion | 3 |
| AE4030 | Satellite's Dynamics and Control | 3 |
| AE4040 | Finite Element Method | 3 |
| AE4041 | Aircraft Loads | 3 |
| AE4042 | Composite Structural Mechanics | 3 |
| AE4043 | Special Problems in Aircraft Structures | 3 |
| AE4060 | Airworthiness | 3 |
| AE4070 | Special Problems in Aircraft Operation and Maintenance | 3 |
| AE4080 | Avionics Systems | 3 |

Minor Program

| | |
|-----|-------------------------|
| 131 | Mechanical Engineering |
| 132 | Electrical Engineering |
| 133 | Engineering Physics |
| 134 | Industrial Engineering |
| 135 | Informatics Engineering |
| 137 | Material Engineering |
| 150 | Civil Engineering |

MATERIAL ENGINEERING

Materials science, the core subject studied in this department, is basically an interdisciplinary field involving the properties of matter and its applications to various areas of science and engineering. This science investigates the relationship between the structure of materials at atomic or molecular scales and their macroscopic properties. Therefore, it involves elements of applied physics and chemistry. The most recent topic in this field is nanotechnology. Materials science plays an important role in forensic engineering and failure analysis. In addition, it also deals with fundamental properties and characteristics of materials.

Materials engineers develop ways of processing metals and converting them into useful products. Metallurgy, the science of metals, is a major component of materials science. Other materials covered in this field are ceramics and polymers or plastics. Metallurgical engineers, a subspecialty of materials engineers, work primarily in industrial area, particularly in the iron and steel industries. Some work with other metals such as aluminum or copper. Metallurgical engineers are also employed in industries that make machinery and other products using metal such as automobiles, aircrafts, and electrical equipments. Some work for government agencies or colleges and universities. Materials engineers use complex equipment, including scanning electron microscopes, X-ray machines, and spectrographs. They use the latest scientific and technological findings in their work.

Another sub specialization is the physical metallurgical engineers. They work to develop new alloys to meet various demands. Physical metallurgical engineers also develop production processes that include melting, casting, alloying, rolling, and welding. They design and supervise processes to produce structural steel, wire, or aluminum sheets. Sometimes they are involved in processes that use these metal goods in the manufacturing of other finished products.

In terms of education, to satisfy the requirements, materials engineering students should spend considerable amount of time in the laboratory to conduct experiments with materials. Basic and advanced subjects such as metal processing, characterization of materials, transport phenomena, phase transformation, material modeling and design, provide a strong basic for students of materials engineering. In the fourth year, students are required to complete a specific final project on metals, ceramics, polymers, or composites and present them in an open seminar and viva exam.

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Materials Engineering Study Program in collaboration with Materials Student Union (MTM) organizes yearly exhibition and seminar activities related to the progression of materials engineers. The main objective of these events is to introduce the profession to the community. Some of the events are called EMINEX / Material Fair, an exhibition of companies in relation to materials science and engineering; SENAMM, a national conference on materials and metallurgical engineering; INSTRUCT (Indonesian Microstructure Competition) / METALLOSCOPE, an activity that aims to share knowledge on materials microstructure characterization. Latest innovative product of Materials Engineering students is a composite made from natural material such as pineapple and palm fiber that won a third place in the Tanoto Research Award 2006. In 2010-2012 a winning national competition grant provided by the Ministry of Education for laboratory infrastructure development (PHKI). Again in 2014 the students won a first place on the fabrication of biodegradable plastics made from "Gembili" yam.

At present research collaboration has been taken with the Mechanical Engineering Department, Hiroshima University, JFE, Japan and Komatsu Indonesia. To support teaching and research activities, Materials Engineering Department also provide expertise for industries. In house and on-site training on materials related topics, training on corrosion prevention, and other industrial services has been undertaken with several government institution i.e, Ministry of Industry and companies such as; Garuda Indonesia, Dirgantara Indonesia, Petrokimia Gresik, Krakatau Steel, Indonesia Power, PJB, Pertamina, BP, Chevron, Total Indonesia, INKA, PINDAD, PUSRI, Conoco Philips, and Komatsu Indonesia.



Curriculum of Material Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1102 | Elementary Physics IB | 3 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1001 | Sports | 2 |
| KU102X | English | 2 |
| MS1100 | Introduction to Mechanical, Material and Aerospace Engineering | 1 |
| KU1072 | Introduction to Information Technology B | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| MS1200 | Engineering Drawing | 2 |
| MS1210 | Statics | 3 |

Total Load : 18 credits

Semester III

| | | |
|--------|------------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| MS2100 | Basic Engineering Analysis | 2 |
| MT2101 | Mechanical Properties of Materials | 3 |
| MT2102 | Mechanics of Materials | 3 |
| MT2103 | Materials Characterization 1 | 2 |
| MS2101 | Mechanical Drawing CAD | 2 |
| KI2142 | Physical Chemistry | 3 |

Total Load : 17 credits

Semester IV

| | | |
|--------|------------------------------------|---|
| MS3200 | Numerical Analysis | 3 |
| MT2231 | Polymer Chemistry | 3 |
| MT2202 | Thermodynamics of Materials | 3 |
| MT2203 | Materials Characterization 2 | 2 |
| MT2224 | Ceramic Materials | 3 |
| MT2205 | Materials Engineering Laboratory 1 | 1 |
| MT2216 | Metallic Materials | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|---|---|
| MS3201 | Engineering Economics and Management | 2 |
| MT3101 | Transport Phenomena in Materials Engineering | 3 |
| MT3132 | Polymeric Materials | 3 |
| MT3103 | Materials Engineering Laboratory 2 | 1 |
| MT3114 | Phase Transformation | 3 |
| MT3125 | Ceramic Raw Materials | 3 |
| MT3116 | Manufacturing Processes of Metallic Materials | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|--|---|
| MT3221 | Ceramics Processing | 3 |
| MT3202 | Electronic and Magnetic Materials | 3 |
| MT3203 | Materials Engineering Laboratory 3 | 1 |
| MT3234 | Composite Materials | 3 |
| MT3205 | Computation Methods in Materials Engineering | 3 |
| MT3236 | Polymer Processing | 3 |

Total Load : 16 credits

Semester VII

| | | |
|--------|--|---|
| KU206X | Religion and Ethics | 2 |
| MT4001 | Experimental Design | 3 |
| MT4002 | Project on Materials Selection and Product Processing Oriented | 3 |
| MT4003 | Materials Technology Seminar | 1 |
| MT4004 | Electrochemistry and Corrosion | 3 |

Total Load : 12 credits

Semester VIII

| | | |
|--------|---|---|
| MT4006 | Environmental Aspects in Materials Technology | 2 |
| MT4005 | Principle of Materials Design | 3 |
| MT4091 | Industrial Internship | 2 |
| MT4092 | Final Project | 5 |

Total Load : 12 credits

Elective Courses:

Specific Study Program 12 credits

Non Specific (minimum) 3 credits

Total CREDITS : 144 Credits

Specific Study Program Elective Course Non Specific Elective Courses

| | | | | | |
|--------|---------------------------------------|---|--------|--------------------------------------|---|
| MT3217 | Plasticity and Deformation Process | 3 | AE4040 | Finite Element Methods | 3 |
| MT3228 | Advanced Ceramics | 3 | AE4042 | Mechanics of Composite Structures | 3 |
| MT3239 | Biobased Polymers | 3 | EL4129 | Semiconductor Devices | 3 |
| MT4007 | Biomaterials | 2 | MS3162 | Machining Processes Lab | 3 |
| MT4008 | Fracture Mechanics of Materials | 2 | MS4012 | Process Industries Equipment | 3 |
| MT4009 | Materials Joining Technology | 2 | MS4050 | Metal Forming | 3 |
| MT4011 | Melting and Solidification Processing | 2 | MS4051 | Welding Technology | 3 |
| MT4012 | Corrosion Prevention Techniques | 2 | MS4052 | Foundry Technology | 3 |
| MT4013 | Surface Treatment and Its Properties | 2 | MS4093 | Engineering Profession Development C | 3 |
| MT4014 | Heat Treatment | 2 | TF4030 | Material Processing Technology | 3 |
| MT4021 | Conventional Ceramics | 2 | TF4032 | Computational Material Science | 3 |
| MT4022 | Ceramics Refractory | 2 | | | |
| MT4023 | Cement and Concrete | 2 | | | |
| MT4024 | Ceramics Plant Design | 2 | | | |
| MT4025 | Advanced Ceramics Processing | 2 | | | |
| MT4031 | Rubber Technology | 2 | | | |
| MT4032 | Fiber Technology | 2 | | | |
| MT4033 | Manufacturing of Polymeric Composite | 2 | | | |
| MT4041 | Non Destructive Testing | 2 | | | |
| MT4042 | Optical Properties of Materials | 2 | | | |
| MT4043 | Magnetic Materials Engineering | 2 | | | |



SCHOOL OF ELECTRICAL ENGINEERING AND INFORMATICS

The School of Electrical Engineering and Informatics (SEEI – ITB) was officially founded in January 1st, 2006 based on Rector Decree No. 012/SK/01/OT/2005 as a merging between Department of Electrical Engineering and Department of Informatics/Computer Science, which are originally within the Faculty of Industrial Technology. Both departments have a long history in conducting higher education in electrical engineering (since 1947) and in Informatics/Computer Science (since 1982). In response to society and industrial needs, the school had added four new programs: Electrical Power Engineering, Telecommunication Engineering, Information System & Technology, and Biomedical Engineering. In addition to six undergraduate programs, SEEI also offer two master's programs and one doctoral program. The overall SEEI's student body is about 2.500 on the average.

The school currently has about 130 permanent faculty members and is supported by 84 non-academic staffs. Among the faculty members, 94 of them hold doctoral degrees and 34 hold master's degree from prominent universities around the world, which bring international cultures and best practices into the school's academic atmospheres.

SEEI facilitates undergraduate programs with a total of 19 educational and research laboratories. Students also have access to thousands of books and other learning material from ITB's central library, SEEI's library as well as from digital library. Additionally, the school hosts several research and training centers from which students can further enhance their educational experiences in preparation of their professional careers.

Dean

: Dr.Ir. Jaka Sembiring, M.Eng.

Vice Dean for Academic Affairs

: Ir. Dwi Hendratmo Widyantoro, M.Sc., Ph.D.

Vice Dean for Resource Planning and Management : Dr.Ir. Nana Rachmana Syambas, M.Eng.

ELECTRICAL ENGINEERING

Electrical Engineering is among the most significant engineering field that drives the evolution of human civilization in the last centuries. It is expected will continue to be the one in the foreseeable future. A new frontier of human endeavor is opened every moment which are only possible by the technology delivered by electrical engineering.

An Electrical engineer undoubtedly becomes the necessary agent of such transformation by delivering the best engineering practice in every possible aspects i.e. delivering the best practice in maintenance and operation; creating a new product and innovation; pursuing state-of-the-art research, etc. The demand for electrical engineer is among the highest in engineering.

The Electrical Engineering Program at SEEI ITB is made up of faculty members who are well respected in their areas of research and education. They engage in research activities encompassing a wide range of areas such as automatic control, biomedical engineering, communications, computer-aided design, machine vision and image processing, computer systems & networking, digital signal processing, electronics, electrical energy, information networking, intelligent systems, parallel and distributed processing, microelectronic materials and devices, microwave engineering and VLSI integrated circuit design.

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Curriculum of Electrical Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| EL1200 | Introduction to Circuit Analysis | 2 |
| IF1210 | Programming Fundamentals | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|------------------------------|---|
| EL2001 | Electric Circuits | 4 |
| EL2101 | Electric Circuits Laboratory | 1 |
| EL2002 | Digital Systems | 4 |
| EL2102 | Digital Systems Laboratory | 1 |
| EL2003 | Discrete Structures | 3 |
| EL2004 | Probability and Statistics | 3 |
| MA2072 | Engineering Mathematics I | 3 |

Total Load : 19 credits

Semester IV

| | | |
|--------|--------------------------------------|---|
| EL2005 | Electronics | 3 |
| EL2205 | Electronics Laboratory | 1 |
| EL2006 | Electromagnetics | 3 |
| EL2007 | Signals and Systems | 3 |
| EL2008 | Problem Solving with C | 3 |
| EL2208 | Laboratory of Problem Solving with C | 1 |
| MA2074 | Engineering Mathematics II | 3 |

Total Load : 17 credits

Semester V

| | | |
|--------|---|---|
| EL3009 | Electronics II | 3 |
| EL3109 | Electronics II Laboratory | 1 |
| EL3010 | Digital Signal Processing | 3 |
| EL3110 | Digital Signal Processing Laboratory | 1 |
| EL3011 | Computer System Architecture | 3 |
| EL3111 | Computer System Architecture Laboratory | 1 |
| EL3012 | Electrical Engineering Materials | 3 |
| | Non Major Elective | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|-------------------------------------|---|
| EL3013 | Instrumentation Systems | 3 |
| EL3014 | Microprocessor Systems | 3 |
| EL3214 | Microprocessor Systems Laboratory | 1 |
| EL3015 | Control Systems | 3 |
| EL3215 | Control Systems Laboratory | 1 |
| EL3016 | Communication Systems | 3 |
| EL3216 | Communication Systems Laboratory | 1 |
| EL3017 | Electrical Power Systems | 3 |
| EL3217 | Electrical Power Systems Laboratory | 1 |

Total Load : 19 credits

Semester VII

| | | |
|--------|------------------------------------|---|
| EL4018 | Profession and Engineering Ethics | 2 |
| EL4090 | Final Project I (Capstone Design) | 3 |
| EL4xxx | Major Electives | 9 |
| KU206X | Religion and Ethics | 2 |
| | Non Major (Basic Science) Elective | 2 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|------------------------------------|---|
| EL4091 | Final Project II (Capstone Design) | 3 |
| EL4092 | Industrial Experiences | 2 |
| EL4xxx | Major Electives | 6 |
| KU2071 | Pancasila and Civic Education | 2 |
| | Non Major (Management) Elective | 2 |
| | Non Major (Environmental) Elective | 2 |

Total Load : 17 credits

Major Elective Courses

| | | | | | |
|--------|--------------------------------------|---|--------|--|---|
| EL4019 | Electric Drive Systems | 3 | EL4131 | Anatomy and Physiology | 3 |
| EL4093 | Profession and Community Development | 3 | EL4132 | Biomedical Engineering | 3 |
| EL4094 | Industry Internships | 9 | EL4138 | VLSI Systems Design | 3 |
| EL4113 | Instrumentation Systems Laboratory | 1 | EL4230 | Analysis and Design of Digital IC | 3 |
| EL4120 | Computer Networks | 3 | EL4233 | Fundamentals of Intelligent Systems and Controls | 3 |
| EL4121 | Embedded Systems Design | 3 | EL4234 | Multivariable Control Systems | 3 |
| EL4122 | Embedded Systems Design Laboratory | 1 | EL4235 | Computer Systems Architecture II | 3 |
| EL4123 | Digital Control Systems | 3 | EL4236 | Network Software Engineering | 3 |
| EL4124 | Digital Control Systems Laboratory | 1 | EL4237 | IC Technology | 3 |
| EL4125 | Digital Image Processing | 3 | EL4239 | Transport Phenomena in Biomedics | 3 |
| EL4126 | Robotics | 3 | EL4240 | Biosignals Measurement | 3 |
| EL4127 | Parallel Computing and Architectures | 3 | EL4241 | RF and Mixed Signal Microelectronics | 3 |
| EL4128 | Operating System Design | 3 | | | |
| EL4129 | Semiconductor Devices | 3 | | | |

Non Major (Basic Science) Elective Courses

| | | | | | |
|--------|---|---|--------|--------------------------------|---|
| FI2112 | Introduction to Einstein Theory of Relativity | 3 | MS2231 | Fluid Mechanics I | 3 |
| FI2151 | Biophysics | 2 | SI2131 | Fluid Mechanics and Hydraulics | 3 |
| FI2204 | Modern Physics | 3 | TK2081 | Elementary Thermodynamics B | 2 |
| MS2041 | Thermal Engineering and Fluid Mechanics | 3 | TK2203 | Heat Transfer Operations | 3 |
| MS2130 | Engineering Thermodynamics I | 3 | | | |

Non Major (Management) Elective Courses

| | | | | | |
|--------|--|---|--------|---|---|
| MB4045 | Investment Management | 3 | MR4004 | Engineering Management | 2 |
| MB4052 | Strategic Change Management | 3 | MR4107 | Contract Management | 3 |
| MB4054 | Quality Management | 3 | TI3005 | Organization and Management of Industrial Company | 2 |
| MB4055 | Project Management | 3 | TI4109 | Financial Management | 3 |
| MR2101 | Introduction to Engineering Management | 2 | TI4203 | Marketing Management | 3 |
| MR3002 | Technology Management | 3 | TI4204 | Human Resource Management | 3 |
| MR3005 | Project Management | 3 | | | |

Non Major (Environmental) Elective Courses

| | | | | | |
|--------|-------------------------|---|--------|---------------------------------|---|
| TL2105 | Environmental Health | 3 | TL4002 | Environmental Engineering | 3 |
| IL2205 | Environmental Health | 2 | TL4201 | Environmental Impact Assessment | 3 |
| TL2202 | Environmental Chemistry | 3 | | | |

Minor Program

| | | |
|--------|-----------------------------------|---|
| EL1200 | Introduction to Circuit Analysis | 2 |
| EL2001 | Electric Circuits | 4 |
| EL2002 | Digital Systems | 4 |
| EL2005 | Electronics | 3 |
| EL2101 | Electric Circuits Laboratory | 1 |
| EL3014 | Microprocessor Systems | 3 |
| EL3214 | Microprocessor Systems Laboratory | 1 |

Total : 18 credits

ELECTRICAL POWER ENGINEERING

The Electrical Power Engineering Program provides education on the area of generation, delivery and use of electrical energy. The program gives the students a basic knowledge of electrical power engineering principles along with the required supporting knowledge of mathematics, science, computing, and engineering fundamentals.

The students are given an opportunity to develop their abilities to formulate, analyze and solve complex problems as well as to design a product or system based on real problems, especially in the field of electrical power engineering. The program provides a sufficient breadth and depth for successful subsequent graduate and post-graduate study, or lifelong learning programs and it gives a sufficient basic to have active roles in developing electrical power engineering and other related industries in Indonesia and overseas. It also provides an appreciation for the broad spectrum of issues arising in professional practice, including teamwork, leadership, safety, ethics, services, economy, environmental awareness, and professional organizations.

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Curriculum of Electrical Power Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| EL1200 | Introduction to Circuit Analysis | 2 |
| IF1210 | Programming Fundamentals | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|--|---|
| EP2091 | Probability and Statistics | 3 |
| EL2001 | Electric Circuits | 4 |
| EL2101 | Electric Circuits Laboratory | 1 |
| EL2142 | Digital and Microprocessor Systems | 4 |
| MA2072 | Engineering Mathematics I | 3 |
| MS2041 | Thermal Engineering and Fluid Mechanic | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|-------------------------------|---|
| EP2076 | Measurement Systems | 3 |
| EP2094 | Signal and Systems | 3 |
| EL2006 | Electromagnetics | 3 |
| EL2005 | Electronics | 3 |
| EL2205 | Electronics Laboratory | 1 |
| MA2074 | Engineering Mathematics II | 3 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|---|---|
| EP3071 | Electric Machines | 3 |
| EP3073 | Numerical Analysis For Electrical Power | 3 |
| EP3075 | Power System Analysis | 3 |
| EP3095 | Electrical Engineering Material | 3 |
| EP3171 | Electrical Power Laboratory I | 2 |
| EL3015 | Control Systems | 3 |
| TI3004 | Engineering Economics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|--------------------------------|---|
| EP3070 | Electric Power Plants | 3 |
| EP3072 | Power Electronics | 3 |
| EP3074 | High Voltage Engineering | 3 |
| EP3076 | Power System Protection | 3 |
| EP3172 | Electrical Power Laboratory II | 2 |
| EP3000 | Elective Telecommunication | 3 |
| KU206x | Religion and Ethics | 2 |

Total Load : 19 credits

Semester VII

| | | |
|--------|-------------------------------------|---|
| EP4096 | Final Project I & Seminar | 2 |
| EP4071 | Utilization of Electrical Energy | 3 |
| EP4073 | Selected Topics in Electrical Power | 2 |
| EP4077 | Electric Power Distribution Systems | 3 |
| EP4xxx | Major Electives | 6 |
| XXLING | Environmental Elective | 2 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|--------------------------------|---|
| EP4091 | Industrial Experience | 2 |
| EP4099 | Final Project II | 4 |
| EP4070 | Electrical Power System Design | 2 |
| XXMANJ | Management Elective | 2 |
| | Non Major Elective | 3 |
| | Free Elective | 3 |

Total Load : 16 credits

Major Elective Courses

| | | |
|--------|--------------------------------------|---|
| EP4050 | Electrical System Project Management | 3 |
| EP4072 | SCADA and Energy Management | 3 |
| EP4074 | System Engineering | 3 |
| EP4075 | Applications of Electrical Motors | 3 |
| EP4079 | Relay Protection | 3 |
| EP4090 | Engineering Ethics | 2 |
| EP4193 | Industrial Cooperative | 3 |

Minor Courses

| | | |
|--------------------|--------------------------|---|
| EP2076 | Measurement Systems | 3 |
| EP3070 | Electric Power Plants | 3 |
| EP3071 | Electric Machines | 3 |
| EP3072 | Power Electronics | 3 |
| EP3074 | High Voltage Engineering | 3 |
| EP3075 | Power System Analysis | 3 |
| Total : 18 credits | | |

Non Major Elective Courses

| | | |
|--------|---|---|
| EL5076 | Electric Transportation System | 2 |
| EL5078 | Non-conventional and Renewable Power Plants | 2 |
| EL5079 | Energy Economics | 2 |
| EL5174 | Direct Current Power Transmission and FACTS | 2 |
| EL5275 | Electromagnetic Compatibility | 2 |
| ET3001 | Analog and Digital Communications Systems | 3 |
| ET3003 | Computer Networks | 3 |
| IL2205 | Environmental Health | 2 |
| MB4045 | Investment Management | 3 |
| MB4055 | Project Management | 3 |
| MR2101 | Introduction to Engineering Management | 2 |
| MR3002 | Management Technology | 3 |
| MR4004 | Engineering Management | 2 |
| TI3005 | Organization and Management of Industrial Company | 2 |
| TI4004 | Industrial Management B | 2 |
| TI4204 | Human Resource Management | 3 |
| TL2105 | Environmental Health | 3 |
| TL4002 | Environmental Engineering | 3 |
| TL4201 | Environmental Impact Assessment | 3 |
| BI2001 | General Environmental Science | 2 |

INFORMATICS/COMPUTER SCIENCE

Informatics/Computer Science Program provides education in the area of theoretical foundations of information and computing as well as practical techniques for their applications in computer systems. Students of Informatics/Computer Science program will also learn a wide range of computer science topics such as algorithm and data structure, theory of computation, programming languages, database and information retrieval, operating system, artificial intelligence, computer visions, computer network, software engineering, computer security and cryptography, machine learning, distributed system, computer graphics and visualization, and other exciting areas.

The program's curriculum is designed to prepare students to enter the rapidly expanding computer field and competitive job markets. Its curriculum development is based on the curricula and courses recommendation by the Institute of Electrical and Electronic Engineer Computer Society and the Association for Computing Machinery.

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Curriculum of Informatics/Computer Science

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| EL1200 | Introduction to Circuit Analysis | 2 |
| IF1210 | Programming Fundamentals | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|--|---|
| IF2110 | Algorithm and Data Structure | 4 |
| IF2120 | Discrete Mathematics | 3 |
| IF2121 | Logic of Informatics | 3 |
| IF2122 | Probability and Statistics | 3 |
| IF2123 | Geometric Algebra | 3 |
| IF2130 | Organization and Computer Architecture | 3 |

Total Load : 19 credits

Semester IV

| | | |
|--------|-------------------------------------|---|
| IF2210 | Object Oriented Programming | 3 |
| IF2211 | Algorithm Strategies | 3 |
| IF2220 | Formal Language Theory and Automata | 3 |
| IF2230 | Operating System | 3 |
| IF2240 | Database | 3 |
| IF2250 | Software Engineering Fundamental | 2 |

Total Load : 17 credits

Semester V

| | | |
|--------|-----------------------------------|---|
| IF3110 | Web based Application Development | 2 |
| IF3111 | Platform-based Development | 2 |
| IF3130 | Computer Networks | 3 |
| IF3140 | Database Management | 2 |
| IF3151 | Human Computer Interaction | 3 |
| IF3170 | Artificial Intelligence | 4 |
| IF3150 | Project Management of Software | 2 |

Total Load : 18 credits

Semester VI

| | | |
|--------|---------------------------------------|---|
| IF3230 | Parallel and Distributed Systems | 3 |
| IF3240 | Information System | 3 |
| IF3250 | Project of Software | 4 |
| IF3260 | Computer Graphics | 3 |
| IF3280 | Socio-informatics and Professionalism | 3 |
| KU206x | Religion and Ethics | 2 |

Total Load : 18 credits

Semester VII

| | | |
|--------|--------------------------------------|---|
| IF4090 | Industrial Practice | 2 |
| IF4091 | Final Project I and Seminar | 2 |
| IF4150 | Domain Specific Software Engineering | 2 |
| IF4xxx | Major Elective | 3 |
| | Free Electives | 6 |

Total Load : 15 credits

Total CREDITS : 145 Credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| IF4092 | Final Project II | 4 |
| IF4xxx | Major Elective | 3 |
| | Non Major Elective | 3 |
| | Environmental Elective | 2 |
| | Free Electives | 8 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 22 credits

Elective Courses

| | | |
|--------|--|---|
| IF4020 | Cryptography | 3 |
| IF4021 | Modeling and Simulation | 3 |
| IF4022 | Advanced Computational Science and Engineering | 3 |
| IF4030 | Advanced Computer Network | 3 |
| IF4031 | Development of Distributed Application | 3 |
| IF4032 | Multimedia System | 3 |
| IF4033 | Information Assurance and Security | 3 |
| IF4040 | Advanced Data Modelling | 3 |
| IF4041 | Database Technology | 3 |
| IF4042 | Information Retrieval Systems | 3 |
| IF4043 | Advanced Information System | 3 |
| IF4050 | Service Oriented Software Development | 3 |
| IF4051 | Component Based Software Engineering | 3 |
| IF4060 | Interaction Engineering | 3 |
| IF4061 | Information and Data Visualization | 3 |
| IF4062 | Development of 3D Graphical Application | 3 |
| IF4070 | Knowledge Representation and Reasoning | 3 |
| IF4071 | Machine Learning | 3 |
| IF4072 | Natural Language (Text and Speech) Processing | 3 |
| IF4073 | Interpretation and Image Processing | 3 |

Minor Courses

| | | |
|--------|--|---|
| IF2110 | Algorithm and Data Structure | 4 |
| IF2130 | Organization and Computer Architecture | 3 |
| IF2240 | Database | 3 |
| IF2250 | Software Engineering Fundamental | 2 |

Total : 12 credits

INFORMATION SYSTEM AND TECHNOLOGY

Information System and Technology program was developed to anticipate the fast growing of the phenomena, problems, needs, and impact of information system to the organization and society, according to development of information technology. This program provides comprehensive knowledge, skill, and way of thinking to be creative, building the abilities to follow advancement of knowledge, technology and the dynamic of social environment.

As one of the academic fields in computing, information system and technology program includes two major academic areas related to:

1. Planning, developing, and evaluating of system in the purpose of information management dedicated to preferred organization or in a global context for a community or society; and
2. Planning, developing, and evaluating the management of the technology used to support the system in organization or society.

Nowadays, Information system and technology become a significant and decisive factor in the dynamics of business, organization and community development. Information system and technology has become an important part of daily lives including knowledge, sciences, engineering and design, services development and delivery, operational activities and management. Effective and efficient uses of information system and technology become urgent to achieve business competitive advantage and to take part in acceleration and growing the community, society or even nation. The use of information system and technology should be embedded in everyday life dimensions, business (electronic-commerce), education and learning (e-education and e-learning), medicine and health (e-health), culture, transportation, industry, tourism, collaboration activities, even entertainment.

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Curriculum of Information System and Technology

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| EL1200 | Introduction to Circuit Analysis | 2 |
| IF1210 | Programming Fundamentals | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|---|---|
| II2110 | IST Mathematic | 3 |
| II2111 | Probability and Statistic | 3 |
| EL2142 | Digital and Microprocessor Systems | 4 |
| IF2140 | Database Modelling | 3 |
| IF2111 | Algorithm and Data Structure | 3 |
| TI3005 | Organization and Management of Industrial Company | 2 |

Total Load : 18 credits

Semester IV

| | | |
|--------|----------------------------------|---|
| II2230 | Computer Network | 3 |
| EL2244 | Computer System and Architecture | 3 |
| II2220 | IST Resource Management | 3 |
| II2221 | IST Project Management | 3 |
| II2240 | System Requirement Analysis | 3 |
| IF2210 | Object Oriented Programming | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|---------------------------------|---|
| II3150 | Multimedia System | 3 |
| II3130 | Operating System | 3 |
| II3160 | Integrative Programming | 3 |
| II3120 | IST Services | 3 |
| II3121 | Enterprise Requirement Analysis | 3 |
| IF3152 | Software Engineering | 3 |

Total Load : 18 credits

Semester VI

| | | |
|--------|---|---|
| II3260 | Mobile Platform and Application Development | 3 |
| II3230 | Information Security | 3 |
| II3231 | Interfacing and Human Computer Interaction Technology | 3 |
| EL4233 | Fundamentals of Intelligent Systems and Controls | 3 |
| II3220 | Enterprise Architecture | 3 |
| II3240 | IST Engineering (System Engineering) | 3 |

Total Load : 18 credits

Semester VII

| | | |
|--------|------------------------------|---|
| II4090 | Industrial Practices | 2 |
| II4091 | Final Project 1 and Seminars | 2 |
| II4470 | IT Legal and Ethics | 2 |
| II4471 | IST Capita Selecta | 2 |
| II4xxx | Major Electives | 8 |
| | Non Major Elective | 3 |

Total Load : 19 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| II4092 | Final Project 2 | 4 |
| II4472 | Interpersonal Communications | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| BI2001 | General Environmental Science | 2 |
| KU206x | Religion and Ethics | 2 |
| | Free Electives | 5 |

Total Load : 17 credits

Major Elective Courses

| | | |
|--------|---|---|
| II4021 | Decision Support System | 2 |
| II4022 | Information Technology Audit | 2 |
| II4031 | Cryptography and Coding | 2 |
| II4032 | Analysis and Design of System Performance | 2 |
| II4033 | Digital Forensic | 2 |
| II4034 | Language and Speech Processing | 2 |
| II4051 | Multimedia System Engineering | 2 |
| II4061 | Data Management | 2 |
| II4062 | Data Warehouse and Business Intelligence | 2 |
| II4071 | IST Profession | 2 |

Non Major Elective Courses

| | | |
|--------|---|---|
| EL4125 | Digital Image Processing | 3 |
| EL4126 | Robotics | 3 |
| EL4127 | Parallel Architectures and Computations | 3 |
| EL4132 | Biomedical Engineering | 3 |
| EP4072 | SCADA and Energy Management | 3 |
| IF4021 | Modeling and Simulation | 3 |
| IF4050 | Service Oriented Software Development | 3 |
| IF4051 | Component Based Software Engineering | 3 |
| IF4062 | Development of 3D Graphical Application | 3 |
| IF4071 | Machine Learning | 3 |
| KU4095 | Entrepreneurship | 2 |
| MB4045 | Investment Management | 3 |
| MB4054 | Quality Management | 3 |
| MR3002 | Management Technology | 3 |
| MR4107 | Contract Management | 3 |
| TI3004 | Engineering Economics | 2 |
| TI4109 | Financial Management | 3 |
| TI4203 | Marketing Management | 3 |
| TI4204 | Human Resource Management | 3 |
| TL4002 | Environmental Engineering | 3 |

TELECOMMUNICATION ENGINEERING

The Telecommunications Engineering Program is an interdisciplinary program, which requires a blend of knowledge covering the areas of Electrical Engineering, Computer Science, Management, Economics and Policy, in addition to Science and Mathematics as the foundation of engineering.

Students in this program are given an opportunity to learn and extend their abilities in analyzing and solving problems of telecommunications engineering. They are also prepared to be capable of designing new implementations of technology in order to serve today's needs of society. The program provides students with an integrated educational experience directed towards the comprehension in applying knowledge and techniques, as well as improving their ability in identifying and finding effective and efficient solutions for practical problems in telecommunications engineering.

This program ensures that the students ability and experience in design and analysis can be achieved by providing them with sequential and integrated course works and laboratories as described in the curriculum.

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Curriculum of Telecommunication Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| EL1200 | Introduction to Circuit Analysis | 2 |
| IF1210 | Programming Fundamentals | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|--------------------------------|---|
| MA2072 | Engineering Mathematics I | 3 |
| ET2001 | Discrete Mathematics | 3 |
| ET2003 | Electric Circuit | 3 |
| ET2005 | Digital System Design | 3 |
| ET2007 | Programming | 3 |
| ET2100 | Telecommunication Laboratory 1 | 1 |
| KU206x | Religion and Ethics | 2 |

Total Load : 18 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| MA2074 | Engineering Mathematics II | 3 |
| ET2000 | Electromagnetics I | 3 |
| ET2002 | Probability and Statistics | 3 |
| ET2004 | Continuous Time Signal Processing | 3 |
| ET2006 | Communication Electronics | 3 |
| ET2008 | Embedded Systems | 3 |
| ET2200 | Telecommunication Laboratory 2 | 1 |

Total Load : 19 credits

Semester V

| | | |
|--------|---|---|
| ET3000 | Electromagnetics II | 3 |
| ET3001 | Analog and Digital Communications Systems | 3 |
| ET3003 | Computer Networks | 3 |
| ET3004 | Telecommunication Traffic Engineering | 3 |
| ET3005 | Discrete Time Signal Processing | 3 |
| ET3009 | Software Engineering | 3 |
| ET3100 | Telecommunication Laboratory 3 | 1 |

Total Load : 19 credits

Semester VI

| | | |
|--------|--|---|
| ET3002 | Digital Communications | 3 |
| ET3006 | Radio Frequency Electronics | 3 |
| ET3007 | Antenna and Wave Propagation | 3 |
| ET3008 | Optical Communication Systems | 3 |
| ET3010 | Connected Services and Cloud Computing | 3 |
| ET3200 | Telecommunication Laboratory 4 | 1 |
| KU2071 | Pancasila and Civic Education | 2 |

Total Load : 18 credits

Semester VII

| | | |
|--------|--------------------------------------|---|
| ET4001 | Final Work I and Seminar | 2 |
| ET4003 | Selected Topics in Telecommunication | 2 |
| ET4041 | Multimedia Communication Systems | 3 |
| ET4061 | Wireless Access Networks | 3 |
| ET4xxx | Major Elective | 3 |
| XXMANJ | Management Elective | 2 |
| | Non Major Elective | 3 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|------------------------|---|
| ET4002 | Final Works II | 4 |
| ET4000 | Industrial Placement | 2 |
| ET4xxx | Major Elective | 6 |
| XXLING | Environmental Elective | 2 |
| | Free Elective | 2 |

Total Load : 16 credits

Major Elective Courses

| | | | | | |
|--------|--|---|--------|---|---|
| ET4004 | Development of Profession/Community A | 2 | ET4064 | Satellite and Terrestrial Communication Systems | 3 |
| ET4005 | Development of Profession/Community B | 3 | ET4065 | Broadcasting Systems | 3 |
| ET4006 | Development of Profession/Community C | 4 | ET4066 | Telemetry Systems | 3 |
| ET4040 | Telecommunication Economy, Business, Regulation and Policy | 3 | ET4067 | VLSI Systems for Digital Communications | 3 |
| ET4042 | Non-Linear Optical Communication Systems | 3 | ET4243 | Queuing Networks | 3 |
| ET4044 | Programming of Mobile Telecommunication Devices | 3 | ET4141 | Advanced IP Technology | 3 |
| ET4045 | Telecommunication Network Security | 3 | ET4144 | Management of Telecommunication Networks | 3 |
| ET4056 | Advanced Radio Frequency Electronics | 3 | ET4160 | Telecommunication Project Management | 3 |
| ET4058 | Radar and Navigation Systems | 3 | ET4242 | Planning of Enterprise Resources | 3 |
| ET4059 | Radar Signal Processing | 3 | | | |

Non Major Elective Courses

| | | | | | |
|--------|------------------------------------|---|--------|---|---|
| AS2005 | Astronomy and Environment | 2 | MB3001 | Environmental Management System | 2 |
| BI2001 | General Environmental Science | 2 | MK4101 | Environment Management System | 2 |
| DI4102 | Interior Design Project Management | 2 | MS3201 | Engineering Economics and Management | 2 |
| DI4208 | Art, Design and Environment | 3 | SR4208 | Art and Environment | 3 |
| DP3204 | Design Management | 2 | TF3202 | Environment and Energy | 2 |
| EP3071 | Electric Machines | 3 | TI3004 | Engineering Economics | 2 |
| EP3072 | Power Electronics | 3 | TI3005 | Organization and Management of Industrial Company | 2 |
| IF2230 | Operating System | 3 | TI3201 | Occupational and Environmental Safety and Health | 2 |
| IF2240 | Data Bases | 3 | TI4004 | Industrial Management B | 2 |
| IF3150 | Project Management of Software | 2 | IL2205 | Environmental Health | 2 |
| IF3151 | Human Computer Interaction | 3 | | | |
| II2240 | System Requirement Analysis | 3 | | | |

Minor Courses

Telecommunication 1

| | | |
|--------|---|---|
| ET3000 | Electromagnetics II | 3 |
| ET3001 | Analog and Digital Communications Systems | 3 |
| ET3002 | Digital Communications | 3 |
| ET3005 | Discrete Time Signal Processing | 3 |
| ET3006 | Radio Frequency Electronics | 3 |
| ET3007 | Antenna and Wave Propagation | 3 |

Total : 18 credits

Telecommunication 2

| | | |
|--------|---|---|
| ET3001 | Analog and Digital Communications Systems | 3 |
| ET3003 | Computer Networks | 3 |
| ET3004 | Telecommunication Traffic Engineering | 3 |
| ET3008 | Optical Communication Systems | 3 |
| ET3009 | Software Engineering | 3 |
| ET3010 | Connected Services and Cloud Computing | 3 |

Total : 18 credits

BIOMEDICAL ENGINEERING

Biomedical Engineering is a multi/trans-disciplinary engineering approach aiming to bridge the traditional disciplines of engineering, biology, and medicine. Engineering approach has played an increasing role in the advances of life science and healthcare. Future breakthroughs on these fields are expected to be more and more technology-driven. Biomedical engineering expertise undoubtedly becomes the critical component of such advances, since best engineering practice in this particular setting demands comprehensive understanding of the biological and medical aspects. It essentially applies well-known principles in engineering and physical sciences to study and solve problems in biology and medicine. SEEI ITB foresees the increasing relevancy of educating future engineers with strong affinity to biology and medicine; hence a specialized program in Biomedical Engineering within SEEI is established.

The Biomedical Engineering Program at SEEI ITB is made up of faculty members who are well respected in their areas of research and education. They engage in research activities encompassing a wide range of areas such as electronics and instrumentation, signal processing, computer networks, intelligent system and robotics, machine vision, and biomedical system modeling. The multi/trans-disciplinary nature of the program is demonstrated through the active participation of different faculty and schools at ITB; among others the School of Life Science and Technology, School of Pharmacy, Faculty of Mathematics and Natural Sciences, and the Faculty of Industrial Technology.

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Curriculum of Biomedical Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| EL1200 | Introduction to Circuit Analysis | 2 |
| IF1210 | Programming Fundamentals | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|--|---|
| EB2001 | Fundamentals of Biomedical Engineering | 2 |
| EB2002 | Electric Circuits and Electronics | 3 |
| EB2003 | Anatomy and Physiology I | 2 |
| EL2142 | Digital System and Microprocessor | 4 |
| EL2101 | Electric Circuits Laboratory | 1 |
| KI2162 | Biochemistry and Laboratory | 4 |
| MA2072 | Engineering Mathematics I | 3 |

Total Load : 19 credits

Semester IV

| | | |
|--------|--------------------------------------|---|
| EB2004 | Signals, Systems and Feedback | 4 |
| EB2005 | Biomedical Electronics | 3 |
| EB2006 | Anatomy and Physiology II | 2 |
| EB2200 | Biomedical Engineering Laboratory I | 2 |
| EL2008 | Problem Solving with C | 3 |
| EL2208 | Laboratory of Problem Solving with C | 1 |
| MA2074 | Engineering Mathematics II | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|--|---|
| EB3001 | Biomedical Physics | 3 |
| EB3002 | Probability and Biostatistics | 3 |
| EB3003 | Numerical Models in Biomedical Engineering | 3 |
| EB3004 | Biomedical Signal Processing | 3 |
| BI31xx | Applied Cell and Molecular Biology | 3 |
| EB3101 | Biomedical Engineering Laboratory IIA | 2 |
| BI4001 | Bioethics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|---|---|
| EB3005 | Bioelectromagnetics | 3 |
| EB3006 | Biosignal Measurement and Instrumentation | 3 |
| EB3007 | Biomedical Image Processing | 3 |
| FA32xx | Biomolecular Genetics and Dynamics | 3 |
| EB3201 | Biomedical Engineering Laboratory IIIA | 2 |
| KU206x | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civics Education | 2 |

Total Load : 18 credits

Semester VII

| | | |
|--------|---|---|
| EB4090 | Final Project I (Capstone Design) | 2 |
| EB4001 | Selected Topics and Professional Issues in Biomedical Engineering | 2 |
| EB4002 | Biomedical System Design | 3 |
| EB4003 | Pattern Recognition | 3 |
| EB4xxx | Major Elective | 3 |
| EB4xxx | Major Elective | 3 |
| | Non Major Elective | 3 |

Total Load : 18 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|------------------------------------|---|
| EB4091 | Final Project II (Capstone Design) | 3 |
| EB4092 | Industrial Experiences | 2 |
| XXLING | Environmental Elective | 2 |
| XXMANJ | Management Elective | 2 |
| EB4xxx | Major Elective | 3 |
| | Free Elective | 3 |

Total Load : 15 credits

Major Elective Courses

| | | |
|--------|---|---|
| EB4004 | Biomedical Instrumentation System | 3 |
| EB4005 | Stochastic Biomedical Signal Processing | 3 |
| EB4006 | Biomedical Imaging System | 3 |
| EB4007 | Medical Information System | 3 |
| EB4008 | Introduction to Biomedical Transport Phenomenon | 3 |
| EB4009 | Biomechanics | 3 |
| EB4010 | Biomedical System Modeling and Simulation | 3 |

Non Major Elective Courses

| | | | | | |
|--------|--|---|--------|---|---|
| EL3013 | Instrumentation System | 3 | BM3104 | Introduction to Bioinformatics | 2 |
| EL4121 | Embedded Systems Design | 3 | BI3xxx | Blood Circulation Physiology | 3 |
| EL4122 | Embedded Systems Design Laboratory | 1 | BI4105 | Neurobiology | 2 |
| EL4123 | Digital Control Systems | 3 | BIxxxx | Bioregeneration Engineering | 3 |
| EL4124 | Digital Control Systems Laboratory | 1 | MR2101 | Introduction to Engineering Management | 2 |
| EL4126 | Robotics | 3 | MR4004 | Engineering Management | 2 |
| EL4127 | Parallel Architectures and Computations | 3 | TI3005 | Organization and Management of Industrial Company | 2 |
| EL4233 | Fundamentals of Intelligent Systems and Controls | 3 | TI4004 | Industrial Management B | 2 |
| II3231 | Human Computer Interaction and Interfacing | 3 | IL2205 | Environmental Health | 2 |
| II4021 | Decision Support System | 2 | BI2001 | General Environmental Science | 2 |
| II4034 | Multimedia System Engineering | 2 | TL2205 | Environment Epidemiology | 2 |
| II4051 | Natural Language and Speech Processing | 2 | FI2112 | Introduction to Einstein Theory of Relativity | 3 |
| FI2151 | Biophysics | 2 | FI2204 | Modern Physics | 3 |
| FI2251 | Radiological Physics | 3 | TF2104 | Thermodynamics | 3 |
| FI3151 | Dosimetry and Radiation Protection | 3 | MS2231 | Fluid Mechanics I | 3 |
| FI3252 | Radiotherapy Physics | 2 | | | |
| TF4020 | Laser and Fiber Optics | 3 | | | |
| TF4021 | Optics | 3 | | | |
| TF4025 | Ultrasonics | 3 | | | |
| MT4007 | Biomaterials | 2 | | | |



FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

Faculty of Civil and Environmental Engineering (FTSL) was previously known by the name of Faculty of Civil Engineering and Planning (FTSP). FTSL has five courses of study available, namely:

1. Civil Engineering
2. Environmental Engineering
3. Ocean Engineering
4. Water Engineering and Management
5. Environmental Infrastructure Engineering

Scope of this faculty is closely related to the provision of basic infrastructure for public i.e. transportation infrastructure (roads, railways, bridges, stations, ports, airports, etc.), water channels both for clean water and waste (irrigation, dams, drainage, plantation waste disposal, etc.), green open spaces, electrical transmission in buildings and telecommunications, and various forms of other buildings.

Therefore, the knowledge learned in the study program is the science that supports the ability to design and maintain these infrastructures. There are many courses derived from the branch of physics, especially Engineering Mechanics, in addition to mathematics-based courses. For those who are fond of the chemistry, there are also courses of such subject matter in the study program of Environmental Engineering. Those who enjoy the process of designing and constructing buildings, both on land and offshore, would be very suitable to enter this school.

To ensure any learning process can be carried out effectively, supporting facilities are provided complete with the latest technology.

Frontline research, problem solving, and community services are carried out by all FTSL ITB academic staff in 10 research group, i.e. (1) Structural Engineering, (2) Geotechnical Engineering, (3) Water Resources Engineering, (4) Transportation Engineering, (5) Construction Engineering and Management, (6) Coastal Engineering, (7) Offshore Engineering, (8) Water & Waste Water Engineering, (9) Air & Waste Management, and (10) Environmental Management Technology.

Dean

: Prof. Ir. Ade Sjafruddin, M.Sc., Ph.D

Vice Dean for Academic Affairs

: Ir. Irsan Soemantri Brodjonegoro, Ph.D.

Vice Dean for Resource Planning and Management : Ir. Indah Rachmatiah Siti Salami, M.Sc., Ph.D.

CIVIL ENGINEERING

Civil Engineering is a professional engineering discipline that deals with the design, construction and maintenance of physical and natural built-environment, including works such as bridges, roads, canals, dams and buildings.

Five major fields of expertise are offered: structural engineering, geotechnical engineering, transportation engineering, water-resources engineering, and construction engineering and management. The basic courses in the study program are in the field of applied physics (engineering mechanics and fluid mechanics) and mathematics. The importance of mastering the knowledge and understanding the basic principles of engineering are emphasized, as well as mastering the design and construction principles and methods, including the management and environmental aspects.

Students are required to take courses in structural analysis, design of structure and foundation, transportation engineering, water resources engineering, and construction management. At the final year, they can take more advanced elective courses to support their final project in one field of expertise.

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Curriculum of Civil Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1001 | Sports | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1266 | Technical Drawing | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|---|---|
| SI2101 | Introduction to Civil Engineering Materials | 3 |
| SI2102 | Statistics and Probability | 3 |
| SI2103 | Engineering Mathematics | 3 |
| SI2111 | Static | 3 |
| SI2131 | Fluid Mechanics and Hydraulics | 3 |
| SI2141 | Introduction to Transportation Engineering | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|-------------------------------|---|
| GD2001 | Introduction to Surveying | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| SI2201 | Numerical Method | 3 |
| SI2211 | Strength of Material | 3 |
| SI2221 | Soil Mechanics I | 3 |
| SI2231 | Hydrology Engineering | 3 |
| SI2241 | Traffic Engineering | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|-----------------------------------|---|
| SI3111 | Structural Analysis I | 3 |
| SI3112 | Concrete Structures | 3 |
| SI3151 | Construction Management | 3 |
| SI3121 | Soil Mechanics II | 3 |
| SI3131 | Irrigation and Drainage Structure | 3 |
| SI3141 | Geometric Design of Highway | 2 |

Total Load : 17 credits

Semester VI

| | | |
|--------|--|---|
| SI3211 | Structural Analysis II | 3 |
| SI3212 | Steel Structures | 3 |
| SI3213 | Structure Dynamic and Earthquake Engineering | 3 |
| SI3221 | Foundation Engineering | 3 |
| SI3241 | Pavement Design of Roads | 2 |
| SI3251 | Construction Method | 3 |

Total Load : 17 credits

Semester VII

| | | |
|--------|-----------------------------------|---|
| SI4098 | Job Training / Internship | 2 |
| SI4111 | Structural Engineering and Design | 3 |
| SI4151 | Engineering Economics | 3 |
| KU206X | Religion and Ethics | 2 |

Total Load : 10 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| SI4099 | Final Project | 4 |
| BI2001 | General Environmental Science | 2 |
| SI4201 | Civil Engineering Systems | 3 |
| SI4231 | Hydraulic Structure | 3 |

Total Load : 12 credits

Elective Courses:

| | |
|---------------------|------------|
| Study Program | 39 credits |
| Other Study Program | 0 credit |
| Elective Free | 15 credits |

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|--|---|
| SI4112 | Advanced Concrete Structures | 3 |
| SI4113 | Wood Structures | 3 |
| SI4121 | Introduction to Soil Dynamics and Earthquake Engineering | 3 |
| SI4131 | Water Resources Development | 3 |
| SI4132 | Coastal and Swamp Engineering | 3 |
| SI4141 | Trips and Good Movement Demand Analysis | 3 |
| SI4142 | Pavement Structure and Materials | 3 |
| SI4143 | Traffic Management | 3 |
| SI4152 | Cost Construction Estimate | 3 |
| SI4153 | Heavy Civil Construction Methods and Project Management for Infrastructure | 3 |
| SI4211 | Prestressed Concrete | 3 |
| SI4212 | Advanced Steel Structures | 3 |
| SI4221 | Retaining Structures and Stability | 3 |
| SI4232 | River Engineering | 3 |
| SI4233 | Hydropower Engineering Building | 3 |
| SI4241 | Railway Engineering | 3 |
| SI4242 | Pavement Evaluation and Maintenance | 3 |
| SI4243 | Intermoda Infrastructure Engineering | 3 |



ENVIRONMENTAL ENGINEERING

The environment has the ability of self-purification. However, if the concentration and variety of waste generated is intolerable, the nature will be unable to do such self-purification. Therefore technical assistance is needed, either in the form of curative or preventive actions.

Environmental Engineering is a science which studies various curative and preventive measures that can be carried out to save the environment whose scope includes water, soil, air, and environmental health through engineering approaches. Efforts are made in the form of engineering on tools and methods which are used to minimize the negative impacts of (both industrial and domestic) waste on the environment and public health. This study program taught the course of potable water engineering, such as potable water supply system, planning of potable water facilities, and various others. Also studied in this study program is the engineering of wastewater i.e. the distribution of wastewater, planning, construction, and operation and maintenance of wastewater processing facilities (sewerage and water channels), management of liquid, solid, and hazardous and toxic waste including urban waste management and industrial waste. Furthermore, students will also learn the management of environmental health which studies the epidemiology, health, safety and environment, including environmental quality management.

Students can also perform social experiment, by conducting approach to community and giving them understanding about environmental problems. Environmental issues are related to everyone because the degradation of environmental quality is a result of everyone's activity. Therefore, the solution must also be carried out by the whole society by firstly changing the paradigms and behavior. It is an environmental engineer task to simplify the existing problems and to become the mediator between government and society.

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Curriculum of Environmental Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1001 | Sports | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1266 | Technical Drawing | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|---|---|
| TL2101 | Fluid Mechanics I | 3 |
| TL2102 | Environmental Statistic | 2 |
| TL2103 | Engineering Mathematics | 3 |
| TL2104 | Introduction to Environmental Engineering | 3 |
| TL2105 | Environmental Health | 3 |
| SI2112 | Knowledge Structure | 2 |
| GD2002 | Introduction to Geographic Information System | 2 |

Total Load : 18 credits

Semester IV

| | | |
|--------|--------------------------------|---|
| TL2201 | Fluid Mechanics II | 3 |
| TL2202 | Environmental Chemistry | 3 |
| TL2203 | Environmental Microbiology | 3 |
| TL2204 | Hydrology and Hydrogeology | 3 |
| TL2205 | Environment Epidemiology | 2 |
| SI2222 | Introduction to Soil Mechanics | 2 |
| TL2206 | Water Quality Management | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|--------------------------------|---|
| TL3101 | Physics and Chemical Treatment | 3 |
| TL3102 | Biological Process Engineering | 2 |
| TL3103 | Environmental Laboratory | 3 |
| TL3104 | Solid Waste Management | 3 |
| TL3105 | Water Supply Engineering | 3 |
| TL3106 | Soil Contamination | 2 |

Total Load : 16 credits

Semester VI

| | | |
|--------|-----------------------------------|---|
| KU206X | Religion and Ethics | 2 |
| TL3201 | Air Pollution | 3 |
| TL3202 | Sustainable Sewerage and Drainage | 3 |
| TL3203 | Water Management | 2 |
| TL3204 | Hazardous Material Management | 2 |
| TL3205 | Environmental Policy and Law | 2 |

Total Load : 14 credits

Semester VII

| | | |
|--------|--------------------------------------|---|
| TL4098 | Field Work | 2 |
| TL4104 | Environmental Engineering Management | 3 |
| TL4101 | Environmental Engineering Design I | 4 |
| TL4102 | Environmental Engineering Design II | 4 |
| TL4103 | Occupational Health | 2 |

Total Load : 15 credits

Semester VIII

| | | |
|--------|---------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| TL4099 | Seminar and Final Task | 5 |
| TL4201 | Environmental Impact Assessment | 3 |
| TL4202 | Project Planning | 2 |

Total Load : 12 credits

Elective Courses:

| | |
|---------------------|------------|
| Study Program | 12 credits |
| Other Study Program | 3 credits |
| Elective Free | 0 credit |

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|-------------------------------------|---|
| TL4002 | Environmental Engineering | 3 |
| TL4097 | Topics in Environmental Engineering | 2 |
| TL4111 | Plumbing and Pump | 3 |
| TL4121 | Tech. Aspect in Waste Recycling | 2 |
| TL4122 | Air Pollution Monitoring | 2 |
| TL4123 | Atmospheric Behavior | 2 |
| TL4131 | Infrastructure and Sanitation | 2 |
| TL4135 | Environmental System Analysis | 2 |
| TL4136 | Environment Conservation Technology | 2 |
| TL4137 | Air Pollution Control | 2 |
| TL4211 | Industrial Waste Management | 3 |
| TL4212 | Water Engineering and Construction | 2 |
| TL4213 | Sludge Treatment | 2 |
| TL4231 | Environmental Physic | 2 |
| TL4232 | Environment Ecological Engineering | 2 |
| TL4233 | Cleaner Technology | 2 |
| TL4234 | Policy and Numerical Transformation | 2 |
| TL4235 | Remediation Technique | 2 |



Doc. Indra Yudha

OCEAN ENGINEERING

The establishment of the Ocean Engineering (OE) program was initiated in 1985 with the development of the New S1 Ocean Engineering Program funded by World Bank Project XVII. Ocean Engineering Program was established in 1994 as a program under the Department of Civil Engineering. In 2006, following a reorganization of Institut Teknologi Bandung, OE became a program under the Faculty of Civil and Environmental Engineering (FCEE). OE program began to have the first student admission in 1994 and in October 1998 OE program had the first undergraduate graduation.

In attempt to fulfill the demand of ocean experts in Indonesia, as an archipelagic country, OE Program offers courses and research opportunities in environmental and engineering aspects of coastal and offshore infrastructure. The program is aimed at prospective students who wish to pursue their professional career in ocean related engineering design, environmental impact analysis, research and development, education, policy making and industry. The curriculum prepares graduates to have the knowledge and the skills to apply the principles of fluid and solid mechanics, dynamics, hydrostatics, probability and applied statics, oceanography, water waves, and underwater acoustics to engineering problems and to work in groups to perform engineering design at the system level, integrating multiple technical areas and addressing design optimization. Currently, the OE Program offers two specialized fields of subjects: Coastal and Offshore Engineering.

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Curriculum of Ocean Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1001 | Sports | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1266 | Technical Drawing | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|----------------------------------|---|
| KU206X | Religion and Ethics | 2 |
| KL2100 | Basic Engineering Analysis I | 3 |
| KL2101 | Fluid Mechanics | 3 |
| KL2102 | Statics | 3 |
| KL2103 | Statistics and Probability | 2 |
| KL2104 | Marine Geotechnics I | 2 |
| KL2105 | Materials for Marine Environment | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|-------------------------------|---|
| KL2200 | Basic Engineering Analysis II | 3 |
| KU2071 | Pancasila and Civic Education | 2 |
| KL2201 | Water Wave Mechanics | 3 |
| KL2202 | Mechanics of Materials | 3 |
| KL2203 | Numerical Methods | 3 |
| KL2204 | Marine Geotechnics II | 2 |
| KL2205 | Physical Oceanography | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|---|---|
| KL3100 | Hydrodynamics | 2 |
| KL3101 | Matrix Structural Analysis | 3 |
| KL3102 | Reinforced Concrete Structures | 3 |
| KL3103 | Ocean Engineering Data Acquisition and Analysis | 3 |
| KL3104 | Underwater Acoustics | 3 |
| KL3105 | Engineering Economics | 2 |

Total Load : 16 credits

Semester VI

| | | |
|--------|---|---|
| KL3200 | Basic Random Waves | 3 |
| KL3201 | Structural Dynamics | 3 |
| KL3202 | Steel Structures | 3 |
| KL3203 | Coastal Processes | 3 |
| KL3204 | Laboratory Experimental Methods | 3 |
| KL3205 | Construction Management of Ocean Structures | 3 |

Total Load : 18 credits

Semester VII

| | | |
|--------|---------------------------------|---|
| KL4098 | Field Project | 2 |
| KL4110 | Planning of Port Infrastructure | 2 |
| KL4100 | Ocean Environment | 3 |
| KL4111 | Coastal Structures | 2 |
| KL4120 | Offshore Platforms | 3 |

Total Load : 12 credits

Semester VIII

| | | |
|--------|------------------------------|---|
| KL4099 | Final Project | 4 |
| KL4210 | Design of Berthing Structure | 3 |
| KL4220 | Subsea Pipeline | 2 |
| KL4221 | Floating Structures | 2 |

Total Load : 11 credits

Elective Courses:

| | |
|---------------------|-----------|
| Study Program | 9 credits |
| Other Study Program | 3 credits |
| Elective Free | 3 credits |

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|---|---|
| KL3106 | Long Waves | 2 |
| KL3206 | Construction Method of Ocean Structures | 2 |
| KL3207 | Introduction to Finite Element Method | 3 |
| KL3208 | Boundary Element Method | 2 |
| KL3209 | Reclamation and Dredging | 2 |
| KL4112 | Modeling in Coastal Engineering | 2 |
| KL4113 | Hydrology and Fisheries/Salt Pond Infrs | 3 |
| KL4114 | Coastal Zone Management | 2 |
| KL4121 | Basic Ship Engineering | 3 |
| KL4200 | Introduction to Ocean Energy | 2 |
| KL4211 | Port Management and Operations | 2 |



Doc. Faculty of Civil and Environmental Engineering

WATER RESOURCES ENGINEERING AND MANAGEMENT

Water is one of basic needs of living matters, hence its availability should be guaranteed to support the sustainable development in an ecosystem to avoid disaster of drought. Availability of food and energy are inevitably related to the sustainable supply of water. In other situation, too much water will also bring a disaster such as flood, flash flood, dam break, embankment failure etc. Challenges in the future regarding to the impact of global climate change towards water resources are also needs to be answered in a proper, comprehensive and integrated way. These examples of situations and circumstances shows that water resources should be further learned, understood and managed through knowledge in water resources engineering and management.

Water Resources Engineering and Management is a study program which offer knowledge, relevant technology applications and management in the field of water resources. During their studies, students will acquire knowledge, concept and applied technologies in the field of water resources engineering. In the end, the graduates will gain competencies in water resources engineering infrastructures planning, design and management. The students will also learn application of information technology and optimization for decision making processes in water resources field. Water resources infrastructures studied are reservoir, irrigation, flood control, drainage network, river hydraulic structure, sediment control structure etc.

Water Resources Engineering and Management Study Program is located at ITB Campus Jatinangor, about 20 km to the east from ITB main campus. New administration facilities, classes, indoor and field laboratory are provided to enhance academic atmosphere. Hydraulic and Hydrology Laboratory, and River and Sedimentation Laboratory has been constructed. Two small reservoirs which were constructed through cooperation of Ministry of Public Works and ITB, can be used as in-campus field laboratory.

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In this study program, after accomplishment of first year student program (TPB), students will learn the basic of water resources engineering, i.e. Engineering Mathematics, Hydrology, Hydraulics, Statistic and Probability and some courses which are related to engineering material and common construction design which are essential in infrastructure design such as: Engineering Construction Material, Statics, Soil Mechanics and Foundation Engineering. Students will also learn Mapping and Geographic Information System, Water Resources Engineering Economics, Construction Management of Water Resources Project. In the final year, students will be engaged in Industrial Attachment and write their Final Year Project.

The graduates of Water Resources Engineering and Management Study Program may choose and develop their career in many companies (consultant, contractors) or join with government agencies/ministry related with water resources engineering and management. Currently, only a few universities offer study program in this field, while challenges in water resources is increasing and must be answered, hence opportunities to develop career as a water resources engineer is challenging, interesting and still widely open.



Curriculum of Water Resources Engineering and Management

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering Design I | 2 |
| KU1072 | Introduction to Informatics Technology B | 2 |
| KU102X | English | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering Design II | 2 |
| KU1001 | Sports | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1266 | Technical Drawings | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|-----------------------------------|---|
| SA2101 | Engineering Mathematics I | 3 |
| SA2102 | Fluid Mechanics | 3 |
| SA2103 | Hydrology I | 3 |
| SI2111 | Statics | 3 |
| SI2101 | Construction Material Engineering | 3 |
| SI2122 | Soil Mechanics | 3 |
| KU206X | Religion and Ethics | 2 |

Total Load : 20 credits

Semester IV

| | | |
|--------|----------------------------|---|
| SA2201 | Engineering Mathematics II | 3 |
| SA2202 | Mapping and GIS | 3 |
| SA2203 | Hydraulics | 3 |
| SA2204 | Hydrology II | 3 |
| SA2205 | Groundwater | 2 |
| SA2206 | Hydrometry | 2 |
| SA2207 | Policy in Water Resources | 2 |
| KU2071 | Pancasila and Civics | 2 |

Total Load : 20 credits

Semester V

| | | |
|--------|---|---|
| SA3101 | Sediment Transport | 3 |
| SA3102 | Design of Irrigation System | 3 |
| SA3103 | Lowland and Coastal Engineering | 3 |
| SA3104 | Foundation Engineering of Hydraulic Structure | 2 |
| SA3105 | Modeling in Water Resources Engineering | 3 |
| SA3106 | Water Resources Economics | 2 |
| | Elective Course | 3 |

Total Load : 19 credits

Semester VI

| | | |
|--------|--|---|
| SA3201 | Hydraulic Structures | 3 |
| SA3202 | Drainage Engineering and System | 3 |
| SA3203 | River Engineering and Morphology | 3 |
| SA3204 | Construction Management of Water Resources Project | 2 |
| SA3205 | Impact of Climate Change | 2 |
| | Elective Course | 3 |
| | Elective Course | 3 |

Total Load : 19 credits

Semester VII

| | | |
|--------|---|---|
| SA4098 | Industrial Attachment / Internship | 2 |
| SA4101 | Integrated Flood Management | 3 |
| SA4102 | System Analyses and Optimization in Water Resources | 3 |
| SA4103 | Reservoir and Hydropower | 3 |
| | Elective Course | 3 |
| | Elective Course | 2 |

Total Load : 16 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|--|---|
| SA4099 | Final Year Project | 4 |
| SA4201 | Waterway Transportation Infrastructure | 2 |
| SA4202 | Water Resources Management | 3 |
| SA4203 | Conservation of Water and Soil | 2 |
| TL4201 | Analyses of Environmental Impact | 3 |

Total Load : 14 credits

Elective Courses

| | | |
|--------|---|---|
| SA3111 | Water Resources Technology | 2 |
| SA3211 | Introduction to Hydraulics Physical Model | 3 |
| SA4111 | Operation and Maintenance of Hydraulic Structures | 2 |
| SA4112 | River Restoration and Protection | 2 |
| SA4113 | Lowland and Coastal Restoration and Protection | 3 |
| SA4114 | Disaster Mitigation | 3 |
| SA4115 | Lakes Ecosystem | 2 |

Elective Courses offered by other Program

| | | |
|--------|--|---|
| GL3221 | Engineering Geology | 3 |
| KL4110 | Seaport Infrastructure Planning | 2 |
| MB4012 | Conflict Resolution | 4 |
| PL3221 | Regional Planning | 3 |
| SI4221 | Design of Retaining Wall and Stability | 3 |
| SI4243 | Intermode Infrastructure Engineering | 3 |
| TL3105 | Drinking Water Supply Engineering | 3 |

Minor Courses

Minor Program : Drainage Engineering

| | | |
|--------|-----------------------------|---|
| SA2203 | Hydraulics | 3 |
| SA2204 | Hydrology II | 3 |
| SA3201 | Hydraulic Structures | 3 |
| SA3202 | Drainage Engineering System | 3 |
| SA4101 | Integrated Flood Control | 3 |

Total : 15 credits

ENVIRONMENTAL INFRASTRUCTURE ENGINEERING

Environmental Infrastructure Engineering plays a major role in developing infrastructures and supporting human development, while contributing to the sustainable development of society. Contamination of soil and water by improper sanitation and waste management, lack of access to drinking water, and unsustainable use of land and water resources remain major obstacles to global sustainability, while new challenges include threats from climate change and rapid urbanization.

Environmental Infrastructure Engineering as a blend of civil engineering and environmental engineering, provides students with the tools to solve future environmental problems and water issues. The courses in, for example, environmental health and water chemistry are preparatory for careers as environmental infrastructure engineers. Students will increase their understanding of the properties and functions of water and ecosystems, learn how to control the pollution caused by human activities as well as to provide the needs of the society without endanger the environment.

Our society has major challenges in managing a changing climate, developing and securing good water quality, developing systems for recycling materials and nutrients, and developing renewable and environmentally smart energy solutions.

To meet this societal need for qualified competence in planning, design, construction and maintenance of infrastructure systems in soil and water, this program promotes the personal development of knowledge, skills and attitudes that are needed to start working as a professional engineer in the field of infrastructure and environmental engineering. An important task is to be knowledgeable and responsible for the interface between urban development and the environment.

The needs for environmental infrastructure engineering expertise are therefore almost endless, and the labour market is very diverse. Graduates will be able to work privately and publicly – in environmental consultancies, with contractors, as public servant and in the government agencies; internationally, nationally or locally.

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Curriculum of Environmental Infrastructure Engineering

Semester I

| | | |
|--------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1101 | Elementary Physics IA | 4 |
| KI1101 | Basic Chemistry IA | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1072 | Introduction to Information Technology B | 2 |
| KU102X | English | 2 |

Total Load : 17 credits

Semester II

| | | |
|--------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1201 | Elementary Physics IIA | 4 |
| KI1201 | Basic Chemistry IIA | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1001 | Sports | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1266 | Technical Drawing | 2 |

Total Load : 19 credits

Semester III

| | | |
|--------|---------------------------|---|
| IL2101 | Hydraulics I | 3 |
| IL2102 | Biostatistics | 2 |
| IL2103 | Water Treatment Structure | 4 |
| SI2113 | Structural Science | 3 |
| GD2003 | Introduction Mapping | 3 |
| IL2203 | Water Microbiology | 3 |

Elective Course

2

Total Load : 20 credits

Semester IV

| | | |
|--------|--|---|
| KU206X | Religion and Ethics | 2 |
| IL2205 | Environmental Health | 2 |
| IL2201 | Hydraulics II | 3 |
| IL2202 | Water Chemistry | 3 |
| IL2104 | Hydrology | 3 |
| PL2231 | Introduction of Regional and City Infrastructure | 2 |
| SI2223 | Introduction to Soil Mechanics and Foundations | 3 |

Total Load : 18 credits

Semester V

| | | |
|--------|--------------------------------|---|
| IL3103 | Laboratory of Water and Waste | 3 |
| IL3104 | Solid Waste Management Systems | 3 |
| IL3105 | Water Supply System | 3 |
| IL3204 | Public Participation | 3 |
| | Elective Course | 4 |

Total Load : 16 credits

Semester VI

| | | |
|--------|-------------------------------|---|
| IL3201 | Drainage and Sewerage | 3 |
| IL3202 | Plumbing and Instrumentation | 3 |
| IL3203 | Waste Water Management System | 3 |
| IL3101 | Unit Operations | 3 |
| IL3102 | Unit Process | 3 |
| | Elective Course | 4 |

Total Load : 19 credits

Semester VII

| | | |
|--------|--------------------------------|---|
| IL4098 | Field work | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| IL4103 | Infrastructure Management | 3 |
| IL4104 | Waste Reduction | 3 |
| IL4202 | Design of Solid Waste Disposal | 3 |
| | Elective Course | 3 |

Total Load : 16 credits

Total CREDITS : 144 Credits

Semester VIII

| | | |
|--------|---------------------------------------|---|
| IL4099 | Seminar and Final Project | 5 |
| IL4201 | Project Planning | 3 |
| IL4102 | Design of Waste Water Treatment Plant | 3 |
| IL4203 | Rural Sanitation | 3 |
| IL4101 | Design of Water Treatment Plant | 3 |
| | Elective Course | 2 |

Total Load : 19 credits

Elective Courses

| | | |
|--------|---|---|
| IL4097 | Integrated Water and Environmental Management | 2 |
| IL4105 | Post-disaster Sanitation | 2 |
| IL4106 | Coastal Sanitation | 2 |
| IL4107 | Soil and Air Modeling | 2 |
| IL4108 | Groundwater Hydraulics | 2 |
| IL4109 | Food Sanitation | 2 |
| IL4204 | Environmental Sanitation | 2 |
| IL4205 | Appropriate Sanitation Technology | 2 |
| IL4206 | Science Society | 2 |
| IL4207 | Pre Design Landfill | 2 |
| IL4208 | Control of Disease Vectors | 2 |

Elective Courses offered by other Program

| | | |
|--------|--------------------------------------|---|
| TL4121 | Technical Aspects of Waste Recycling | 2 |
| TL4212 | Waterworks | 2 |
| TL4213 | Sludge Processing | 2 |
| TL4214 | Groundwater Hydraulics | 2 |
| TL4221 | Pre-designed Landfill | 2 |



SCHOOL OF ARCHITECTURE, PLANNING AND POLICY DEVELOPMENT

The School of Architecture, Planning and Policy Development (SAPPD) was established on August 29, 2005, under Rector Decree No. 222/2005. SAPPD is a combination of two departments that were originally parts of the Faculty of Civil Engineering and Planning (i.e. Department of Architecture and Department of Urban and Regional Planning) and three study programs which were originally parts of the Faculty of Industrial Engineering (i.e. Master Program of Development Study, Master Program of Transportation, and Doctoral Program of Transportation).

SAPPD has been active as an academic implementation unit since January 1, 2006. Study programs offered at the bachelor level are the Study Program of Architecture and Study Program of Urban and Regional Planning. Both are continuously thriving with significant contribution to the creation and dissemination of scientific knowledge in the field of planning, design, and built environment policy development, and its application for the improvement of the welfare of society and sustainable development of environment.

Through various fields of expertise that exist in the SAPPK, it is expected that institutional capacity and supporting human resources from the local to national level will increase, through a synergy between educational activities, researches, and community developments. Students will be guided to possess the ability to think creatively, systematically and critically as well as ethical and responsible attitude so that they are ready to become professionals, entrepreneurs, leaders, and powerful agents of change in society. Developed learning process seeks to encourage the growth of academic activities and collaborative efforts with special attention to issues concerning: good governance; community-based and participatory approach; knowledge, culture and local identity; the harmonization of global, central, and local challenges and opportunities.

Dean

: Prof. Dr. Ing.Ir. Widjaja Martokusumo

Vice Dean for Academic Affairs

: Dr.Ir. Denny Zulkaidi, MUP

Vice Dean for Resource Planning and Management : Dr. Sri Maryati, ST,MIP

ARCHITECTURE

Study program of Architecture in ITB is the first architecture educational institutions in Indonesia. ITB Architectural Education was planned based on extensive knowledge in dealing with the challenges of cultural change, and the rapid progress of technology and economy in the future. The learning process applied is the student centered learning, where the lecturers position themselves as facilitators instead of teachers. Creation of a dynamic learning atmosphere is created through group interaction activities, peer-group and the jury system.

Design as the core competence of architecture profession and scientific discipline is built in the integrated studio in which students explore the architectural design that gradually increased to be more diverse, complex and integrated by considering the aesthetic, cultural, historical, environmental, practical, and technical dimensions. Architectural design activity is seen as a problem setting, an exploration process to determine which decisions can be implemented, what results can be achieved, and what steps to achieve it. Development of creative ideas is aimed to obtain an optimal solution that can meet the interests of various parties which are often conflicting. This capability has to be developed as this will become the benchmark for success of the architectural profession in the future.

Architecture bachelor program emphasis is in the studio. The developed learning model includes the teaching field of:

- Design of buildings based on the typology (hospitals, museum, schools, shopping centers)
- Design of structure and construction
- Design of housing and settlements
- Design with a specific approach: tectonics and shape

Others subjects to broaden students' architecture perspective and support the skills as outlined in the studio, include:

Architectural Space and Shape, Visual Design, Structure, Construction and Materials, Asian and Archipelago Architecture, Design Method and Approach, Building System and Utilities, Urban Architecture, Theory and Criticism of Architecture, and Professional Practice.

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| Email | : kadep@ar.itb.ac.id |

Curriculum of Architecture

Semester I

| | | |
|-------------------------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1102 | Elementary Physics IB | 3 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| AR1101 | Fundamentals of Planning and Design | 3 |
| KU1001 | Sports | 2 |
| Total Load : 18 credits | | |

Semester II

| | | |
|-------------------------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| PL1202 | Presentation and Communication Technique | 3 |
| KU1072 | Introduction to Information Technology B | 2 |
| Total Load : 18 credits | | |

Semester III

| | | |
|-------------------------|--|---|
| AR2190 | Architectural Design Studio I | 5 |
| AR2120 | Building Construction and Materials Studio I | 3 |
| AR2111 | Architectural Appreciation | 2 |
| AR2121 | Fundamentals of Building Structure | 2 |
| AR2112 | Architectural Design Principles | 2 |
| AR2131 | Architectural History and Tradition of the World | 2 |
| AR2141 | Sustainable Built Environment | 2 |
| Total Load : 18 credits | | |

Semester IV

| | | |
|-------------------------|--|---|
| AR2290 | Architectural Design Studio II | 5 |
| KU206X | Religion and Ethics | 2 |
| AR2250 | Architectural Computation Studio | 3 |
| AR2210 | Space and Form Organization Studio | 3 |
| AR2211 | Architectural Design Theory | 2 |
| AR2212 | Human Behavior and Architectural Design | 2 |
| AR2231 | Architectural History and Tradition of Indonesia | 2 |
| Total Load : 19 credits | | |

Semester V

| | | |
|-------------------------|---|---|
| AR3190 | Architectural Design Studio III | 5 |
| AR3110 | Site Planning and Design Studio | 3 |
| AR3120 | Building Construction and Materials Studio II | 3 |
| AR3121 | Building Physics | 2 |
| AR3131 | History of Architectural Typologies | 2 |
| | Elective Course | 2 |
| | Elective Course | 2 |
| Total Load : 19 credits | | |

Semester VI

| | | |
|-------------------------|---------------------------------|---|
| AR3290 | Architectural Design Studio IV | 5 |
| AR3250 | Structure and Form Studio | 3 |
| AR3221 | Building Services | 2 |
| AR3222 | Construction Project Management | 2 |
| AR3241 | Housing and Settlements Design | 2 |
| | Elective Course | 2 |
| | Elective Course | 2 |
| Total Load : 18 credits | | |

Semester VII

| | | |
|-------------------------|----------------------------------|---|
| AR4090 | Architectural Design Studio V | 5 |
| AR4050 | Final Design Project Preparation | 3 |
| AR4051 | Comprehensive Examination | 1 |
| AR4111 | Introduction to Urban Design | 2 |
| AR4151 | Architecture Seminar | 2 |
| | Elective Course | 2 |
| | Elective Course | 2 |
| Total Load : 17 credits | | |

Semester VIII

| | | |
|-------------------------|----------------------------------|---|
| AR4099 | Final Design Project | 6 |
| KU2071 | Pancasila and Civic Education | 2 |
| AR4052 | Architects Professional Practice | 3 |
| AR4231 | Architectural Criticism | 2 |
| | Elective Course | 2 |
| | Elective Course | 2 |
| | Elective Course | 2 |
| Total Load : 17 credits | | |

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|--|---|
| AR3111 | Principles of Landscape Architecture | 2 |
| AR3122 | Appropriate Architecture | 2 |
| AR3132 | Historic Building Documentation | 2 |
| AR3211 | Introduction to Architectural Research | 2 |
| AR3231 | Colonial Architecture | 2 |
| AR3232 | Indonesian Architecture Post-Independence | 2 |
| AR3242 | Housing and Settlement Typomorphology | 2 |
| AR4121 | Algorithmic Approach in Design | 2 |
| AR4141 | Community Participation in Housing Planning and Design | 2 |
| AR4142 | Introduction to Real Estate | 2 |
| AR4211 | Architecture and Urbanism | 2 |
| AR4212 | Preservation of Historic Buildings and Sites | 2 |
| AR4221 | Building Economics | 2 |
| AR4222 | Introduction to BIM in Architecture | 2 |
| AR4232 | Architecture of Islam | 2 |
| AR4241 | Settlements for Low-Income Society | 2 |

Minor Courses

| | | |
|--------|--|---|
| AR2111 | Architectural Appreciation | 2 |
| AR2112 | Architectural Design Principles | 2 |
| AR2131 | Architectural History and Tradition of the World | 2 |
| AR2211 | Architectural Design Theory | 2 |
| AR2212 | Human Behavior and Architectural Design | 2 |
| AR2231 | Architectural History and Tradition of Indonesia | 2 |
| AR3131 | History of Architectural Typologies | 2 |



Doc. Widjaja Martokusumo

URBAN AND REGIONAL PLANNING

Urban and Regional Planning (PWK-Perencanaan Wilayah dan Kota) is one of the study program in SAPPD. Established in September 14, 1959, URP is a study program with vast relation to various other disciplines, both technical and socio-economics. URP focuses on the science of planning and designing an integrated region, thereby increasing the welfare of society.

In the process of education, when one becomes an URP student in addition to main planning related courses, one will have to take subjects from other study program, such as environmental geology, mapping, and others. In addition to technical subjects, one will also study the social, economy, and political related sciences, i.e. Social Aspects of Planning, Population Studies, Introduction to Economics of Planning, Urban and Regional Economics, Development Finance, Transportation Economics, Community Development, Planning and Politics, and others.

As an illustration, for example, within an urban area, there are many aspects that must be understood by a planner (the term for URP graduate). In the urban area there are physical components e.g. green space, shopping malls, housing, and others. On the other hand, there are also non-physical components e.g. congestion, density, pollution, and so forth. If a planner cannot understand those problems as a whole, he will not be able to make decent planning. Subsequently, area that is not well-planned will have poor conditions. Thus, URP also provides courses in the aspects of computation, economics, social, institution, politics, environment and physical. Planning is generally required to create better conditions for future, hence physical aspect is not the only one to be considered.

There is an interesting fact that has been very popular, which is where URP graduate works, he will still be distinguishable by his coherent and systematic way of thinking. Because when one studies in URP, not only he learns about urban and regional planning but he also learns the whole process which often called POAC: Planning, Organizing, Actuating, and Controlling. After a plan is created, there should be process to be put into practice to ensure its outcome and guard it from derailing. Therefore the plan must be implemented, then be managed and controlled. Plan creation must also consider the conditions of past and present, or to say "Learning from the past, managing the present; shaping the future".

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Curriculum of Urban and Regional Planning

Semester I

| | | |
|-------------------------|--|---|
| MA1101 | Mathematics IA | 4 |
| FI1102 | Elementary Physics IB | 3 |
| KI1102 | Basic Chemistry IB | 2 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| AR1101 | Fundamentals of Planning and Design | 3 |
| KU1001 | Sports | 2 |
| Total Load : 18 credits | | |

Semester II

| | | |
|-------------------------|---|---|
| MA1201 | Mathematics IIA | 4 |
| FI1202 | Elementary Physics IIB | 3 |
| KI1202 | Basic Chemistry IIB | 2 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| PL1202 | Communication and Presentation Techniques | 3 |
| KU1072 | Introduction to Information Technology B | 2 |
| Total Load : 18 credits | | |

Semester III

| | | |
|-------------------------|--|---|
| PL2102 | Spatial Pattern and Structure | 3 |
| PL2101 | Environment and Natural Resources | 3 |
| PL2151 | Introduction to Economics | 2 |
| PL2103 | Introduction of Spatial Data | 3 |
| PL2104 | Population Analysis in Planning | 2 |
| PL2105 | Planning Methods I | 3 |
| GL2021 | Introduction to Geological Environmental | 2 |
| | Elective Course | 2 |
| Total Load : 20 credits | | |

Semester IV

| | | |
|-------------------------|---|---|
| PL2251 | Urban and Regional Economics | 3 |
| PL2201 | Land Use Planning | 2 |
| PL2231 | Introduction to Urban and Regional Infrastructure | 2 |
| PL2211 | Housing System | 2 |
| PL2202 | Planning Methods II | 4 |
| PL2209 | Planning Process Studio | 3 |
| PL2241 | Planning Law | 2 |
| Total Load : 18 credits | | |

Semester V

| | | |
|-------------------------|--|---|
| PL3111 | Urban Planning | 3 |
| PL3101 | Social System and Community Development | 3 |
| PL3131 | Urban and Regional Infrastructure Planning | 3 |
| PL3119 | Site Planning Studio for Residential | 3 |
| PL3141 | Development Finance | 2 |
| | Elective Courses | 5 |
| Total Load : 19 credits | | |

Semester VI

| | | |
|-------------------------|---|---|
| PL3221 | Regional Planning | 3 |
| PL3222 | Rural Planning | 2 |
| PL3219 | Urban Planning Studio | 4 |
| PL3239 | Urban and Regional Infrastructure Studio | 3 |
| PL3241 | Development Administration and Management | 3 |
| | Elective Courses | 4 |
| Total Load : 19 credits | | |

Semester VII

| | | |
|-------------------------|-------------------------------|---|
| PL4129 | Regional Planning Studio | 4 |
| PL4112 | Urban Design | 2 |
| PL4190 | Internship | 2 |
| PL4101 | Research Methods | 2 |
| PL4102 | Planning Evaluation Technique | 2 |
| | Elective Courses | 4 |
| Total Load : 16 credits | | |

Semester VIII

| | | |
|-------------------------|-------------------------------|---|
| KU206X | Religion and Ethics | 2 |
| PL4201 | Planning Theory | 2 |
| PL4202 | Development Control | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| PL4290 | Final Project | 6 |
| PL4103 | Planning Information System | 2 |
| | Elective Course | 2 |
| Total Load : 18 credits | | |

Total CREDITS : 146 Credits

Elective Courses

| | | |
|--------|---|---|
| PL3001 | Disaster Aspect in Planning | 2 |
| PL3002 | Special Topics in Planning I | 2 |
| PL3011 | Land Development | 2 |
| PL3031 | Infrastructure and Transportation Economics | 2 |
| PL4001 | Introduction of Tourism Planning | 2 |
| PL4002 | Coastal Area Development | 2 |
| PL4003 | Regional and Urban Modelling | 2 |
| PL4004 | Participatory Planning | 2 |
| PL4005 | Capita Selecta | 2 |
| PL4006 | Special Topic in Planning II | 2 |
| PL4007 | City and Regional Innovation System | 2 |
| PL4008 | Seminar in Futuristic Studies | 2 |
| PL4012 | Urban Revitalization and New Town Planning | 2 |
| PL4031 | Transportation Institution | 2 |
| PL4032 | Transportation Modelling | 2 |
| PL4041 | Introduction to Urban Finance | 2 |
| PL4042 | Planning and Politics | 2 |

Elective Courses
offered by other program

| | | |
|--------|--|---|
| AR4142 | Introduction to Real Estate | 2 |
| BI4201 | Environmental Impact Assessment | 3 |
| BI4202 | Landscape Ecology | 3 |
| BI4203 | Management of Tropical Marine and Coastal Ecosystems | 3 |
| DK4208 | Art, Design and Environment | 3 |
| GD3205 | Remote Sensing | 4 |
| GD4103 | Environmental Geography | 2 |
| GD4104 | Environmental Remote Sensing | 3 |
| ME3036 | Climate Change | 3 |
| OS3205 | Coastal Management | 2 |
| SI2241 | Traffic Engineering | 2 |
| TG5132 | Disaster Mitigation | 2 |
| TL3203 | Water Management | 2 |
| TL4135 | Environmental System Analysis | 2 |
| TL4232 | Environment Ecological Engineering | 2 |
| TL5180 | Coastal Management | 2 |

Minor Courses

Minor Program : Urban and Regional Planning

| | | |
|--------|-----------------------------------|---|
| PL2101 | Environment and Natural Resources | 3 |
| PL2104 | Population Analysis in Planning | 2 |
| PL2201 | Land Use Planning | 2 |
| PL2251 | Urban and Regional Economics | 3 |
| PL3111 | Urban Planning | 3 |
| PL3221 | Regional Planning | 3 |

Total : 16 credits

Minor Program : Regional and Rural Planning

| | | |
|--------|---|---|
| PL2101 | Environment and Natural Resources | 3 |
| PL2102 | Spatial Pattern and Structure | 3 |
| PL2104 | Population Analysis in Planning | 2 |
| PL2231 | Introduction to Urban and Regional Infrastructure | 2 |
| PL2251 | Urban and Regional Economics | 3 |
| PL3221 | Regional Planning | 3 |
| PL3222 | Rural Planning | 2 |

Total : 18 credits

Minor Program : Urban Planning and Design

PL2101 Environment and Natural Resources 3

PL2104 Population Analysis in Planning 2

PL2201 Land Use Planning 2

PL2211 Housing System 2

PL2231 Introduction to Urban and Regional
Infrastructure 2

PL2251 Urban and Regional Economics 3

PL3111 Urban Planning 3

Total : 17 credits

Minor Program : Urban Infrastructure

PL2102 Spatial Pattern and Structure 3

PL2231 Introduction to Urban and Regional
Infrastructure 2PL3031 Infrastructure and Transportation
Economics 2

PL3111 Urban Planning 3

PL3131 Urban and Regional Infrastructure Planning 3

PL4031 Transportation Institution 2

PL4032 Transportation Modeling 2

Total : 17 credits

Minor Program : Urban Development Management

PL2241 Planning Law 2

PL3111 Urban Planning 3

PL3141 Development Finance 2

PL3241 Development Administration and
Management 3

PL4102 Planning Evaluation Technique 2

PL4202 Development Control 2

Total : 14 credits



FACULTY OF VISUAL ART AND DESIGN

Faculty of Visual Art and Design (FSRD) was established in 1984 after experiencing a long history of institution development. It was founded on August 1, 1947, as the University Education Center for Drawing Teacher under the Faculty of Sciences of University of Indonesia, in Bandung. In 1956, together with the Division of Architecture, the Center for Drawing Teacher was merged into Section of Architecture and Art. Then in 1984, the major of Art became a separate faculty namely Faculty of Visual Art and Design. This new faculty then has developed into five study programs in bachelor degree: Visual Art, Craft, Interior Design, Industrial Design, and Visual Communication Design along with two master programs (1989) and one doctorate program (1996).

Faculty of Visual Art and Design facilitates students to express themselves in the form of two dimensional, three dimensional, or intermedia visual artworks. Students are invited to explore media, shapes and ideas and then pour it into artworks. Human need for aesthetic, expression, function, could be met through the creation of works of art and design, either in visual art, craft, interior, industrial, or visual communication design. Creative and innovative abilities in solving problems also hold an important role. This is very interesting because in addition to the ability to realize ideas, one can also creatively be able to fulfil the wishes and needs of others either in the form of art, craft, or design. The produced works may also provide inspiration to all who need it.

| | |
|--|---|
| Dean | : Dr. Imam Santosa, M.Sn |
| Vice Dean for Academic Affairs | : Hafiz Aziz Ahmad, M.Ds., Ph.D. |
| Vice Dean for Resource Planning and Management | : Dr. Achmad Haldani Destiarmand, M.Sn. |

VISUAL ART

Visual art is a branch of art sciences which studies the aesthetics of art, either in theory or in practice. Therefore, an art student is expected to be able to create artwork based on the understanding of the art sciences and the current cultural development.

Study program of Art, FSRD ITB has a distinguished character as an art institution that is integrated with the science and technology. Encompassing science and technology eventually forms the mindset that leads to more in-depth scientific art studies and adaptive attitude towards the development of current culture; hence the produced artworks will have high relevance with the developments in science and technology and the growing issues in society.

Study program of Art has three main practical courses majoring in 2D art (painting and graphic), 3D art (sculpture and ceramics) and Intermedia art. It also has one theoretical course in Art and Aesthetic theories. In the Painting course, various styles of painting are studied, so are the media exploration and the search for formal expressions. Graphic course taught conventional printing techniques, photography, and digital printing. In Sculpture course, basics of sculpting and understanding of materials and three-dimensional shapes are taught. In Ceramics, art manufacturing covers and studies several processes ranging from formation, coloring to the burning stage. The Intermedia course taught various forms of artworks by combining multiple media, not only in visual form but also in the form of motion and sound. Study Program of Art also provides the extensive range of research and use of materials in the artworks in manufacturing process, so that the creativity with can be developed by immense visual possibilities. As for those interested in art theory, they can deepen it with selecting and concentrating on a specific study area, such as art history, art philosophy, art criticism, art management, and others.

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Curriculum of Visual Art majoring in 2D Art

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|---------------------|---|
| SR2001 | Visual Art Studio I | 4 |
| SR2101 | Cultural History | 2 |
| SR2102 | Drawing III | 3 |
| SR2103 | Aesthetic I | 2 |
| SR2104 | Introduction of Art | 2 |
| SR2105 | Art Media | 2 |

Total Load : 15 credits

Semester IV

| | | |
|--------|----------------------|---|
| SR2002 | Visual Art Studio II | 5 |
| SR2201 | Western Art History | 2 |
| SR2202 | Drawing IV | 3 |
| SR2203 | Asian Art | 2 |
| SR2204 | Art Appreciation | 2 |

Total Load : 14 credits

Semester V

| | | |
|--------|-------------------------------|---|
| SR3001 | 2 Dimensional Art Studio I | 5 |
| SR3101 | Method of Art Creation I | 2 |
| SR3102 | Art and Public Place I | 3 |
| SR3103 | Methodology Of Research Art I | 2 |
| SR3104 | Modern of Visual Art | 2 |

Total Load : 14 credits

Semester VI

| | | |
|--------|-----------------------------|---|
| SR3002 | 2 Dimensional Art Studio II | 5 |
| SR3091 | Seminar I | 3 |
| SR3204 | Art Management | 2 |
| SR3201 | History of Indonesian Art I | 2 |
| SR3202 | Art and Public Space II | 3 |
| SR3203 | Aesthetics II | 2 |

Total Load : 17 credits

Semester VII

| | | |
|--------|----------------------------------|---|
| SR4001 | 2 Dimensional Art Studio III | 5 |
| SR4101 | Experimental Art | 3 |
| SR4102 | Exhibition Project | 3 |
| SR4103 | Art Criticism I | 2 |
| SR4104 | History of Modern Indonesian Art | 2 |
| SR4105 | Art Sociology I | 2 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| KU206X | Religion and Ethics | 2 |
| SR4091 | Final Project Report | 2 |
| SR4092 | Final Project of Visual Art | 6 |
| SR4208 | Art and Environment | 3 |

Total Load : 15 credits

Elective courses: 17 credits

Total CREDITS :145 Credits

Curriculum of Visual Art majoring in 3D Art

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|---------------------|---|
| SR2001 | Visual Art Studio I | 4 |
| SR2101 | Cultural History | 2 |
| SR2102 | Drawing III | 3 |
| SR2103 | Aesthetic I | 2 |
| SR2104 | Introduction of Art | 2 |
| SR2105 | Art Media | 2 |

Total Load : 15 credits

Semester IV

| | | |
|--------|----------------------|---|
| SR2002 | Visual Art Studio II | 5 |
| SR2201 | Western Art History | 2 |
| SR2202 | Drawing IV | 3 |
| SR2203 | Asian Art | 2 |
| SR2204 | Art Appreciation | 2 |

Total Load : 14 credits

Semester V

| | | |
|--------|--------------------------------|---|
| SR3003 | Three Dimensional Art Studio I | 5 |
| SR3101 | Method of Art Creation I | 2 |
| SR3102 | Art and Public Place I | 3 |
| SR3103 | Methodology Of Research Art I | 2 |
| SR3104 | Modern of Visual Art | 2 |

Total Load : 14 credits

Semester VI

| | | |
|--------|---------------------------------|---|
| SR3004 | Three Dimensional Art Studio II | 5 |
| SR3091 | Seminar I | 3 |
| SR3204 | Art Management | 2 |
| SR3202 | Art and Public Space II | 3 |
| SR3201 | History of Indonesian Art I | 2 |
| SR3203 | Aesthetics II | 2 |

Total Load : 17 credits

Semester VII

| | | |
|--------|----------------------------------|---|
| SR4002 | Three Dimensional Art Studio III | 5 |
| SR4101 | Experimental Art | 3 |
| SR4102 | Exhibition Project | 3 |
| SR4103 | Art Criticism I | 2 |
| SR4104 | History of Modern Indonesian Art | 2 |
| SR4105 | Art Sociology I | 2 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| SR4091 | Final Project Report | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| KU206X | Religion and Ethics | 2 |
| SR4092 | Final Project of Visual Art | 6 |
| SR4208 | Art and Environment | 3 |

Total Load : 15 credits

Elective courses: 16 credits

Total CREDITS :144 Credits

Curriculum of Visual Art majoring in Intermedia Art

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|---------------------|---|
| SR2001 | Visual Art Studio I | 4 |
| SR2101 | Cultural History | 2 |
| SR2102 | Drawing III | 3 |
| SR2103 | Aesthetic I | 2 |
| SR2104 | Introduction of Art | 2 |
| SR2105 | Art Media | 2 |

Total Load : 15 credits

Semester IV

| | | |
|--------|----------------------|---|
| SR2002 | Visual Art Studio II | 5 |
| SR2201 | Western Art History | 2 |
| SR2202 | Drawing IV | 3 |
| SR2203 | Asian Art | 2 |
| SR2204 | Art Appreciation | 2 |

Total Load : 14 credits

Semester V

| | | |
|--------|-------------------------------|---|
| SR3005 | Intermedia Art I | 5 |
| SR3101 | Method of Art Creation I | 2 |
| SR3102 | Art and Public Place I | 3 |
| SR3103 | Methodology Of Research Art I | 2 |
| SR3104 | Modern of Visual Art | 2 |

Total Load : 14 credits

Semester VI

| | | |
|--------|-----------------------------|---|
| SR3006 | Intermedia Art II | 5 |
| SR3091 | Seminar I | 3 |
| SR3204 | Art Management | 2 |
| SR3201 | History of Indonesian Art I | 2 |
| SR3202 | Art and Public Space II | 3 |
| SR3203 | Aesthetics II | 2 |

Total Load : 17 credits

Semester VII

| | | |
|--------|------------------------------------|---|
| SR4003 | Studio Works of Intermedia Art III | 5 |
| SR4101 | Experimental Art | 3 |
| SR4102 | Exhibition Project | 3 |
| SR4103 | Art Criticism I | 2 |
| SR4104 | History of Modern Indonesian Art | 2 |
| SR4105 | Art Sociology I | 2 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| KU206X | Religion and Ethics | 2 |
| SR4091 | Final Project Report | 2 |
| SR4092 | Final Project of Visual Art | 6 |
| SR4208 | Art and Environment | 3 |

Total Load : 15 credits

Elective courses: 16 credits

Total CREDITS :144 Credits

Curriculum of Visual Art majoring in Art Theory

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|---------------------|---|
| SR2001 | Visual Art Studio I | 4 |
| SR2101 | Cultural History | 2 |
| SR2102 | Drawing III | 3 |
| SR2103 | Aesthetic I | 2 |
| SR2104 | Introduction of Art | 2 |
| SR2105 | Art Media | 2 |

Total Load : 15 credits

Semester IV

| | | |
|--------|----------------------|---|
| SR2002 | Visual Art Studio II | 5 |
| SR2201 | Western Art History | 2 |
| SR2202 | Drawing IV | 3 |
| SR2203 | Asian Art | 2 |
| SR2204 | Art Appreciation | 2 |

Total Load : 14 credits

Semester V

| | | |
|--------|-------------------------------|---|
| SR3007 | Study of Art I | 5 |
| SR3101 | Method of Art Creation I | 2 |
| SR3103 | Methodology Of Research Art I | 2 |
| SR3104 | Modern of Visual Art | 2 |
| SR3109 | Visual Culture I | 3 |

Total Load : 14 credits

Semester VI

| | | |
|--------|-----------------------------|---|
| SR3008 | Study of Art II | 5 |
| SR3091 | Seminar I | 3 |
| SR3204 | Art Management | 2 |
| SR3201 | History of Indonesian Art I | 2 |
| SR3203 | Aesthetics II | 2 |
| SR3205 | Art Anthropology | 3 |

Total Load : 17 credits

Semester VII

| | | |
|--------|----------------------------------|---|
| SR4004 | Study of Art III | 5 |
| SR4102 | Exhibition Project | 3 |
| SR4103 | Art Criticism I | 2 |
| SR4104 | History of Modern Indonesian Art | 2 |
| SR4106 | Art Communication | 3 |
| SR4105 | Art Sociology I | 2 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| SR4203 | Art Criticism II | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| KU206X | Religion and Ethics | 2 |
| SR4092 | Final Project of Visual Art | 6 |
| SR4208 | Art and Environment | 3 |

Total Load : 15 credits

Elective courses: 16 credits

Total CREDITS :144 Credits

Elective Courses

| | | |
|--------|------------------------------------|---|
| SR2003 | Painting Option | 3 |
| SR2004 | Sculpture Option | 3 |
| SR2005 | Printmaking Option | 3 |
| SR2006 | Ceramic Option | 3 |
| SR2007 | Art Paper Technique | 3 |
| SR3105 | Islamic Art History | 2 |
| SR3106 | Art and Market | 2 |
| SR3107 | Art Print Digital | 3 |
| SR3108 | Art and Sprituality | 2 |
| SR3206 | Art Photography | 3 |
| SR3207 | New Media Art | 3 |
| SR4202 | Visual Art, Science and Technology | 2 |
| SR4204 | Art Psychology | 2 |
| SR4205 | Woman Studies in Visual Art | 2 |
| DK2107 | Basic Photography | 3 |
| DK3014 | Perceptual Psychology | 3 |
| DK3016 | Social Psychology | 2 |
| DK3111 | Motion Graphic | 3 |
| DP4204 | Interactive Product Design | 2 |



Doc. Indra Yudia

CRAFT

Craft is one of the study programs in the Faculty of Art. Craft is in the midst of design and art. Design focuses on the technical standpoint as well as the functional value, whereas art emphasizes philosophical value of an artwork and its meaning or message that the artist wanted to convey to the observer. Between both of them, craft focuses on the design and production of a functional product with emphasis on aesthetic value, quality of design, and the meaning or philosophical message.

In the past, objects that were included in craft products were objects of high aesthetic value and usually honored i.e. keris, ulos cloth, batik cloth, and others. Nowadays the craft developed rapidly in line with the spirit of its time, technology developments, trends and the dynamically ever-changing lifestyles. However, the craft still absorbs the values and traditional elements in its products, to preserve the image of Indonesian tradition, in the present context.

People are often confused to differentiate between craft and handicraft. Therefore, the study program of Craft in ITB is more focused on the mastery of design skills in creating the concept, form and style (fashion) in a broad sense, which then become very important in supporting the growth of creative industries. On the other hand, Handicraft is designed to be more exclusive and has added values in many aspects, because the process relies on the skills of hand (handmade).

In the final stages of the Craft course, students are directed to be more able to cooperate with other disciplines such as chemistry, architecture, interior design, and management.

On the other concepts, craft may be reproduced to meet the needs in quantity, but it is not without limitation. Craft products are hard to imitate because of its uniqueness in the use of materials, as well as in the unification process and in the finishing of the work; it is always dynamic hence there is theoretically no identical product.

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The study program of Craft in ITB is currently divided into two course majors:

1. Textile Crafts major, which covers several subjects, including:

- Textile definition
- Textile craft design world, such as textile material, color, texture, pattern, ornamentation, and cultural background.
- Understanding of lifestyle, fashion, trends, and technology that accompanies it.
- Various craft production techniques: weaving, dyeing, batik, knitting, printing, embroidery, and so on, as well as exploration of the basic techniques into innovative craft products.
- Leading issues of the world, such as eco-friendly products (back to nature, eco-fashion, green design, eco-design), products with local cultural value (local content, indigenous raw materials, indigenous culture), and the manufacturing process of craft products and aesthetics.

2. Ceramics Craft major, which covers subjects mentioned above but only with a different medium—ceramic material with its own techniques. The subjects are:

- Various mediums of ceramic, such as: earthenware, stoneware, porcelain.
- Traditional decorative meaning associated with the meaning of the selected shape, to create ideas that fit in with present imagery.
- Various decorative and its definition.
- Physical and aesthetics properties of various mediums to form a craft masterpiece, which can then be mass produced without losing its exclusiveness.
- Various production techniques of ceramics craft: from basic materials processing stage, the formation of materials, burning process, models and molds creation and, as well as basic knowledge about the application of glazes on ceramic raw materials.

Curriculum of Craft majoring in Textile

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|--|---|
| KR2001 | Image Analysis | 5 |
| KR2102 | Ornament | 3 |
| KR2103 | Fashion Accessories | 3 |
| KR2104 | Digitalized Technical Drawing of Craft | 3 |
| KR2101 | History of Design | 2 |

Total Load : 16 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| KR2005 | Form Analysis | 5 |
| KR2206 | History of Fashion | 2 |
| KR2207 | Digitalized Presentation of Craft | 3 |
| KR2208 | Sociology of Craft | 2 |
| KR2201 | Design Method | 2 |

Total Load : 14 credits

Semester V

| | | |
|--------|---------------------------------|---|
| KR3009 | Fashion Research | 5 |
| KR3110 | Textiles Material and Process | 3 |
| KR3111 | Resist Dyes (Batik and Tie Dye) | 3 |
| KR3112 | Pattern Drafting | 3 |
| KR3113 | Interlacing | 3 |
| KR3101 | Design Critics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|--------------------------------|---|
| KR3014 | Textile Craft II (Interior) | 5 |
| KR3215 | Seminar for Craft | 3 |
| KR3216 | Surface Textile | 3 |
| KR3217 | Indonesian Traditional Textile | 2 |
| KR3218 | Weaving | 3 |
| KR3219 | Fashion Illustration | 3 |

Total Load : 19 credits

Semester VII

| | | |
|--------|---|---|
| KR4020 | Textile Craft III (Indigenous Fiber and Natural Dyes) | 5 |
| KR4090 | Textile Job Training | 3 |
| KR4092 | Preliminary Final Project Textiles | 3 |
| KR4124 | Fashion Management | 3 |
| KR4122 | Craft Entrepreneurship | 3 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| KR4208 | Art, Design and Environment | 3 |
| KR4094 | Final Project | 6 |

Total Load : 13 credits

Elective courses: 10 credits

Total CREDITS :144 Credits

Curriculum of Craft majoring in Ceramic

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|--|---|
| KR2001 | Image Analysis | 5 |
| KR2102 | Ornament | 3 |
| KR2103 | Fashion Accessories | 3 |
| KR2104 | Digitalized Technical Drawing of Craft | 3 |
| KR2101 | History of Design | 2 |

Total Load : 16 credits

Semester IV

| | | |
|--------|-----------------------------------|---|
| KR2005 | Form Analysis | 5 |
| KR2206 | History of Fashion | 2 |
| KR2207 | Digitalized Presentation of Craft | 3 |
| KR2208 | Sociology of Craft | 2 |
| KR2201 | Design Method | 2 |

Total Load : 14 credits

Semester V

| | | |
|--------|--|---|
| KR3026 | Ceramics I (Basic Form and Tableware) | 5 |
| KR3127 | Technology of Glaze Materials | 3 |
| KR3128 | Decorative Ceramic I | 3 |
| KR3129 | Basic Ceramic Body Forming Techniques | 3 |
| KR3130 | Knowledge and Engineering of Ceramic Raw Materials | 3 |

KR3101 Design Critics

2

Total Load : 19 credits

Semester VI

| | | |
|--------|---|---|
| KR3031 | Ceramic II (Accessories and Interior Product) | 5 |
| KR3215 | Seminar for Craft | 3 |
| KR3232 | Ceramic Firing Technology | 3 |
| KR3233 | Ceramic Field Work | 3 |
| KR3234 | Digital Application for Ceramic | 2 |

KR3235 Mold Making Technology

3

Total Load : 19 credits

Semester VII

| | | |
|--------|-----------------------------------|---|
| KR4036 | Lifestyle Tradition | 5 |
| KR4091 | Ceramic Job Training | 3 |
| KR4093 | Preliminary Final Project Ceramic | 3 |
| KR4124 | Fashion Management | 3 |
| KR4122 | Craft Entrepreneurship | 3 |

Total Load : 17 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| KR4208 | Art, Design and Environment | 3 |
| KR4094 | Final Project | 6 |

Total Load : 13 credits

Elective courses: 10 credits

Total CREDITS :144 Credits

Elective Courses

| | | |
|--------|-----------------------------|---|
| KR3242 | Batik | 2 |
| KR3243 | Tie Dye | 2 |
| KR4139 | Decorative Ceramic II | 3 |
| KR4141 | Form and Style | 2 |
| KR4240 | Sculptural Ceramic | 3 |
| DI3005 | Exhibition Design | 2 |
| DK4109 | Visual Culture of Nusantara | 2 |
| DP3111 | Design and Human Factor I | 2 |
| DP4202 | Creative Product Strategy | 2 |



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INTERIOR DESIGN

Study program of interior design studies the relationship between human and his various activities within the space in the building, physically, psychologically, and aesthetically (related to beauty). In this study program, students will be invited to think laterally in solving human problems that are associated with space.

To create a good interior design, some subjects will be taught including the subject on furniture, theory of colors, theory of shapes, history of design and architecture, psychology, structure, construction, physics of building, and others. In addition to those subjects, students will also be assisted in forming their discipline, ethics, and dedication toward their profession. For example, space designed for children will be different with the space designed for adults. Physical shapes and sizes between children and adults are very unlike which will result in differences in spatial dimension. Moreover, the needs and interests as well as the tendency for shapes and color between children and adults are also very different.

During the study at the Interior Design program, students will also learn about the spaces in apartment buildings, houses, shops, offices and public spaces i.e. hotels, airports, shopping malls, hospitals, and others.

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Curriculum of Interior Design

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|-------------------------------|---|
| DI2001 | Interior Design I | 5 |
| DI2102 | Principles of Interior Design | 2 |
| DI2103 | Interior Spatial Exploration | 3 |
| DI2104 | Interior Material and Color | 3 |
| DI2105 | Interior Design Ergonomy | 2 |
| DI2106 | Interior Design Presentation | 3 |
| DI2101 | History of Design | 2 |

Total Load : 20 credits

Semester IV

| | | |
|--------|--|---|
| DI2002 | Interior Design II | 5 |
| DI2202 | Review of Architecture | 2 |
| DI2203 | Furniture Design I | 4 |
| DI2204 | Interior Acoustic and Lighting | 2 |
| DI2205 | Interior Construction and Details | 2 |
| DI2206 | Introduction Psychology of Interior Design | 2 |
| DI2201 | Design Method | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|-----------------------------|---|
| DI3001 | Interior Design III | 5 |
| DI3102 | Workshop Design II | 4 |
| DI3103 | Interior Design Typology | 2 |
| DI3104 | Interior Building Utilities | 2 |
| DI3101 | Design Critics | 2 |

Total Load : 15 credits

Semester VI

| | | |
|--------|-------------------------|---|
| DI3002 | Interior Design IV | 5 |
| DI3201 | Furniture Design III | 4 |
| DI3202 | Interior Design Seminar | 3 |
| DI3203 | Interior Design Ethics | 2 |

Total Load : 14 credits

Semester VII

| | | |
|--------|------------------------------------|---|
| DI4001 | Interior Design V | 5 |
| DI4098 | Internship | 3 |
| DI4092 | Preliminary of Final Project | 3 |
| DI4102 | Interior Design Project Management | 2 |

Total Load : 13 credits

Semester VIII

| | | |
|--------|-------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| KU206X | Religion and Ethics | 2 |
| DI4208 | Art, Design and Environment | 3 |
| DI4094 | Interior Design Final Project | 6 |

Total Load : 13 credits

Elective courses: 15 credits

Total CREDITS :145 Credits

Elective Courses

| | | |
|--------|---|---|
| DI3003 | Review of Traditional Furniture | 2 |
| DI3004 | Review of Traditional Interior Design | 2 |
| DI3005 | Exhibition Design | 2 |
| DI3006 | Introduction of Interior Design Statics | 2 |
| DI3007 | Cultural Aspect of Interior Design | 2 |
| DI4004 | Interior Design Business | 2 |
| DI4005 | Sustainability in Interior Design | 2 |
| DI4006 | Heritage Interior Design Conservation | 3 |
| DI4007 | Healing Environment | 2 |
| DI4008 | Interior Design for Preservation Building | 2 |



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INDUSTRIAL DESIGN

Industrial Design is a study program that studies the design and manufacture of products as the solution for the problem which is based on the study of human comfort as the users and the development of its surrounding industrial principles. For example, in addition to making products that are safe and comfortable to use, it should also be economical and in accordance with the needs and desires of its users.

In an attempt to solve a problem in the field of industrial design, several approaches are taken towards interdisciplinary aspects, including: aesthetic, social, cultural, technology, management, environment, and science.

Competency of Graduate

Industrial Design graduate competence is with the specificity on the field of product design, where one is expected to have:

- Ability to design products creatively and able to implement particular scientific applications in the design of a comprehensive product with various approach/premise on the problem.
- Ability to examine objects and problems of product design.
- Ability to communicate product design ideas either orally, written, or visually.
- Ability to work well both interdisciplinary or independently in accordance with each expertise.

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Curriculum of Industrial Design

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|------------------------|---|
| DP2001 | Industrial Design I | 5 |
| DP2101 | History of Design | 2 |
| DP2103 | Product Semantics | 2 |
| DP2105 | Material and Process I | 3 |
| DP2107 | Presentation Technique | 3 |
| DP2109 | Design Ergonomics | 3 |

Total Load : 18 credits

Semester IV

| | | |
|--------|-------------------------------------|---|
| DP2002 | Industrial Design II | 5 |
| DP2201 | Design Method | 2 |
| DP2204 | Basic Engineering in Product Design | 2 |
| DP2206 | Material and Process II | 3 |
| DP2208 | Digital Modelling I | 3 |

Total Load : 15 credits

Semester V

| | | |
|--------|----------------------------------|---|
| DP3001 | Industrial Design III | 5 |
| DP3101 | Design Critics | 2 |
| DP3103 | Digital Modelling II | 3 |
| DP3105 | Lifestyle Product Design | 2 |
| DP3107 | Built Environment Product Design | 2 |

Total Load : 14 credits

Semester VI

| | | |
|--------|----------------------|---|
| DP3204 | Design Management | 2 |
| DP3002 | Industrial Design IV | 5 |
| DP3202 | Design Business | 3 |
| DP3206 | Sociology of Design | 2 |
| DP3208 | Innovation Product 1 | 2 |

Total Load : 14 credits

Semester VII

| | | |
|--------|---|---|
| DP4003 | Industrial Design V | 5 |
| DP4090 | Industrial Design Professional Practice | 4 |
| DP4092 | Product Design Portfolio | 3 |
| DP4101 | Product Design Innovation II | 2 |

Total Load : 14 credits

Semester VIII

| | | |
|--------|------------------------------------|---|
| DP4208 | Art, Design and Environment | 3 |
| KU2071 | Pancasila and Civic Education | 2 |
| KU206X | Religion and Ethics | 2 |
| DP4094 | Final Project of Industrial Design | 6 |
| DP4201 | Design Writing and Publication | 2 |

Total Load : 15 credits

Elective courses: 18 credits

Total CREDITS :144 Credits

Elective Courses

| | | |
|--------|----------------------------|---|
| DP2111 | Craft Design | 2 |
| DP3109 | Artifact Design | 2 |
| DP3111 | Design and Human Factor I | 2 |
| DP3113 | Seating Design | 2 |
| DP4202 | Creative Product Strategy | 2 |
| DP4204 | Interactive Product Design | 2 |
| DP4206 | Service Product Design | 2 |
| DP4207 | Design of Public Facility | 2 |

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VISUAL COMMUNICATION DESIGN

Visual Communication Design (DKV) is a branch of the design sciences that studies how to deliver messages using creative expressions to achieve certain goals, such as providing information or persuasion (as in advertising). The techniques and media that use visual elements to convey the message are also studied. Therefore, the visual communication designer should be able to process the message in an effective, informative, and communicative way.

There are basic subjects being taught in the study program of Visual Communication Design: developing forms of visual language (play of images) and processing messages (play of words) for both social and commercial purposes, either from individuals or groups. Visualization must be creative and innovative, while the core messages should be communicative, efficient, and effective. Both must support each other to be well delivered to the target.

The scope of work of a visual communication designer is very vast, ranging from designing product label, a logo which reflects an institution or company (branding), promotional package and campaign of a program, to the mass media advertising. Unlike artists (in this case, graphic artists) whose work is created as their personal expression, the works produced by a designer of visual communication emphasized on the concept that aimed and intended for targeted audiences.

There are three majors in the study program of Visual Communication Design that can be selected ahead of Semester V:

1. Graphic Design
2. Advertising Visual Communication
3. Multimedia Communication

Graphic Design and Advertising Visual Communication are processing visual language in static media. Thus, the skills of communication, typography, illustration and photography become factors that must be mastered. With their expertise, graphic designers can create logos, editorial designs, sign systems, packaging design, product promotional packages, and others. Advertising designers are capable of designing an attractive and efficient visualization for the purpose of persuasion, repackaging the image of a product/program/campaign with a good visual language which culminated in the change of behavior of the targeted audience. Meanwhile, Multimedia Communications leads to the dynamic time and audio based media. Animations, web design, interactive media, to directing the film are few examples of profession as multimedia designer.

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Curriculum of Visual Communication majoring in Graphic Design

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|-----------------------------------|---|
| DK2001 | Basic Visual Communication Design | 4 |
| DK2101 | History of Design | 2 |
| DK2103 | Basic Typography | 3 |
| DK2105 | Basic Illustration | 3 |
| DK2107 | Basic Photography | 3 |
| DK2109 | Communication Process | 2 |

Total Load : 17 credits

Semester IV

| | | |
|--------|--|---|
| DK2002 | Applied Visual Communication Design | 4 |
| DK2201 | Design Method | 2 |
| DK2202 | Applied Typography | 3 |
| DK2204 | Applied Illustration | 3 |
| DK2206 | Applied Photography | 3 |
| DK2208 | Production Method of Visual Communication Design | 2 |
| DK2210 | Communication Psychology | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|---|---|
| DK3001 | Graphic Design 1 | 4 |
| DK3115 | Animation | 3 |
| DK3103 | Printing Technology | 3 |
| DK3109 | Packaging Design | 3 |
| DK3119 | Research Methodology of Visual Communication Design | 2 |
| DK3117 | Visual Language | 2 |
| DK3101 | Design Critics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|--------------------------|---|
| DK3002 | Graphic Design II | 5 |
| DK3008 | Graphic Design Seminar | 3 |
| DK3202 | Graphic Design Portfolio | 3 |

Total Load : 11 credits

Semester VII

| | | |
|--------|--|---|
| DK4001 | Graphic Design III | 5 |
| DK4101 | Graphic Design Perspective | 3 |
| DK4090 | Visual Communication Design Internship | 3 |
| DK4107 | Visual Communication Design Management | 3 |

Total Load : 14 credits

Semester VIII

| | | |
|--------|---|---|
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| DK4208 | Art, Design and Environment | 3 |
| DK4099 | Visual Communication Design Final Project | 6 |

Total Load : 13 credits

Elective courses: 15 credits

Total CREDITS :144 Credits

Curriculum of Visual Communication majoring in Multimedia Communication

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|-----------------------------------|---|
| DK2001 | Basic Visual Communication Design | 4 |
| DK2101 | History of Design | 2 |
| DK2103 | Basic Typography | 3 |
| DK2105 | Basic Illustration | 3 |
| DK2107 | Basic Photography | 3 |
| DK2109 | Communication Process | 2 |

Total Load : 17 credits

Semester IV

| | | |
|--------|--|---|
| DK2002 | Applied Visual Communication Design | 4 |
| DK2201 | Design Method | 2 |
| DK2202 | Applied Typography | 3 |
| DK2204 | Applied Illustration | 3 |
| DK2206 | Applied Photography | 3 |
| DK2208 | Production Method of Visual Communication Design | 2 |
| DK2210 | Communication Psychology | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|---|---|
| DK3003 | Multimedia Design I | 4 |
| DK3115 | Animation | 3 |
| DK3105 | Visual Narrative | 3 |
| DK3111 | Motion Graphic | 3 |
| DK3119 | Research Methodology of Visual Communication Design | 2 |
| DK3117 | Visual Language | 2 |
| DK3101 | Design Critics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|---------------------------|---|
| DK3004 | Multimedia Design II | 5 |
| DK3010 | Multimedia Design Seminar | 3 |
| DK3204 | Videography | 3 |

Total Load : 11 credits

Semester VII

| | | |
|--------|--|---|
| DK4003 | Multimedia Design III | 5 |
| DK4103 | Interactive Media | 3 |
| DK4090 | Visual Communication Design Internship | 3 |
| DK4107 | Visual Communication Design Management | 3 |

Total Load : 14 credits

Semester VIII

| | | |
|--------|---|---|
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| DK4208 | Art, Design and Environment | 3 |
| DK4099 | Visual Communication Design Final Project | 6 |

Total Load : 13 credits

Elective courses: 15 credits

Total CREDITS :144 Credits

Curriculum of Visual Communication majoring in Advertising Communication

Semester I

| | | |
|--------|---|---|
| SR1101 | Basic Principles of Visual Art and Design | 2 |
| SR1102 | Drawing I | 4 |
| SR1103 | Basic Visual I 2D | 3 |
| SR1104 | Basic Visual I 3D | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU102X | English | 2 |
| KU1001 | Sports | 2 |

Total Load : 18 credits

Semester II

| | | |
|--------|---|---|
| SR1201 | Creativity and Humanity | 2 |
| SR1202 | Drawing II | 4 |
| SR1203 | Basic Visual II 2D | 3 |
| SR1204 | Basic Visual II 3D | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| KU1071 | Introduction to Information Technology A | 2 |

Total Load : 18 credits

Semester III

| | | |
|--------|-----------------------------------|---|
| DK2001 | Basic Visual Communication Design | 4 |
| DK2101 | History of Design | 2 |
| DK2103 | Basic Typography | 3 |
| DK2105 | Basic Illustration | 3 |
| DK2107 | Basic Photography | 3 |
| DK2109 | Communication Process | 2 |

Total Load : 17 credits

Semester IV

| | | |
|--------|--|---|
| DK2002 | Applied Visual Communication Design | 4 |
| DK2201 | Design Method | 2 |
| DK2202 | Applied Typography | 3 |
| DK2204 | Applied Illustration | 3 |
| DK2206 | Applied Photography | 3 |
| DK2208 | Production Method of Visual Communication Design | 2 |
| DK2210 | Communication Psychology | 2 |

Total Load : 19 credits

Semester V

| | | |
|--------|---|---|
| DK3005 | Advertising Design I | 4 |
| DK3115 | Animation | 3 |
| DK3107 | Theory of Advertising | 3 |
| DK3113 | Copywriting | 3 |
| DK3119 | Research Methodology of Visual Communication Design | 2 |
| DK3117 | Visual Language | 2 |
| DK3101 | Design Critics | 2 |

Total Load : 19 credits

Semester VI

| | | |
|--------|---------------------------------|---|
| DK3006 | Advertising Design III | 5 |
| DK3012 | Advertising Design Seminar | 3 |
| DK3206 | Advertising Business Management | 3 |

Total Load : 11 credits

Semester VII

| | | |
|--------|--|---|
| DK4005 | Advertising Design III | 5 |
| DK4105 | Visual Branding | 3 |
| DK4090 | Visual Communication Design Internship | 3 |
| DK4107 | Visual Communication Design Management | 3 |

Total Load : 14 credits

Semester VIII

| | | |
|--------|---|---|
| KU206X | Religion and Ethics | 2 |
| KU2071 | Pancasila and Civic Education | 2 |
| DK4208 | Art, Design and Environment | 3 |
| DK4099 | Visual Communication Design Final Project | 6 |

Total Load : 13 credits

Elective courses: 15 credits

Total CREDITS :144 Credits

Elective Courses

| | | |
|--------|---------------------------------------|---|
| DK3014 | Perceptual Psychology | 3 |
| DK3016 | Social Psychology | 2 |
| DK3208 | Children Book Illustration and Design | 3 |
| DK4109 | Visual Culture of Nusantara | 2 |
| DK4111 | Infographic | 3 |
| DK4113 | Experimental Multimedia | 3 |
| DK4115 | Experimental Graphic | 3 |
| DK4117 | Comic | 3 |
| DK4119 | Introduction of Advertising | 3 |
| DK4121 | Typeface Design | 3 |
| DK4204 | Sociology Communications | 3 |
| DK4206 | Game Design | 3 |
| DK4210 | Experimental Animation | 3 |
| DK4212 | Marketing Communication | 3 |





SCHOOL OF BUSINESS AND MANAGEMENT

The School of Business and Management ITB (SBM ITB) is the only school/faculty in ITB built on the humanities and management science. The ministry requires higher education institutions to conduct Tri Dharma Perguruan Tinggi. SBM ITB is developing itself to excel in education, to develop and to disseminate knowledge in the fields of business and management. The research activities focus on business cases and management practices of the leading successful companies in Indonesia so that the development of management will be relevant to the Indonesian context. Proximity to business environment and reliable research methodology improves SBM ITB's ability to create excellence in research. As part of the internalization strategy, SBM ITB aims to achieve international accreditation. Furthermore, SBM ITB emphasizes globalization in order to prepare its students to compete with the students of other leading business schools in Asia and Pacific.

The mission of SBM ITB is "To educate students to be innovative leaders with an entrepreneurial mindset and to develop and disseminate knowledge of business and management for the betterment of business, government, and society". The vision of SBM ITB is "Being a world-class institution that inspires and develop new leaders with entrepreneurial spirit".

In 2009, just six years after its establishment in December 2003, SBM ITB received recognition from SWA Magazine (<http://www.swa.co.id>, a highly rated business magazine in Indonesia), as the best MBA program in Indonesia. The magazine also recognized the IBE (Integrative Business Experience) provided by SBM ITB as one of the most innovative programs offered by business schools.

The very high public reputation of SBM ITB is evidenced by the low student admission rate. The admission rate for the undergraduate programs in 2014-2015 was just 4%. There were 3,207 applicants for the 136 available places in the undergraduate programs. At a ratio of 24:1, SBM ITB has become one of the most sought after business schools in Indonesia.

Dean

: Prof.Dr.Ir. Sudarso Kaderi Wiryono, DEA

Vice Dean for Academic Affairs

: Prof.Dr.Ir. Utomo Sardjono Putro, M.Eng

Vice Dean for Resource Planning and Management : Dr. Aurik Gustomo, ST., MT

MANAGEMENT

The future of our world is characterized by rapid and unexpected changes, accompanied by global competition; this is where networking becomes very important. These rapid and unexpected changes obsolete knowledge, hence the best ways of today may not necessarily suitable for future uses. Therefore, the abilities to promptly take decisions and to be creative are needed. Answering global challenges, management study program besides regular program, has also international business program.

Management study program seeks to enable the students to develop skills in business and to run various functions of management whilst also considering ethics, integrity and social responsibility. Its curriculum consists of minimum 144 undergraduate credits, which can be completed in nine semesters or three years. SBM has the advantage to accelerate the study progress through short semesters, making it possible to graduate a year early when compared with other schools/faculties in ITB.

Students' first year is directed to understand extensively that the world is very diverse, interconnected and interdependent; there is no problem that can be solved with absolute correct answer, thus broad view, openness, and willingness to accept differences is needed. This broad understanding also needs to be disclosed properly so the ability to express thoughts and feelings are also very important. Students are also given lectures to develop soft skill, the ability to build teamwork, to express their thoughts and feelings, to communicate and the ability to do holistic thinking between the natural order, individuals, society, and technology.

In the second year, as we have two programs, General Management and International Business program, theoretical science masteries in business and management are further developed through direct involvement in business practices. The General Management program directs students to engage with external parties i.e. financial institutions (banks, and others), suppliers, distributors, and end consumers of products/services produced in the activity. Field studies to Asian countries are the form of engagement for International Business students as they learn about business practices and international customers in Asia. In accordance with the business characteristics that must be carried out by students, students will also be trained to be able to face all the risk of failure as part of the learning and self-maturation process.

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In the General Management programme students, when their business earn profits, it should be used to create community development programs, thus the involvement of students in the real business will be used not only as a medium to train the skills to produce value-added economy, but also as media to raise awareness of social responsibility in social life.

After going through real business practices, in their third year of study in the General Management program, students are trained to be able to evaluate and determine the direction to which his competence will be developed. This process is strengthened with a number of optional courses, to concentrate his competence in the field of his interest. The third year for International Business students is conducted abroad, where SBM is sending the students for one year to SBM partner universities in various countries. The processes of teaching and learning in this study program are conducted both inside and outside the classroom, combining theory and practice in a balanced manner.



Doc. School of Business and Management

Curriculum of General Management

Semester I

| | | |
|--------|--|---|
| MA1103 | Business Mathematics I | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1001 | Sports | 2 |
| KU1071 | Introduction to Information Technology A | 2 |
| KU102X | English | 2 |
| MB1101 | Introduction to Business | 4 |
| MB1102 | Performance Art | 3 |

Total Load : 19 credits

Semester II

| | | |
|--------|---|---|
| MA1203 | Business Mathematics II | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| MB1201 | Business Statistics | 3 |
| MB1212 | Study of Human Society | 4 |
| MB1203 | Leadership and Management Practice (P) | 3 |

Total Load : 17 credits

Semester III

| | | |
|--------|--|---|
| MB2001 | Financial Accounting | 4 |
| MB2002 | Psychology and Organizational Behavior | 3 |
| MB2003 | Logic and Critical Thinking | 3 |

Total Load : 10 credits

Semester IV

| | | |
|--------|---------------------------------------|---|
| MB2101 | Decision Making (P) | 5 |
| MB2102 | Business Communication | 3 |
| MB2103 | Marketing | 3 |
| MB2104 | Business Ethics and Law | 3 |
| MB2105 | Integrative Business Experience I (P) | 6 |

Total Load : 20 credits

Semester V

| | | |
|--------|--|---|
| MB2201 | Technology Operation Management | 4 |
| MB2202 | Human Capital Management | 4 |
| MB2203 | Financial Management | 4 |
| MB2204 | Integrative Business Experience II (P) | 6 |
| KU206X | Religion and Ethics | 2 |

Total Load : 20 credits

Semester VI

| | | |
|--------|---------------------------------|---|
| MB3001 | Environmental Management System | 2 |
| MB3002 | Community Project | 4 |
| MB4xxx | Elective Course I | 4 |

Total Load : 10 credits

Semester VII

| | | |
|--------|-------------------------------|---|
| MB31xx | Capstone I | 4 |
| MB3101 | Economics | 4 |
| MB3102 | Business Research Method | 3 |
| KU2071 | Pancasila dan Civic Education | 2 |
| MB4xxx | Elective Course 2 | 3 |
| MB4xxx | Elective Course 3 | 4 |

Total Load : 20 credits

Semester VIII

| | | |
|--------|-------------------|---|
| MB32xx | Capstone II | 4 |
| MB4098 | Colloquium | 2 |
| MB4xxx | Elective Course 4 | 3 |
| MB4xxx | Elective Course 5 | 3 |
| MB4xxx | Elective Course 6 | 3 |
| MB4xxx | Elective Course 7 | 3 |

Total Load : 18 credits

Semester IX

| | | |
|--------|-------------------|---|
| MB4099 | Final Project | 6 |
| MB4xxx | Elective Course 8 | 4 |

Total Load : 10 credits

Total CREDITS : 144 Credits

Elective Courses

| | | |
|--------|--|---|
| MB3131 | Family Business | 4 |
| MB3132 | Strategic Management | 4 |
| MB3133 | Performance Management | 4 |
| MB3231 | International Business | 4 |
| MB3232 | Organization Anthropology | 4 |
| MB3233 | Cross Culture and Conflict Management | 4 |
| MB4011 | Negotiation | 4 |
| MB4012 | Conflict Resolution | 4 |
| MB4013 | Multivariate Statistics | 4 |
| MB4014 | Financial Audit and Control | 4 |
| MB4015 | Corporate Finance | 4 |
| MB4016 | Shopper Behaviour | 3 |
| MB4017 | Contemporer Human Capital Management | 4 |
| MB4018 | Compensation Management and Employee Performance | 4 |
| MB4019 | Creativity and Inovation | 3 |
| MB4020 | Technology Management | 4 |
| MB4021 | Enterprise Resources Planning | 3 |
| MB4022 | Operations Excellent Strategy | 4 |
| MB4023 | Supply Chain Management | 4 |
| MB4041 | Modelling and Simulation for Decision Analysis | 3 |
| MB4042 | Capital Market | 3 |
| MB4043 | Managerial Accounting | 3 |
| MB4044 | Financial Planning | 3 |
| MB4045 | Investment Management | 3 |
| MB4046 | Islamic Banking | 3 |
| MB4047 | Business Risk and Venture Capital | 3 |
| MB4048 | Emotional Branding | 3 |
| MB4049 | Retail Management | 4 |
| MB4050 | Brand Management | 3 |
| MB4051 | Organizational Development and Learning Organization | 3 |
| MB4052 | Strategic Change Management | 3 |
| MB4053 | Corporate Social Responsibility | 3 |
| MB4054 | Quality Management | 3 |
| MB4055 | Project Management | 3 |
| MB4056 | Bank Management and Financial Services | 3 |
| MB4070 | Entrepreneurship and Bio-Industry Management | 3 |

Minor Courses

| | | |
|-------------------------|---|---|
| Minor Program : General | | |
| MB2002 | Psychology and Organizational Behaviour | 3 |
| MB2103 | Marketing | 3 |
| MB2201 | Technology in Operation Management | 4 |
| MB2203 | Financial Management | 4 |
| MB3132 | Strategic Management | 4 |

Minor Program

| | |
|-----|---------------------------------|
| 104 | Microbiology |
| 107 | Pharmacy |
| 116 | Clinical and Community Pharmacy |
| 121 | Mining Engineering |
| 122 | Petroleum Engineering |
| 130 | Chemical Engineering |
| 131 | Mechanical Engineering |
| 132 | Electrical Engineering |
| 133 | Engineering Physics |
| 134 | Industrial Engineering |
| 135 | Informatics Engineering |
| 136 | Aeronautics and Astronautics |
| 137 | Material Engineering |
| 150 | Civil Engineering |
| 152 | Architecture |
| 153 | Environmental Engineering |
| 154 | City Planning |
| 172 | Craft Design |
| 173 | Interior Design |
| 174 | Graphics Design |
| 175 | Product Design |
| 192 | Entrepreneurship |

Curriculum of International Business

Semester I

| | | |
|--------|--|---|
| MA1103 | Business Mathematics I | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1001 | Sports | 2 |
| KU1071 | Introduction to Information Technology A | 2 |
| KU102X | English | 2 |
| MB1101 | Introduction to Business | 4 |
| MB1102 | Performance Art | 3 |

Total Load : 19 credits

Semester II

| | | |
|--------|---|---|
| MA1203 | Business Mathematics II | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| MB1201 | Business Statistics | 3 |
| MB1212 | Study of Human Society | 4 |
| MB1203 | Leadership and Management Practice (P) | 3 |

Total Load : 17 credits

Semester III

| | | |
|---------|------------------------|---|
| MB2001 | Financial Accounting | 4 |
| MB 2002 | Economics | 4 |
| MB 200x | International Business | 2 |

Total Load : 10 credits

Semester IV

| | | |
|--------|---------------------------------------|---|
| MB3233 | Cross Culture and Conflict Management | 3 |
| MB2102 | Business Communication | 3 |
| MB2103 | Marketing | 3 |
| MB2xxx | Integrated Business: Asia 1 (IBA1) | 4 |
| KU2071 | Pancasila and Civic Education | 2 |
| MB2xxx | International Finance and Trade | 3 |
| MB2xxx | Foreign Language | 2 |

Total Load : 20 credits

Semester V

| | | |
|--------|---|---|
| MB2201 | Technology Operation Management | 4 |
| MB2002 | Psychology and Organizational Behaviour | 3 |
| MB2203 | Financial Management | 4 |
| MB2xxx | Integrated Business: Asia 2 | 5 |
| KU206X | Religion and Ethics | 2 |
| MB3001 | Environmental Management System | 2 |

Total Load : 20 credits

Semester VI

| | | |
|--------|---------------------------------|---|
| MB2xxx | Decision Making and Negotiation | 3 |
| MB2202 | Human Capital Management | 4 |
| MB3102 | Business Research Method | 3 |

Total Load : 10 credits

Semester VII

| | | |
|--------|-------------|---|
| MB3xxx | Elective 1* | 4 |
| MB3xxx | Elective 2* | 4 |
| MB3xxx | Elective 3* | 3 |
| MB3xxx | Elective 4* | 3 |
| MB3xxx | Elective 5* | 3 |
| MB3xxx | Elective 6* | 3 |

Total Load : 20 credits

Semester VIII

| | | |
|--------|--|---|
| MB3xxx | Elective 7* | 3 |
| MB4098 | Colloquium | 2 |
| MB2104 | Business Ethics and Law* | 3 |
| MB3xxx | Elective 9* (International Economic and Politic) | 3 |
| MB3xxx | Elective 8* | 3 |
| MB3xxx | Elective 9* | 4 |

Total Load : 18 credits

Semester IX

| | | |
|--------|---------------|---|
| MB4099 | Final Project | 6 |
| MB4xxx | Elective 10 | 4 |

Total Load : 10 credits

Total CREDITS : 144 Credits

(*) All elective courses will be taken in Partner University in the third year.

ENTREPRENEURSHIP

Entrepreneurship is the disciplinary science of the life cycle of an enterprise beginning with conceptualization and planning right up to operating a successful business. The foundations of the science of entrepreneurship include business models, theories of innovation, business planning, handling of risk, investment and allocation of finances, a knowledge of negotiation and the business legislation, the setting up and development of a business.

To produce graduates in entrepreneurship who are able to apply their skills and knowledge to recognize and grasp business opportunities, and create and develop enterprises after assessing the business risks involved. Graduates are expected to be able to plan business models and procedures, which abide by ethical protocols in accordance with principles of business practice of universally acknowledged excellence and industrial standards of the highest quality.

Students' first year is directed to understand extensively that the world is very diverse, interconnected and interdependent; there is no problem that can be solved with absolute correct answer, thus broad view, openness, and willingness to accept differences is needed. This broad understanding also needs to be disclosed properly so the ability to express thoughts and feelings are also very important. Students are also given lectures to develop soft skill, the ability to build teamwork, to express their thoughts and feelings, to communicate and the ability to do holistic thinking between the natural order, individuals, society, and technology.

In the second year, students have understands concepts of innovation and principles of creativity in relation to the development of products and enterprises, understands how business develops, understands the basic principles of social sciences such as sociology, economics, psychology, anthropology and how they apply to understanding the institutions and context of the world of business, understands the principles of management science, knows the basic principles of technology, mathematics and statistics.

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After going through real business practices, third year students are able to plan business systems and models, able to identify business opportunities, conduct research on the feasibility of a business, and make a business proposal, able to see through a business from the stage of preparing the market, launching the product, managing production, human resources and finances, able to build up a business so that it develops with steady growth, able to manage risks associated with a business and its development, able to communicate and negotiate. This process is strengthened with high moral standards and recognizes responsibility in conforming to business ethics, appropriate leadership qualities such as showing initiative, risk-taking, independent, creativity, being proactive and innovative, a sense of national priorities when conducting business.

Curriculum of Entrepreneurship

Semester I

| | | |
|--------|--|---|
| MA1103 | Business Mathematics I | 3 |
| KU1101 | Introduction to Engineering and Design I | 2 |
| KU1001 | Sports | 2 |
| KU1071 | Introduction to Information Technology A | 2 |
| KU102X | English | 2 |
| MB1101 | Introduction to Business | 4 |
| MB1102 | Performance Art | 3 |

Total Load : 19 credits

Semester II

| | | |
|--------|---|---|
| MA1203 | Business Mathematics II | 3 |
| KU1201 | Introduction to Engineering and Design II | 2 |
| KU1011 | Indonesian Language: Scientific Writing | 2 |
| MB1201 | Business Statistics | 3 |
| MB1212 | Study of Human Society | 4 |
| MB1203 | Leadership and Management Practice (P) | 3 |

Total Load : 17 credits

Semester III

| | | |
|--------|------------------------------------|---|
| MK2001 | Design Thinking for Innovation (P) | 4 |
| MK2102 | Basic Accounting | 3 |
| MK2103 | Business Economics | 3 |

Total Load : 10 credits

Semester IV

| | | |
|--------|---|---|
| KU206X | Religion and Ethics | 2 |
| MK2002 | Business Model and System Development (P) | 4 |
| MK2101 | Production System and Technology | 3 |
| MB2104 | Sales and Marketing | 3 |
| MK2201 | Micro and Small Business | 3 |
| MK2202 | Managerial Accounting | 3 |
| MK4101 | Environmental Management System | 2 |

Total Load : 18 credits

Semester V

| | | |
|--------|---------------------------------------|---|
| KU2071 | Pancasila and Civic Education | 2 |
| MK3001 | Business Planning and Feasibility (P) | 4 |
| MK2203 | Social Entrepreneurship | 3 |
| MK2105 | Multivariate Statistics (P) | 3 |
| MK2204 | Religion and Ethics | 3 |
| MK2205 | Business Computation and Analytics | 2 |
| MK3101 | Business Risk Analysis | 3 |

Total Load : 20 credits

Semester VI

| | | |
|--------|----------------------------------|---|
| MK3002 | Business Initiation Practice (P) | 4 |
| MK3003 | Entrepreneurship Mentoring I (P) | 3 |
| MK3102 | Investment and Capital Analysis | 3 |

Total Load : 10 credits

Semester VII

| | | |
|--------|--|---|
| MK3103 | Communication and Business Negotiation | 3 |
| MK3201 | Business Initiation Practice (P) | 4 |
| MK4001 | Start-up Business Practice (P) | 4 |
| KU2071 | Entrepreneurship Mentoring II (P) | 3 |
| MK3xxx | Elective Course | 3 |
| MK3xxx | Elective Course | 4 |

Total Load : 20 credits

Semester VIII

| | | |
|--------|------------------------------------|---|
| MK4003 | Business Development Practice (P) | 4 |
| MK4004 | Entrepreneurship Mentoring III (P) | 3 |
| MK4103 | Business Research Method | 3 |
| MK4102 | Business Growth Strategy | 3 |
| MK3xxx | Elective Course | 4 |
| MK3xxx | Elective Course | 3 |

Total Load : 20 credits

Semester IX

| | | |
|--------|---------------|---|
| MB4099 | Final Project | 6 |
|--------|---------------|---|

| | | |
|--------|-----------------|---|
| MB4xxx | Elective Course | 4 |
|--------|-----------------|---|

Total Load : 10 credits

Total CREDITS : 144 Credits

Elective Courses


| | | | | | |
|--------|--|---|--------|----------------------------------|---|
| MK3011 | Technology Based Business | 3 | MK3019 | Creativity and Innovation | 3 |
| MK3012 | Service Business | 3 | MK3020 | Management of Technology | 3 |
| MK3013 | New Product Development | 3 | MK3021 | Technology Commercialisation | 3 |
| MK3014 | Tourism Business | 3 | MK3022 | Intellectual Property Management | 3 |
| MK3015 | Venture Capital Business | 3 | MK3023 | Quality Control and Management | 3 |
| MK3016 | Creative and Cultural Entrepreneurship | 3 | MK3024 | Brand Development and Management | 3 |
| MK3017 | Business Finance | 3 | MK3025 | Decision Making and Analysis | 3 |
| MK3018 | Corporate Entrepreneurship | 3 | | | |

Minor Program

| | |
|-----|---------------------------|
| 104 | Microbiology |
| 107 | Pharmacy |
| 121 | Mining Engineering |
| 122 | Petroleum Engineering |
| 130 | Chemical Engineering |
| 131 | Mechanical Engineering |
| 132 | Electrical Engineering |
| 133 | Engineering Physics |
| 134 | Industrial Engineering |
| 135 | Informatics Engineering |
| 137 | Material Engineering |
| 150 | Civil Engineering |
| 152 | Architecture |
| 153 | Environmental Engineering |
| 154 | City Planning |
| 173 | Interior Design |
| 174 | Graphics Design |
| 175 | Product Design |
| 190 | Management |

Minor Courses

| | | |
|--------|---------------------------------------|---|
| MK3001 | Business Planning and Feasibility (P) | 4 |
| MK3002 | Business Initiation Practice (P) | 4 |
| MK4001 | Start-up Business Practice (P) | 4 |
| MK4003 | Business Development Practice (P) | 4 |



HYMN OF ITB

With pride, we call out thy name
The glorious almamater, the cherished ITB
How immense is thy contribution for the country
For the noble ideals of welfare society

Verse:

O Lord we pray, for Thy consent and guidance
In duties and devotions, for the haven and the nation

Music & lyrics: Yudia Pancaputra

in harmonia progressio

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