

INSTITUT TEKNOLOGI BANDUNG

# Undergraduate Student Handbook

2010

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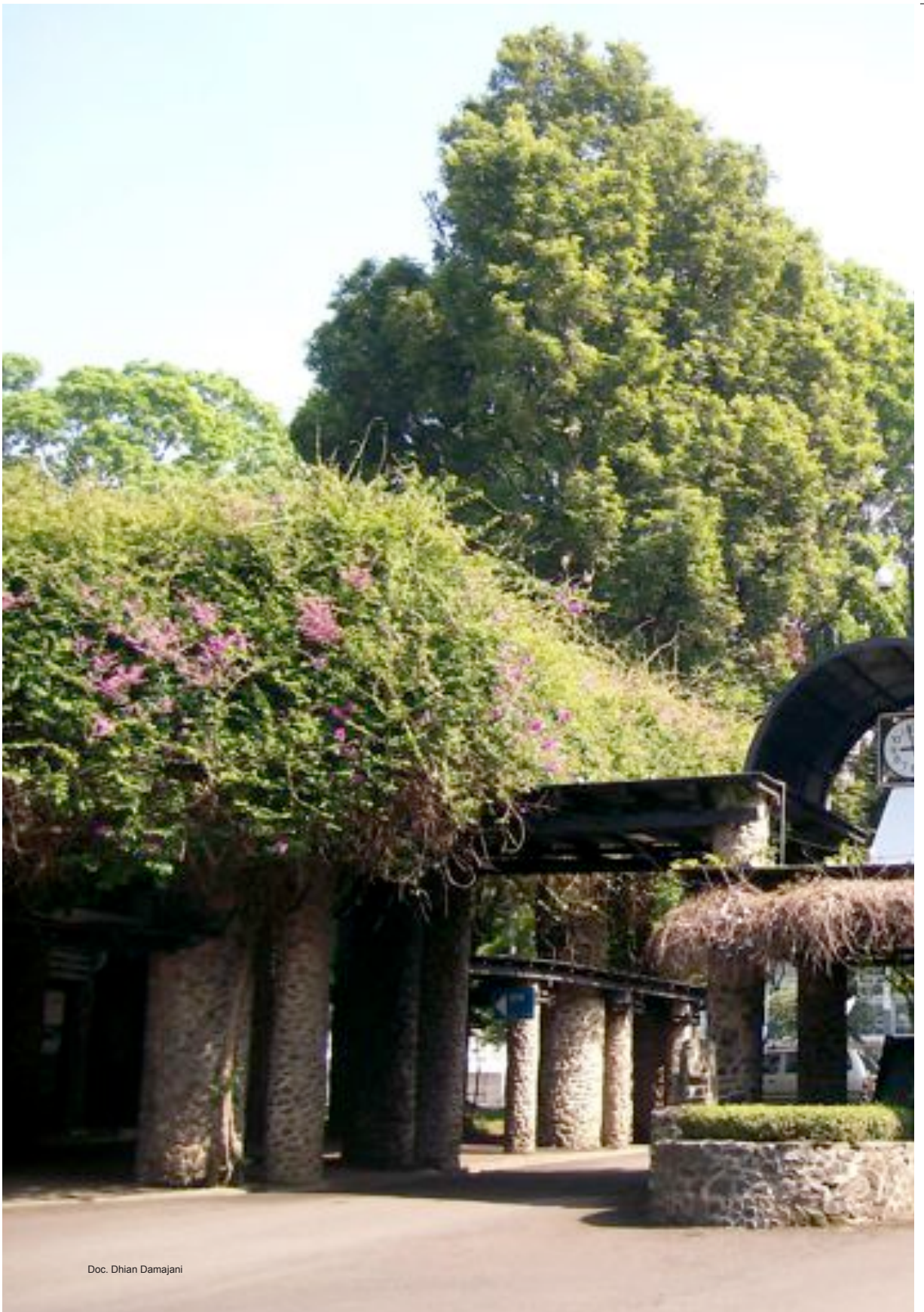
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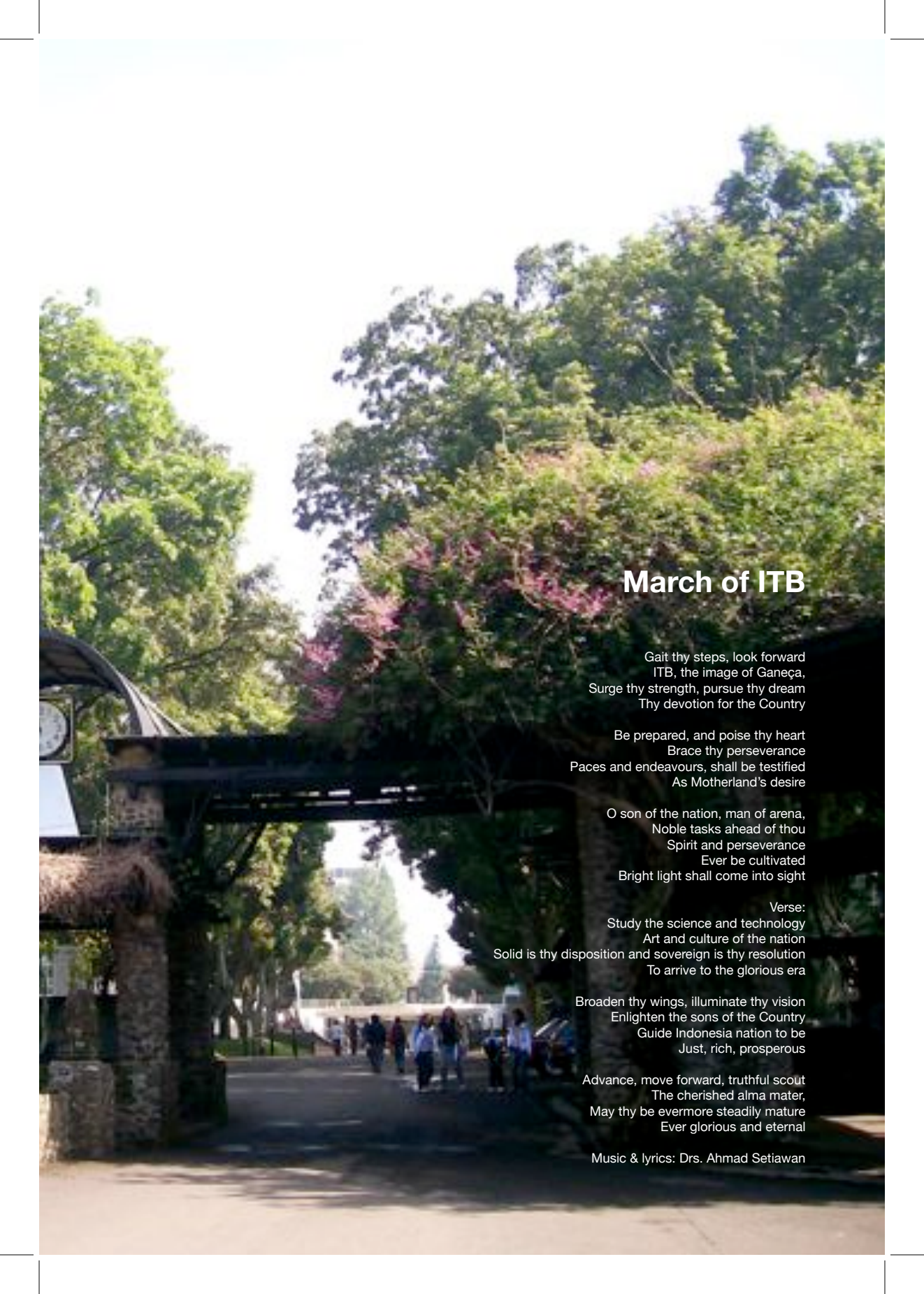




Doc. Dhian Damajani







## 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



## VISION

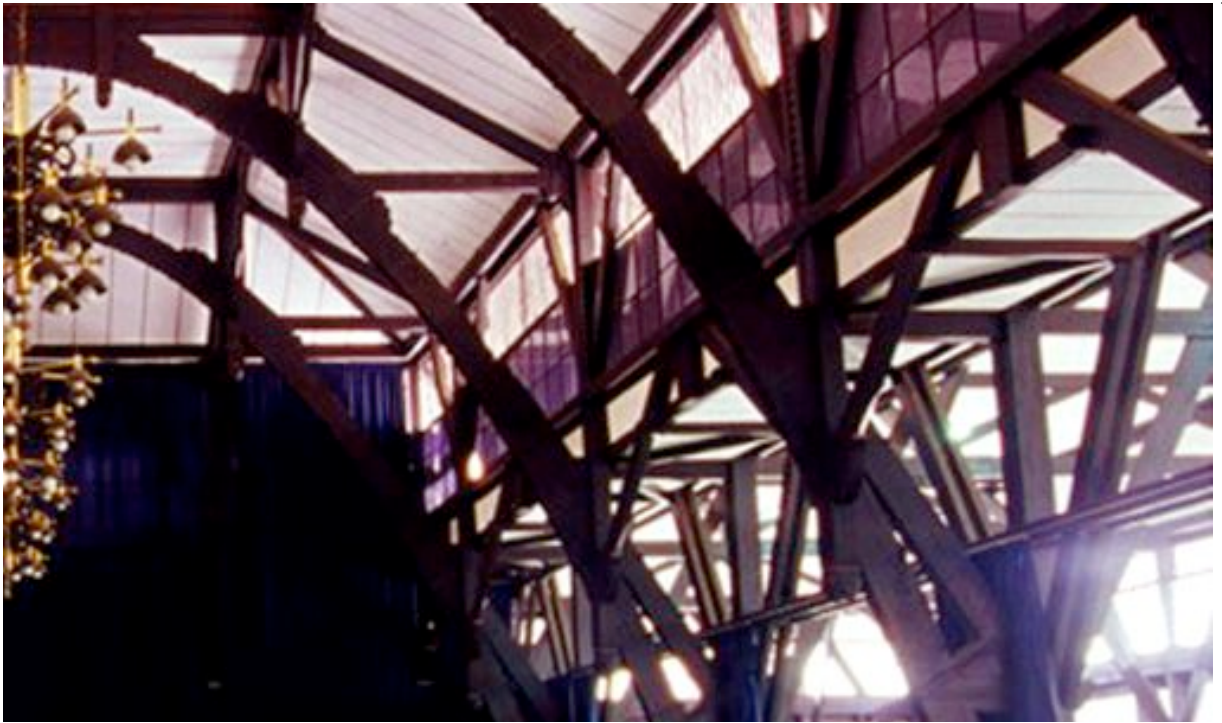
ITB vision in 2005 is the realization of culture and tradition of excellence of ITB: a university with the culture and tradition of research and excellent development in science, technology, and arts, highly upholding social and humanity values; a world class research and development university, which are autonomous, based on ITB basic values: a university that is self-directing; self-motivating; self-developing; self-supporting; self-assessing; making self-decision, based on the Indonesian high values.

(Source: RENIP ITB 2006-2025)

## MISSION

Together with the power of other nations aims to lead the progress of the Indonesian nation, to make the nation equal with other nations of the developed countries in the world in science, technology, and arts, highly upholding social and humanity values, making natural resources and culture help the nation to be an independent nation with strong economy, guaranteed in its social welfare, having justice, noble culture, and nation sovereignty, which can participate in realizing peace and human welfare on earth.

(Source: RENIP ITB 2006-2025)



Doc. Indra Yudha

## 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.

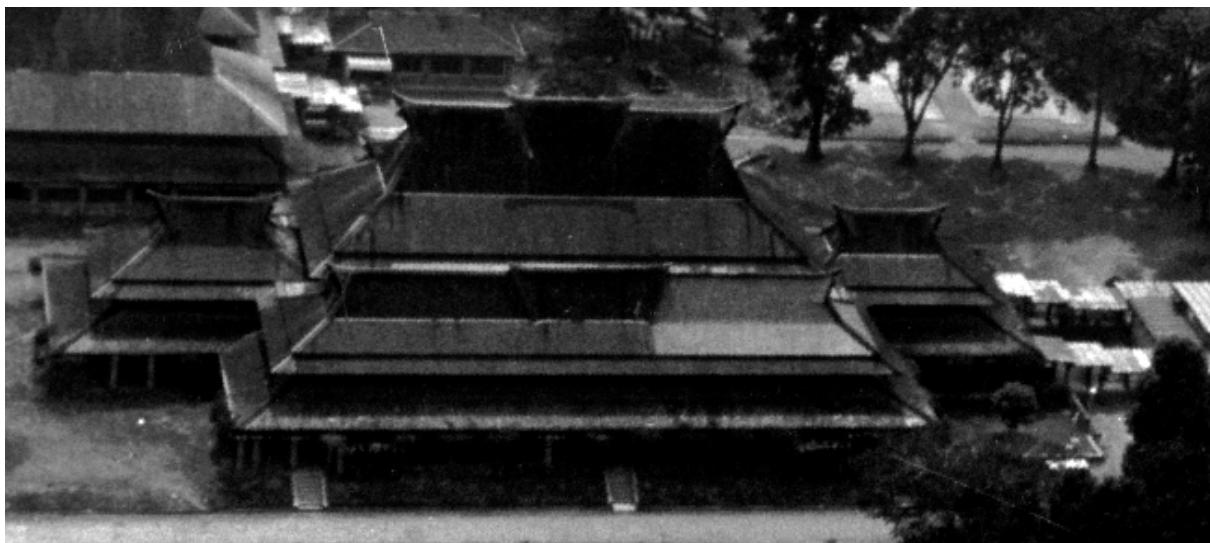
It is useful when at the initial process of study each student had already identified his/her interest and choice of study programme. But the case is often different; some students still do not have a clear picture of what to do during and after their undergraduate educations. This book is expected to 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. Akhmaloka, Ph.D  
Rector

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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 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.





Doc. Dihan Damagani



Doc. Dihan Damagani

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. Dihan Damagani

## ITB, Ganesa Campus

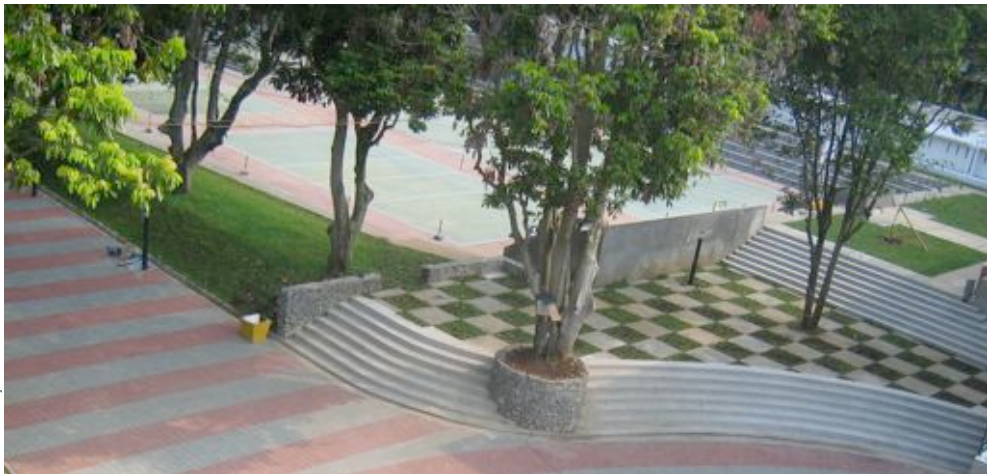
When it was built in 1920, Ganesa campus which was 30 ha wide, was located near Cikapundung river banks with green rice fields at Lebak Siliwangi and beautiful scenery of Tangkubanparahu in the north.

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.



Doc. Dihan Damajanti



Doc. Dihan Damajanti



Doc. Dhian Damajani

Along with hundreds of varieties of vegetations, ITB becomes a source of inspiration to explore and deepen knowledge.

## History and the Future

The future	ITB-BHMN (State-owned Entity)	ITB as Research & Development University -Academic Excellence for Education -Academic Excellence for Industrial Relevance -Academic Excellence for Contribution of the New Knowledge -Academic Excellence for Empowerment
2001-2005		December 26, 2000 , the determination of ITB-BHMN -ITB-BHMN Transformation 2002-2005 -ITB Accountability 2008
1959-2000	Institut Teknologi Bandung	March 2, 1959 Institut Teknologi Bandung was officially opened by Ir. Soekarno (The first president of RI) -1959 First Rector of ITB was inaugurated -1973 Common First Year Program was opened -1979 Postgraduate Program was opened
1950-1959	Universitas Indonesia	Faculty of Engineering Faculty of Science and Natural Science
1946-1950	Universiteit van Indonesie	June 21, 1946 was established by NICA 1946 Faculteit van Technische Wetenschap was founded October 6 1947, Faculteit van Exacte Wetenschap was founded
1945-1946	School of Engineering (STT)	1945, Bandung School of Engineering (STT) was opened 1946 TH moved to Yogyakarta with the name STT Bandung in Jogja 1949 STT Bandung became Gajah Mada University (UGM)
1944-1945	Bandung Kogyo Daigaku (BKD)	April 1, 1944 TH was reopened with the name BKD by the Japanese government.
1920-1942	Techische Hogeschool (TH)	July 3, 1920 TH was officially opened by the Dutch government July 1, 1924 first graduation of TH Bandung July 3, 1926, first graduation of Indonesian Engineers (one of them was Ir. Soekarno, the first president of Indonesia)

## KEY SUCCESS FACTORS

There are four key success factors which will lead to the implementation of ITB 2025 vision: ability to attract best talents into ITB community; ability to maintain the existence of best talents' in ITB community; ability to invite and empower resources and potency (including funding) to develop ITB; being responsive to ITB stakeholder's needs.

Key Success Factors that needs to be manifested by ITB in order to get world class recognition are:

1. Attractive to the best talents (brain and heart) - having a bargaining power to advance and develop
2. Retaining and developing the best talents (the internal potency) - having conducive academic atmosphere to advance and develop
3. Having a capacity to acquire resources and potency (internal & external) - having the capability to develop network
4. Being responsive toward external development - responsible to participate in realization of the Indonesian people's ideals).

## ORGANIZATION

With the new form of ITB BHMN, ITB top management has four main elements: Board of Trustees, Academic Senate, Council of Professors, and Academic Units led by the Rector.

Board of trustees is the highest structure of the institute that represents the interest of the government and people in general, which is responsible to the Ministry of National Education.

Institute's Academic Senate is the highest normative structure in the field of academic affairs.

Council of Professors is the institute's professors' forum whose members are all professors in the institute.

Rector is the leader of Institut Teknologi Bandung who has the authority and responsibility to carry out the education programs in Institut Teknologi Bandung.



## CAMPUS FACILITIES AND SERVICES

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 IT.

- **Sagung Seto**  
It is located in central Library Building 1st floor. The bookstore provides textbooks and popular books, and is open every Monday through Friday, 9:00 am to 5:00 pm and Saturday, 9:00 am to 12:00 pm. Textbooks are also provided here.
- **Toko Buku ITB**  
Toko Buku ITB is the on-campus site for text, reference, and general reading. Toko Buku ITB is located near Aula Timur, and is open Monday through 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 through 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.



Dok. Linda Yudha

#### 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.

##### Open Schedule

Monday - Thursday,	8:00 am to 8:00 pm
Friday,	9:00 am to 11:00 pm
	1:00 pm to 8:00 pm
Saturday,	8:00 am to 12.30 pm

#### 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.

#### 1.5. Computer Laboratories and IT Facilities

- **Comlabs USDI**  
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 through Friday, 8:00 am – 9:00 pm, Saturday 8:00 am to 12:30 pm.

- Hotspot

ITB Hotspot is connection wireless service in strategic place in ITB. To use this service, we 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, you can call Unit Sumber Daya Informatika ITB (USDI ITB) office. ITB-INA service also provides 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, 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,



Dok. Indra Yudha



Dok. Indra Yudha

near asrama H with capacity 300 people, and one room is for 4 (four) people maximum.

- Dormitory Bumi Ganesha, located at Jalan Cisitu Baru No. 35, Bandung 40135, and phone +62-22-2502445, capacity 120 people, one room is for 3 (three) people.
- Dormitory Kanayakan 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. Cisitu 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. Cisitu Lama 13
- Kaltim "Lamin Mahakam" Dormitory, Jl. Titiran 2
- Lampung Sebauai 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. Cisitu Baru 37
- Putra Kalbar "Kapas 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 it is open Monday through 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
- Acupuncture

### 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 hav-

ing 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 undecline 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 +32-22-2512401, 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)

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 through Friday, 8:00 am to 4:00 pm.

Contact

PCAD ITB

Jalan Ganesha No 10

Bandung 40132

West Java, Indonesia

Website: [www.pcd.itb.ac.id](http://www.pcd.itb.ac.id)

## 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 Monday through Friday, 7:15 am to 5:00 pm. This can-

teen 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 Monday through Friday, 7:00 am to 5:00 pm. Students often visit this little canteen, because it is near college room, provide snack, coffee, etc.
- Canteen Borju  
Located on Labtek V Basement Floor, and is open Monday through Friday, 7:00 am to 4:00 pm. We can get Indonesian and Western foods here.
- Canteen Barrac  
It is located near Mining Department, and is open Monday through 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 Monday through Friday, 8:00 am to 4:00 pm. Name of the canteen appropriate with the location in Northwest. Many kind of food such as fried rice, noodle, capcay, and some Chinese foods can be found here. The price is between 4000 – 7000 rupiahs.
- Canteen Bengkok  
It is located near Chemistry building, and is open Monday through 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 Monday through 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 childrenages 3 months to 5 years. It is open every working day from 7:00 am. To 5:00 pm. It has indoor and outdoor play grounds, sleeping rooms, and classroom. It also provides pediatrician, psychologist, nutritionist, and educator.



Dok. Indra Yudha



Dok. Indra Yudha

### 3.3. Sasana Budaya Ganesha

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 reached from organizer, PT Gobel Dharma Sarana Karya in SABUGA, Jalan Taman-sari 73 Bandung, phone +62-22-4212043.

### 3.4. Sawunggaling Hotel

Sawunggaling Hotel provides services to ITB guests and alumni. It has 17 rooms (4 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 Monday through 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 Monday through Thursday. 9:00 am to 6:00 pm and Friday, 9:00 am to 11:00 am, 1:00 am 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, 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 co-

operation with local, regional, international artists, various cultural foundation, and art institutions. The exhibition space is approximately 150 m<sup>2</sup> 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 removable 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 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 through Friday from 8:45 am to 3:00 pm, inside the bank, we can use 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 in Jalan Dayang Sumbi (besides LAPI's building).
- ATM Mandiri and ATM BCA, both of ATM is near G.10 Shop, in front of ITB campus.

##### 4.2. Parking Area

ITB provides some parking areas. There are East Hall and Wet Hall Parking Area, and campus backside gate parking area. Parking areas open Monday through Friday, 7:00 am to 6:00 pm, except for FSRD parking area, 7:00 am to 10:00 pm.

##### 4.3. Places for Worship

Around ITB, there are some places of worship for students. As most Indonesian people posses the 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.

##### 4.4. Sports Center

The Sport Center has Olympic-size swimming pool, kids swimming pool, diving pool. Football field, basketball fields, volleyball fields, tennis courts,



Dok. Putri Odatama



Dok. Indra Yutha



Dok. Indra Yutha



Dok. Indra Yutha

jogging track and fitness center. 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, ext8854.

## 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 which provide a variety of activities for students are offered.

### 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' organizations. In ITB students, this organizations is 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 (BKSK).

### 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
- 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 Group (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”
- Institut Sosial Humaniora Tiang Bendera ITB
- Islamic Students Society “GAMAIIS”
- ITB Internet Community (COMMUNET-ITB)
- 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
- Student’s Tabloid Boulevard
- Unit Kelompok Studi Ekonomi dan

- Pasar Modal (KSEP)
- Unit Pembinaan Kewirausahaan Mahasiswa “UPKM”

### Sports

- Aerokreasi
- Aikido
- Archery
- 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 “IMA G”
- Art and Design Students Association “KMSR”
- Astronomy Students Association “HIMASTRON”
- 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 "EGA"
- 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 try to make the distance learning become more realistic, so the students feels like they are attending the real class. It makes the distances doesn't matter again.

'School on Internet' is an educational environment using Internet technologies. Indonesian geographical condition, consists of thousands islands spreads from Sabang to Merauke, is a huge challenges to establish education. The main problem faced by the lecturer is the location of universities in Indonesia, which spreads through 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 lecturer are held using 'video conference' method over the Internet by the lecturer at ITB. The registration and the exercise submission are done through SOI ITB web site.

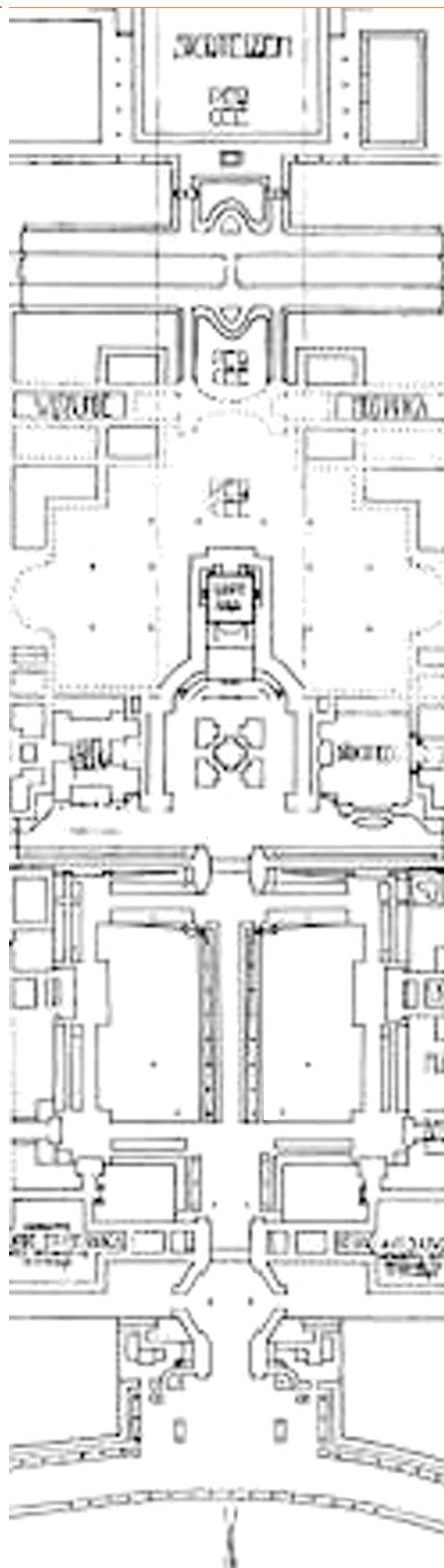
This system is development to support academic lesson in Institute Teknologi Bandung. Collaboration between lecturers and students is expected more intensive by the system. To use this facility, students have to register first. For further information, email: [soi-team@soi.itb.ac.id](mailto:soi-team@soi.itb.ac.id)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

Unit Sumber Daya Informasi (USDI)  
Gedung CCAR Lantai 3  
Jalan Tamansari 64 Bandung  
Phone: +62-22-4254121,  
ext 12305  
Fax: +62-22-2515034

### 2. E-Learning

This system is developed to support the academic activities in ITB. The collaboration between lecturers and students is hopefully to be intensive by this system. To use this online system, students can register first.





## Potrait of Ganesa Campus

## The Footsteps: from TH to ITB

### The Beginning of TH

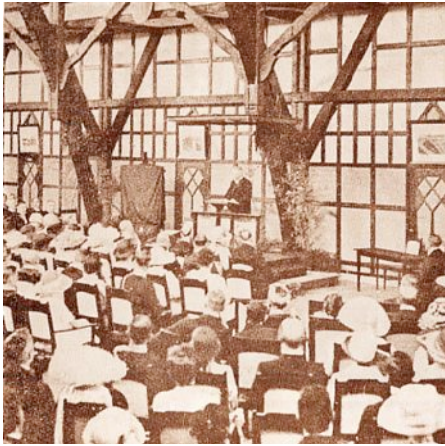
ITB has a unique history. Just imagine how difficult it was when the founding fathers tried to convince the government of Dutch East Indies—nearly a hundred years ago—that a university should be established in Indonesia. Until 1910, as told in a blue-covered book—*Dari TH ke ITB (From TH to ITB)*—, Indonesian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

It was K.A.R. Bosscha, Klopper, Ijzerman, and B. Coops the gentlemen who played significant role as the founding fathers of this institute. Planter of Malabar, Pangalengan, Bosscha was 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. Klopper—then appointed rector—was the first *Magnificus* of TH. Along with J.W. Ijzerman, Chairman of *Raad van Beheer*, Klopper left of Holland on March 8th, 1919 to undertake the mission.

Klopper 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 to 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 day West Hall), 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 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 President of College van Curatoren. As a tribute to Mr. Bosscha's contributions, a physics laboratory officially opened on March 18th, 1922 was named Bosscha Laboratory.



## 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 to 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 the new university 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 Sukarno 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

There are now 5 (five) faculties with an addition of 2 (two) new faculties: Faculty of Mineral Technology (FTM), which was later changed into Faculty of Earth and Mineral Technology (FIKTM) and Faculty of Arts and Design (FSRD).



## 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 probable 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 mass and space. This basic concept has been preserved by his successors in further development of the master plan.

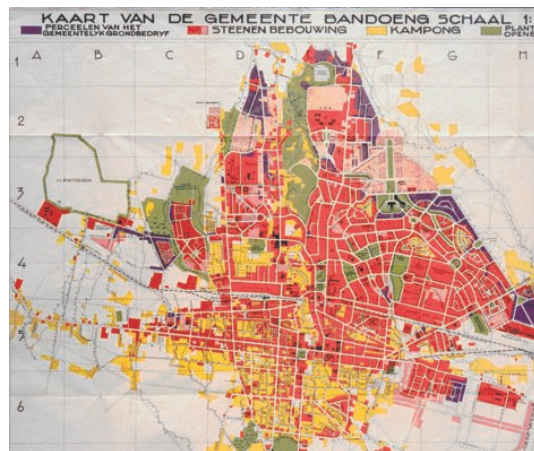
### Old Bandung

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 Grootte Postweg (Post Road) (now Jl. Asia-Africa). 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 her 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.

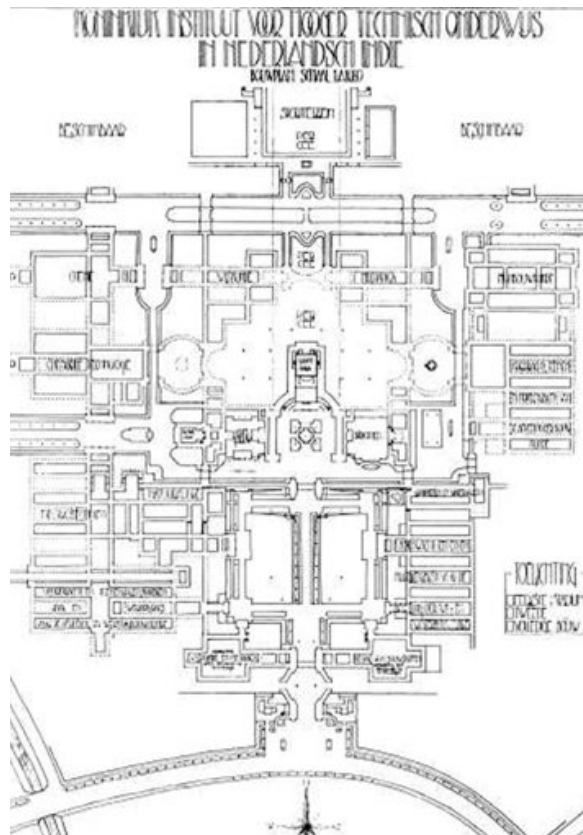
The campus of ITB (Hoogeschool Technische te Bandoeng/Technical College of Bandung), which was officially opened by the General Governor of Dutch East Indies in July 1920, was part of the whole facilities of Bandung due to the plan made by Dutch colonial government. The establishment of Gedung Sate, 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 infrastructures, but also was well planned and designed. Hence, the Stads Gemeente Bandung, which was 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.



## Preliminary Master Plan of Ganesa Campus



The establishment of ITB campus was initiated by a European/Dutch philanthropic group, which consisted of Priangan planters (Preanger-planters) 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 its 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.





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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 and East Hall. 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. I was also 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).





## 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.

There were also two different buildings in the front of the ones previously mentioned known as PLN Laboratory and TPB Building, and Soedibjo Prodjoseputro designed them. An open space around these buildings was designed by Panogu Silaban Group, AR-78 Students that had won an architectural contest. Other buildings built in this period are Technological Laboratory (Labtek) I designed by PT Binaro and Labtek II & III designed by Sangkuriang Architects Bureau (Rahaju BUK, 1996).





## 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.



## 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 of course 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 Wirasonjayadesigned 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 relates 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.

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. It also built wider buildings of Labtek VII and VIII, 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 a 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.

One of the buildings developed in this period and are 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 contain 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 related 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 floors 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.

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## 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.

1. 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.
2. 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.
3. 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.
4. 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.

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.

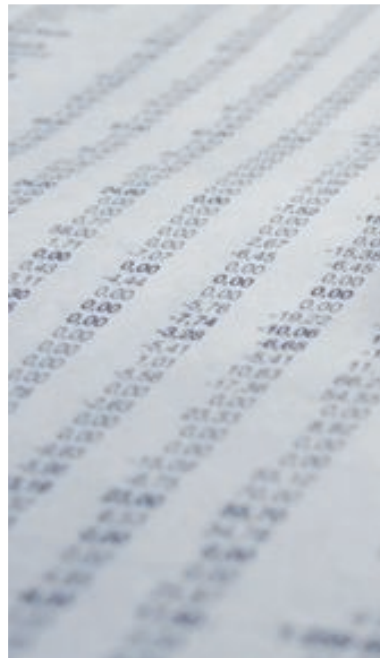
Aside from formulating and exploring new fundamental theoretical knowledge, the study of Mathematics also focus's in quantifying a problem (from everyday life) as a mathematical model that can be solved. In pursuing a degree at the Mathematics Study Program, a student is trained with the skill of mathematical 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 1

MA1101	Calculus I	
FI1101	Elementary Physics IA	
KI1101	Basic Chemistry I A	
KU1101	Integrated Science I	
KU1001	Sport	
KU1011	Scientific Writing	
KU1180	Introduction to Mathematics and Physical Sciences	
	Elective	

Total = 19 CREDITS

Total Credits at Year 1 = 39 CREDITS

### Semester 3

MA2121	Elementary Linear Algebra A	
MA2151	Discrete Mathematics	
MA2181	Data Analysis	
KU206X	Elective	

Total = 16 CREDITS

Total Credits at Year 2 = 34 CREDITS

### Semester 5

MA3131	Introduction to Complex Analysis	
MA3171	Numerical Mathematics	
MA3181	Introduction To Probability Theory	
MA302X	...	

Total = 16 CREDITS

Total Credits at Year 3 = 30 CREDITS

### Semester 7

MAX081	Mathematical Statistics/ Introduction to Stochastic Process	
MA4091	Mathematical Seminar I	
MA4093	Final Project I	
	Elective	
	Elective	
	Elective	

Total = 17 CREDITS

Total Credits at Year 4 = 33 CREDITS

Total CREDITS = 144 SKS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU102X	English	2
		Elective	3
2		Elective	2

Total = 20 CREDITS

### Semester 4

4	MA2231	Multivariable Calculus	4
4	MA2271	Mathematical Methods	4
4	MA2251	Mathematical Computation	4
4	KU2071	Pancasila and Civic Education	2
		Elective	4

Total = 18 CREDITS

### Semester 6

4	MA3231	Introduction to Real Analysis	4
4	MA3011	Careers in Mathematics	2
4	MA3271	Mathematics Modeling	4
4	MA304X	Introduction to Differential Geometry / Geometry	4

Total = 14 CREDITS

### Semester 8

4	MA4092	Mathematical Seminar II	1
1	MA4094	Final Project II	3
3	ZZZZZ	Elective	4
4	YYYYYY	Elective	4
3		Elective	4
2			

Total = 16 CREDITS

### Elective Courses

MA2111	Introduction to Mathematics	3
MA2252	Introduction to Number Theory	4
MA2281	Statistical Methods	3
MA3012	Teaching of School Mathematics	2
MA3013	History of Mathematics	2
MA3021	Algebraic Structures	4
MA3022	Linear Algebra	4
MA3041	Introduction to Differential Geometry	4
MA3042	Geometry	4
MA3051	Introduction to Graph Theory	4
MA3071	Introduction to Optimization	4
MA3081	Mathematical Statistics	4
MA3161	Introduction to the Theory of Interest	3
MA3261	Intro. to Financial Math.	4
MA3272	Optimization Methods	4
MA3281	Intro. to Multivariate Analysis	4
MA4031	Real Functions	4
MA4032	Capita Selecta in Analysis	4
MA4041	Capita Selecta in Geometry	4
MA4051	Combinatorial Optimization	4
MA4081	Intro. to Stochastic Processes	4
MA4095	Undergraduate Research I	3
MA4096	Undergraduate Research II	3
MA4121	Capita Selecta in Algebra I	4
MA4151	Cryptography	4
MA4152	Capita Selecta in Discrete Math. I	4
MA4171	Linear Control Theory	4
MA4172	Capita Selecta in Applied Math. I	4
MA4181	Risk Models	4
MA4182	Capita Selecta in Statistics I	4
MA4221	Capita Selecta in Algebra II	4
MA4251	Coding Theory	4
MA4252	Capita Selecta in Discrete Math. II	4
MA4272	Capita Selecta in Applied Math. II	4
MA4281	Generalized Linear Models	4
MA4282	Capita Selecta in Statistics II	4

### Elective Courses

MA6011	Topic in Teaching Mathematics I	3
MA6012	Topic in Teaching Mathematics II	3
MA6032	Function and Analytic Geometry	3

Total CREDITS = 9 SKS

### Minor Program

3	102	Physics
4	122	Petroleum Engineering
3	133	Engineering Physics
2	134	Industrial Engineering
2	135	Informatics Engineering

### Minor Courses

4	Minor Program : Mathematics 1		
4	MA2121	Elementary Linear Algebra A	4
4	MA2181	Data Analysis	4
4	MA2231	Multivariable Calculus	4
4	MA302X	...	4
4	MAX081	Mathematical Statistics/ Introduction to Stochastic Process	4
Total = 20 CREDITS			

4	Minor Program : Mathematics 2		
4	MA2121	Elementary Linear Algebra A	4
4	MA2151	Discrete Mathematics	4
4	MA2231	Multivariable Calculus	4
4	MA302X	...	4
3	MAX081	Mathematical Statistics/ Introduction to Stochastic Process	4
Total = 20 CREDITS			

4	Minor Program : Mathematics 3		
4	MA2121	Elementary Linear Algebra A	4
4	MA2231	Multivariable Calculus	4
4	MA2271	Mathematical Methods	4
4	MA302X	...	4
4	MAX081	Mathematical Statistics/ Introduction to Stochastic Process	4
Total = 20 CREDITS			

4	Minor Program : General		
4	MA2121	Elementary Linear Algebra A	4
4	MA2181	Data Analysis	4
4	MA2231	Multivariable Calculus	4
4	MA3231	Introduction to Real Analysis	4
Total = 16 CREDITS			

# 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.

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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 :

1. High Energy Theoretical Physics and Instrumentation Research Group
2. Physics of Electronic Materials Research Group
3. Physics of Magnetism and Photonics Research Group
4. Nuclear Physics and Biophysics Research Group
5. Physics of Complex System Research Group



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## Curriculum of Physics

### Semester 1

MA1101	Calculus I	4
FI1101	Elementary Physics IA	4
KI1101	Basic Chemistry I A	3
KU1101	Integrated Science I	2
KU1001	Sport	2
KU1011	Scientific Writing	2
KU1180	Introduction to Mathematics and Physical Sciences	2

Total = 19 CREDITS  
Total Credits at Year 1 = 39 CREDITS

### Semester 2

MA1201	Calculus II	4
FI1201	Elementary Physics IIA	4
KI1201	Basic Chemistry II A	3
KU1201	Natural and Universe Systems	2
KU1072	Introduction to Information Technology B	2
KU102X	English	2
	Elective	3

Total = 20 CREDITS

### Semester 3

FI2101	Mechanics	3
FI2102	Mathematical Physics I	4
FI2103	Theory of Special Relativity	3
FI2104	Electronics	4
FI2104	Statistical Data Analysis	3
KU206X	Elective	3

Total = 20 CREDITS  
Total Credits at Year 2 = 40 CREDITS

### Semester 4

FI2201	Electricity and Magnetism	4
FI2202	Mathematical Physics II	4
FI2203	Thermodynamics	3
FI2204	Instrumentation System	3
FI2001	Study of Physics Literature	2
KU2071	Pancasila and Civic Education	2
KU206X	Elective	2

Total = 20 CREDITS

### Semester 5

FI3101	Waves	4
FI3102	Computational Physics	4
FI3103	Physics Experiment I	2
FI3104	Quantum Physics I	4
YYYYYY	Elective	3
	Elective	4

Total = 20 CREDITS  
Total Credits at Year 3 = 35 CREDITS

### Semester 6

FI3201	Quantum Physics II	3
FI3202	Statistical Physics	4
FI3203	Experiment Physics II	2
FI3204	Advanced Mechanics	3
FI3001	Scientific Communication	3
ZZZZZZ	Elective	4

Total = 19 CREDITS

### Semester 7

FI4001	Solid State Physics	4
FI4002	Nuclear Physics	4
FI4097	Final Project I	5
	Elective	4

Total = 17 CREDITS  
Total Credits at Year 4 = 26 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

FI4098	Final Projec II	4
FI4099	Final Project Seminar	1
	Elective	4

Total = 9 CREDITS

## Elective Courses

FI2111	Basics of Programming	2
FI3231	Introduction to Electronic Material Physics	2
FI4091	Independent Study	2
FI4092	Job Training	2
FI4101	Physics and Industries	3
FI4111	Einstein Theory of General Relativity	3
FI4121	Modern Optics	3
FI4122	Magnetism and Magnetic Materials	3
FI4131	Nanoelectronics and Nanosystem	2
FI4132	Computation of Materials and Quantum Devices	3
FI4141	Reactor Physics	3
FI4142	Nuclear Reactions and its Application	3
FI4151	Biophysics	3
FI4161	Methods in Earth Physics	3
FI4162	Electromagnetic Modeling and Inversion	3
FI4171	Sensor Systems	3
FI4212	Methods of Theoretical Physics	3
FI4213	Special Topics in Theoretical Physics	3
FI4221	Applied Spectroscopy	3
FI4222	Introduction to Material Physics	3
FI4231	Phys and Tech of Semiconductors	2
FI4232	Special Topics in Electronics Materials	3
FI4241	Special Topics in Reactor Physics	3
FI4251	Physics of Radiation	3
FI4252	Electrophysiology and Bioenergetics	3
FI4261	Special Topics in Complex Systems	3
FI4262	Special Topics In Computational Physics	3
FI4271	Microprocessor and Interface Sys	3
FI4272	Digital Data Processing	3

## Minor Courses

Minor Program : Physics 1

FI2101	Mechanics	3
FI2103	Theory of Special Relativity	3
FI2201	Electricity and Magnetism	4
FI3101	Waves	4
FI3104	Quantum Physics I	4

Total = 18 CREDITS

## Minor Program

101	Mathematics
103	Astronomy
104	Microbiology
105	Chemistry
106	Biology
107	Pharmacy
120	Geology
121	Mining
122	Petroleum Engineering
123	Geophysics
124	Geophysics
125	Metalurgy
128	Meteorology
129	Oceanography
130	Chemical Engineering
131	Mechanical Engineering
132	Electrical Engineering
133	Engineering Physics
134	Industrial Engineering
135	Informatics Engineering
136	Aerospace Engineering
137	Material Engineering
150	Civil Engineering
151	Geomatics
152	Architecture
153	Environmental Engineering
154	City Planning
155	Ocean Technology
190	Management

Minor Program : Physics 1

FI2101	Mechanics	3
FI2103	Theory of Special Relativity	3
FI2201	Electricity and Magnetism	4
FI2203	Thermodynamics	3
FI3101	Waves	4
FI3104	Quantum Physics I	4

Total = 21 CREDITS

## 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, in-organic 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 Enginee 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 Enginee



## Curriculum of Chemistry

### Semester 1

MA1101	Calculus I	4
FI1101	Elementary Physics IA	4
KI1101	Basic Chemistry I A	3
KU1101	Integrated Science I	2
KU1001	Sport	2
KU1011	Scientific Writing	2
KU1180	Introduction to Mathematics and Physical Sciences	2

Total = 19 CREDITS  
Total Credits at Year 1 = 39 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU102X	English	2
2		Elective	3

Total = 20 CREDITS

### Semester 3

KU206X	Elective	2
KI2121	Basic Analytical Chemistry	4
KI2141	Structure and Chemical Bonding	3
KI2151	Monofunctional compounds	3
KI2152	Organic Chemistry Laboratory	2
MA2071	Basic Mathematics for Scientists	3
	Elective	3

Total = 20 CREDITS  
Total Credits at Year 2 = 39 CREDITS

### Semester 4

2	KI2221	Separation Methods and Electrometry	4
4	KI2231	Chemistry of the main groups	2
3	KI2241	Chemical Energetics	4
3	KI3011	Chemistry Laboratory Management	3
2	KI2251	Polyfunctional Organic Compounds	4
3	KI2261	Basic Biological Chemistry	2
3			

Total = 19 CREDITS

### Semester 5

KI3121	Spectrometric Analyses	4
KU2071	Pancasila and Civic Education	2
KI3131	Transition Metals and Catalysts	3
KI3141	Chemical Dynamycs	4
KI3151	Organic Synthesis	3
KI3161	Structure and Functional Biomolecules	3

Total = 19 CREDITS  
Total Credits at Year 3 = 38 CREDITS

### Semester 6

4	KI3211	Experimental Design	2
2	KI3212	Structure Elucidation	3
3	KI3231	Inorganic Structure and Reactivity	3
4	KI3213	Environmental Chemistry	3
3	KI3261	Metabolism and Genetic Information	4
3		Elective	4

Total = 19 CREDITS

### Semester 7

KI4011	Final Year Project I	4
	Elective	4
	Elective	4
	Elective	4

Total = 16 CREDITS  
Total Credits at Year 4 = 28 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

4	KI4012	Final Year Project II	4
4	KI4013	Final Project Seminar and Oral Comprehensive Seminar	1
4		Elective	4
4		Elective	3

Total = 12 CREDITS

### Elective Courses

KI3011	Chemistry Laboratory Management	3
KI3111	Introduction to Difrraction Methods	2
KI3122	Introduction to Chemometry	2
KI3142	Radiochemistry and Radiation	2
KI3152	Stereochemistry	2
KI3213	Environmental Chemistry	3
KI3262	Introduction to Biochemistry Research	2
KI4111	Chemical Principles	3
KI4211	Chemistry and Society	1
KI4212	Industrial Experience	2
KI4213	Project Lab	2
KI5112	Advanced Structure Elucidation	3
KI5113	Introduction to Computational Chemistry	3
KI5123	Applied Analytical Chemistry	3
KI5142	Chemical Thermodynamics	3
KI5143	Selected Topics in Physical Chemistry	3
KI5144	Polymer and its Degradation	3
KI5145	Surface Chemistry	3
KI5146	Mathematical Methods in Physical Chemistry	3
KI5153	Natural Products Chemistry	3
KI5154	Structure Elucidation of Natural Product	3
KI5163	Molecular Biotechnology	3
KI5164	Selected Topics on Biochemistry	3
KI5165	Medical Biochemistry	3
KI5212	Computational Chemistry	3
KI5223	Electrometric Analysis	3
KI5224	Special Methods in Analytical Chemistry	3
KI5243	Physical Chemistry of Polymer	3
KI5244	Solid State Chemistry	3
KI5245	Electrochemistry	3
KI5246	Sensors and Lithography	3
KI5253	Physical Organic Chemistry	3
KI5254	Organometallic Chemistry	3
KI5255	Selected Topics on Organic Chemistry	3
KI5263	Food Biochemistry	3
KI5264	Computational Biochemistry	3

### Minor Program

122	Petroleum Engineering
130	Chemical Engineering
153	Environmental Engineering

### Minor Courses

KI2121	Basic Analytical Chemistry	4
KI2151	Monofunctional compounds	3
KI3131	Transition Metals and Catalysts	3
KI3141	Chemical Dynamics	4
KI3161	Structure and Functional Biomolecules	3

Total = 17 CREDITS

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# 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 :

1. Solar System Research Group
2. Star Physics Research Group
3. 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



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## Curriculum of Astronomy

### Semester 1

MA1101	Calculus I	4
FI1101	Elementary Physics IA	4
KI1101	Basic Chemistry I A	3
KU1101	Integrated Science I	2
KU1001	Sport	2
KU1011	Scientific Writing	2
KU1180	Introduction to Mathematics and Physical Sciences	2

Total = 19 CREDITS  
Total Credits at Year 1 = 39 CREDITS

### Semester 2

MA1201	Calculus II	4
FI1201	Elementary Physics IIA	4
KI1201	Basic Chemistry II A	3
KU1201	Natural and Universe Systems	2
KU1072	Introduction to Information Technology B	2
KU102X	English	2
	Elective	3

Total = 20 CREDITS

### Semester 3

FI2101	Mechanics	3
AS2101	Astrophysics	3
AS2102	Statistics in Astronomy	3
AS2103	Practical Astronomy	3
AS2104	Mathematical Methods in Astronomy II	3
KU206X	Elective	2
	Elective	2

Total = 19 CREDITS  
Total Credits at Year 2 = 39 CREDITS

### Semester 4

FI2203	Thermodynamics	3
AS2202	Basic Astronomy Laboratory I	3
AS2204	Mathematical Methods in Astronomy II	3
FI2201	Electricity and Magnetism	4
KU2071	Pancasila and Civic Education	2
	Elective	2

Total = 19 CREDITS

### Semester 5

AS3102	Celestial Mechanics	3
AS3103	Solar System	3
AS3101	Basic Astronomy Laboratory II	3
AS3105	Processes in Astrophysics I	3
FI3101	Waves	4
ASXXX	Elective	3

Total = 19 CREDITS  
Total Credits at Year 3 = 39 CREDITS

### Semester 6

AS3204	Processes in Astrophysics II	3
AS3201	Gravitation and Cosmology A	3
AS3202	Physics of Galaxy	3
AS3203	Stellar Physics	3
ZZZZZZ	Elective	3
ASXXX	Elective	3
	Elective	2

Total = 20 CREDITS

### Semester 7

AS4101	Gravitation and Cosmology B	3
AS4190	Seminar	1
AS4191	Final Project I	3
ASXXX	Elective	3
ASXXX	Elective	3
	Elective	2

Total = 15 CREDITS  
Total Credits at Year 4 = 27 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

AS4291	Final Presentation	1
AS4292	Final Project II	3
ASXXX	Elective	3
ASXXX	Elective	3
	Elective	2

Total = 12 CREDITS

## Elective Courses

AS2105	Astronomy and Environment	3
AS3002	Computational Astronomy	3
AS3006	Calendar System	3
AS3007	Small Solar System Bodies	3
AS4103	Observational Astrophysics	3
AS4104	Interstellar Matter	3
AS4105	Stellar Evolution	3
AS4202	Dynamics of Stellar System	3
AS4203	The Stellar System	3
AS4204	Satellite Orbits	3
AS4205	Dynamics of Small Solar System Bodies	3

## Minor Program

101	Mathematics
102	Physics
105	Chemistry

## Minor Courses

AS2101	Astrophysics	3
AS2103	Practical Astronomy	3
AS3103	Solar System	3
AS3202	Physics of Galaxy	3
AS3203	Stellar Physics	3
AS4101	Gravitation and Cosmology B	3

Total = 18 CREDITS

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# SCHOOL OF LIFE SCIENCE AND TECHNOLOGY

School of Life Sciences and Technology (SITH) was established on January 1, 2006, which was previously incorporated in Department of Biology, Faculty of Mathematics and Natural Science. Although it is relatively new, the science field that becomes SITH basis has existed in ITB since 1959.

SITH tries to answer the challenges associated with living organism problems both in society and industry. With the increasing urge from the society for the application of life sciences as safe solutions, SITH strengthens its field of science by conducting a variety of interdisciplinary studies, especially in collaboration with the field of engineering. For those who choose SITH as a place of learning, they will interact with tropical biodiversity from the aspects of science and technology (engineering).

SITH consists of two study programs, namely Biology and Microbiology. The difference between them lies in the group of organism being studied. Study program of Microbiology specifies microorganisms as the group of living organism to be studied, while the study program of Biology studies animals, plants, and microorganisms. Although study program of Biology facilitates students to learn about microorganisms, the scope is relatively limited and general compared to that of the study program of Microbiology.

## BIOLOGY

Biology is the science that studies living things, i.e. animals, plants and microorganisms. Several aspects that will be studied i.e. genetics, structure of organisms, the development of organisms, physiology, ecology, behavioural biology, evolution, and even its application in society.

There are many interesting things in the universe which one will encounter when studying biology. Then, what are the advantages of biological sciences that are being taught in university compared with that already taught in high school? As a technology-based institute, of course, studies of life sciences at ITB are more in-depth and adjusted with recent developments in technology, given that the present and future is called the Era of Biotechnology. At the study program of Biology, we will learn about gene engineering, tissue culture, pest control, forest conservation, stem cell, and others. Knowledge learned can be applied to other fields, e.g. medicine, agriculture, fisheries, agriculture, forestry, environment, and technology which is commonly called biotechnology.

Another interesting fact of the study program of Biology is that it has a wide range of researches, hence students can develop creativity and curiosity. For example, students interested in researching cancer may conduct it here. Students who are interested in becoming entrepreneurs also can develop their interests by choosing to concentrate on the study of certain sciences, such as the development of low-cost fish feed with high-quality, food production with the help of bacteria and fungi (e.g. yogurt, cheese), the management of ornamental plants, etc. The learning process is not less interesting. In the study program of Biology one will experience field trip—learning activities that are conducted outdoors. Ujung Kulon National Park and the West Bali National Park are examples of the field trip destinations. One can observe animal behaviour, natural phenomena, and also practice the theories already learned in class.

Every science cannot stand alone, so is the case for the biological sciences. Some sciences related to biology are mathematics, physics, and chemistry. These three sciences are invaluable tools in understanding biological process. Mathematics is important for Biology students, for many processes in nature need to be converted into simpler model. On the other hand, how insects walk on water surface is one of the phenomena that can be explained by the concept of physics. Last but not least, the reactions that occur in bodies of living organisms i.e. process of photosynthesis, food digestion, search for pairs in insects (which uses pheromones, a natural hormone which is able to attract the insects of the opposite sex), working mechanism and the formation of hormones, are inseparable part of chemistry.

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Doc. Indra Yudha

## Curriculum of Biology

### Semester 1

MA1102	Elementary Calculus I	3
FI1102	Elementary Physics IB	3
KI1101	Basic Chemistry I A	3
KU1101	Integrated Science I	2
KU1011	Scientific Writing	2
BI1101	Biological Concepts I	3
KU1073	Introduction to Information Technology C	2

Total = 18 CREDITS

Total Credits at Year 1 = 36 CREDITS

### Semester 2

3	MA1202	Elementary Calculus II	3
3	FI1202	Elementary Physics IIB	3
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU102X	English	2
3	BI1201	Biological Concepts II	3
2	KU1001	Sport	2

Total = 18 CREDITS

### Semester 3

2	BI2101	Introductory Life Sciences and Technology	2
3	BI2102	Animal Anatomy and Physiology	3
2	BI2103	Animal Anatomy and Physiology Project	2
4	BI2104	Biosystematics	4
4	BI2105	Genetics	4
3	KI2051	Organic Chemistry	3

Elective

Total = 20 CREDITS

Total Credits at Year 2 = 40 CREDITS

### Semester 4

2	BI2201	Animal Development	3
3	BI2202	Plant Structure and Development	3
2	BI2203	Plant Physiology	3
4	BI2204	Plant Project	2
4	BI2205	Cellular and Molecular Biology I	3
3	KI3061	Biochemistry	3
2		Elective	3

Total = 20 CREDITS

### Semester 5

3	BI3101	Ecology	3
3	BI3102	Ecology Project	3
2	BI3103	Cell and Molecular Biology II	2
2	BI3104	Cellular and Molecular Biology Project	2
3	MA2082	Biostatistics	3
2	KU206X	Elective	2

Elective

Total = 19 CREDITS

Total Credits at Year 3 = 39 CREDITS

### Semester 6

4	BI3001	Research Methodology	3
3	BI3201	Etology	3
2	BI3090	Internship	3
2	BI3202	Evolution	2
3	BM3206	Microbiology	4
2		Elective	3
3		Elective	2

Total = 20 CREDITS

### Semester 7

5	BI4097	Final Project	2
2	KU3082	Scientific Communication Skills	2
2	KU2071	Pancasila and Civic Education	2
		Elective	3
		Elective	3
		Elective	2

Total = 15 CREDITS

Total Credits at Year 4 = 27 CREDITS

Total CREDITS = 144 SKS

### Semester 8

5	BI4098	Final Project Report & Seminar	2
2	BI4099	Final Oral Examination	2
2	BI4001	Bioethics	2
3	MB4060	Entrepreneurship and Bio-Industry Management	3
3		Elective	3
2		Elective	3

Total = 12 CREDITS

## Elective Courses

BI1202	Cell Biology and its Application	3
BI2106	Pharmaceutical Botany	4
BI3002	Plant Biotechnology	3
BI3105	Animal Histology	3
BI3203	Tropical Biodiversity	3
BI3204	Wetland Ecology and Management	3
BI3205	Animal Biotechnology	3
BI3206	Endocrinology	2
BI3207	Molecular Phylogenetics	2
BI3208	Plant Ecophysiology	3
BI3209	Plant Microscopic Analysis and Techniques	3
BI4101	Aquaculture	3
BI4102	Bioconservation	3
BI4103	Ecofarming Technology	3
BI4104	Entomology	3
BI4105	Physiology of Blood Circulation	2
BI4106	Immunology	2
BI4108	Neurobiology	2
BI4109	Plant Metabolism	2
BI4110	Plant Morphogenesis	3
BI4201	Environmental Impact Assessment	3
BI4202	Landscape Ecology & Management	3
BI4203	Tropical Ocean & Coastal Ecosystem Management	3
BI4204	Urban Entomology	2
BI4205	Basic Toxicology	3
BI4206	Biomineralogy	3
BI4207	Genomics & Proteomics	3
BI4208	Ethnobotany	2
BI4209	Plant Nutrition	3

## Minor Courses

Minor Program : Biology			
4	BI2102	Animal Anatomy and Physiology	3
3	BI2105	Genetics	4
3	BI2205	Cellular and Molecular Biology I	3
3	BI3101	Ecology	4
3	BI3202	Evolution	2
Total = 16 CREDITS			
Minor Program : General			
3	BI2102	Animal Anatomy and Physiology	3
4	BI2105	Genetics	4
3	BI2205	Cellular and Molecular Biology I	3
3	BI3202	Evolution	2
Total = 12 CREDITS			



# MICROBIOLOGY

Microbiology is an applied science that uses microorganisms (microbes) as a tool for improving the quality of human life. At first the use of microbes was only limited to the food industry. Along with the development of science, microbes was then begun to be used for other human activities, such as waste management, development of science in the field of genetic engineering, and others.

In accordance with its name, at the study program of Microbiology, students will learn everything related to the microbes. This of course will have different scope to that being studied in study program of Biology. In study program of Microbiology, the subjects are rarely directly related to plants and animals, i.e. problems associated with plant diseases, infectious diseases, and so forth. In study program of Microbiology we will learn the techniques of genetic engineering, cell culture, fermentation technology, food manufacturing whose processes involve microbes, and so forth.

Gene engineering and cell culture will certainly relate to the science of microbiology, because microbes (especially plasmid which is a component in a microbe) are tool used to insert genes into other organisms. For example, when we intend to insert anti-pest gene into certain plant, we will extract specific plasmids from bacteria and then insert an anti-pest gene into it, and after the process is completed, the bacteria will be inserted into the plant.

By studying in study program of Microbiology, students can also utilize a variety of existing knowledge to create various types of healthy foods which are processed using microbes, e.g. yogurt and cheese. Two types of food is a food manufacturing process aided by microbes. The quantities and types of microbes that are used will affect the taste of yogurt and cheese produced from the fermentation process.

In addition, microbes are now being used to overcome the problem of waste. For example, at the stage of transporting crude oil from offshore drilling or distributing oil from one place to another, if there is a leakage, it will result in spillage of crude oil (which would contaminate the sea). Microbes, particularly certain bacteria, have the ability to assist the cleaning process in the sea—the bacteria will “eat” (decompose) the oil that becomes contaminant.

The learning process will be supported with a variety of exciting activities e.g. laboratory practice, field trips, visits to institutions and related agencies, and others. Laboratory practice is part of the course where students can verify or directly observe the studied phenomena. Field trip will help students to directly observe such phenomenon in nature. 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.



## Curriculum of Microbiology

### Semester 1

MA1102	Elementary Calculus I
FI1102	Elementary Physics IB
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1011	Scientific Writing
BI1101	Biological Concepts I
KU1073	Introduction to Information Technology C

Total = 18 CREDITS

Total Credits at Year 1 = 36 CREDITS

### Semester 2

3 MA1202	Elementary Calculus II	3
3 FI1202	Elementary Physics IIB	3
3 KI1201	Basic Chemistry II A	3
2 KU1201	Natural and Universe Systems	2
2 KU102X	English	2
3 BI1201	Biological Concepts II	3
2 KU1001	Sport	2

Total = 18 CREDITS

### Semester 3

BI2101	Introductory Life Sciences and Technology
BM2101	General Microbiology
BM2102	Microbiology Project
BM2103	Biophysics
KI2122	Analytical Chemistry
KI2051	Organic Chemistry

Elective

Total = 19 CREDITS

Total Credits at Year 2 = 39 CREDITS

### Semester 4

2 BM2201	Fundamentals of Cell & Molecular Biology	2
3 BM2202	Microbial Physiology	4
2 BM2203	Microbial Ecology	4
2 KI3061	Biochemistry	3
3 MA2082	Biostatistics	3
3 KU2071	Pancasila and Civic Education	2
4	Elective	2

Total = 20 CREDITS

### Semester 5

BM3101	Molecular Microbial Genetics
BM3102	Microbial Genetics Project
BM3103	Introduction to Bioinformatics
BM3104	Enzymology
BM3105	Virology
BM3106	Microbial Biosystematics

Elective

Total = 19 CREDITS

Total Credits at Year 3 = 39 CREDITS

### Semester 6

3 BM3001	Research Methodology	2
2 BM3201	Principles of Fermentation Technology	4
2 BM3202	Analytical Microbiology	3
2 BM3091	Internship	3
3 KU3082	Scientific Communication Skills	2
3	Elective	3
4	Elective	2

Total = 20 CREDITS

### Semester 7

BM4097	Final Project I
BM4101	Microbial Pathogenesis & Immunology
BM4102	Environmental Microbiology
BM4103	Food Microbiology
	Electives
	Electives

Total = 15 CREDITS

Total Credits at Year 4 = 27 CREDITS

Total CREDITS = 144 SKS

### Semester 8

4 BM4098	Final Project II	3
3 BM4099	Colloquium	2
2 BM4201	Biosafety	2
2 MB4060	Entrepreneurship and Bio-Industry Management	3
4		
3	Electives	4

Total = 12 CREDITS

## Elective Courses

BM3002	Industrial Microbiology
BM3107	Fungal Technology Project
BM3108	Microalgal Culturing Techniques
BM3204	Bacteriology
BM3205	Aquatic Microbial Ekology
BM3206	Microbiology
BM4001	Microbiology Laboratory Assistant
BM4104	Bioremediation
BM4105	Geomicrobiology
BM4106	Plant Microbes Interaction
BM4202	Petroleum Microbiology
BM4203	Diagnostic Microbiology
BM4204	Micology
BM4205	Algology

## Minor Courses

2	Minor Program : Food Mirobiology		
2	BM2101	General Microbiology	3
3	BM2102	Microbiology Project	2
2	BM2202	Microbial Physiology	4
2	BM3202	Analytical Microbiology	3
4	BM4103	Food Microbiology	2
2	BM4201	Biosafety	2
2	Total = 16 CREDITS		

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## SCHOOL OF PHARMACY

Department of Pharmacy of ITB was established on 6 October 1947, which was known as Department of Pharmacy, under the faculty named *Faculteit voor Wiskunde en Natuurwetenschappen*. At that time this faculty was a part of University of Indonesia. On 1st February 1949, the faculty was changed to The Faculty of Exacta and Natural Sciences (FIPIA), but still under the University of Indonesia. The department organization's structure was very simple, only one person as a chairman of the department, but since 1959, the organization was expanded and one secretary of Department was assigned to help the Head of Department.

## PHARMACEUTICAL SCIENCE AND TECHNOLOGY

Pharmaceutical Science and Technology provide opportunity for student to acquire knowledge and skills in science and technology of pharmacy covering all aspects related to pharmaceutical products from discovery and invention, processing and development of raw material to pharmaceutical preparation. Study Program of Pharmaceutical Science and Technology focus on product oriented knowledge to fulfill the need of expertise in research, product development and quality control of pharmaceutical product and medical devices.

Ilmu yang dipelajari dalam prodi terkait sangat erat dengan dunia industri farma. The study program of pharmaceutical science and technology is a continuation of pharmacy study program that was established on 6 October 1947 together with the formation of *Faculteit van Exacte Wetenschap* as part *Universiteit van Indonesia* in Bandung. Transformation of higher education institution continuously taken place but did not substantially changed the status and the content of pharmacy education program. Attempt to promote the status of organization of pharmacy education into a faculty has been initiated since ITB was still as a state university. By 29 August 2005, through the Rector Decree No 222/SK/K01/OT/2005, the organization of pharmacy education was transformed into School of Pharmacy. In 2006, School of Pharmacy introduced two study programs, one of which is pharmaceutical science study program that is a new name for the existing pharmacy study program. The study program focuses on science, technology and arts on producing a good quality of medicine. The other study program is Clinical and Community Pharmacy, melalui program komputer.



Doc. Indra Yudha

## Curriculum of Pharmaceutical Science and Technology

### Semester 1

MA1102	Elementary Calculus I	3
FI1102	Elementary Physics IB	3
KI1101	Basic Chemistry I A	3
KU1101	Integrated Science 1	2
KU1073	Introduction to Information Technology C	2
KU1011	Scientific Writing	2
FA1101	Introduction to Pharmacy & Health	3

Total = 18 CREDITS

Total Credits at Year 1 = 36 CREDITS

### Semester 2

MA1202	Elementary Calculus II	3
FI1202	Elementary Physics IIB	3
KI1201	Basic Chemistry II A	3
KU1201	Natural and Universe Systems	2
KU1001	Sport	2
KU102X	English	2
BI1202	Cell Biology and its Application	3

Total = 18 CREDITS

### Semester 3

FA2101	An-organic Pharmaceutical Analysis	3
FA2102	Pharmaceutical Microbiology	3
FA2103	Physical Pharmacy I	2
BI2106	Pharmaceutical Botany	4
FA2105	Human anatomy and Phsyology I	2
KI2051	Organic Chemistry	3
KU206X	Elective	2

Total = 19 CREDITS

Total Credits at Year 2 = 37 CREDITS

### Semester 4

FA2201	Environmental Pharmacy	2
FA2202	Basic of Drug synthesis	3
FA2203	Pharmaceutical Statistics	2
FA2204	Physical Pharmacy II	4
FA2205	General Pharmacognosy	2
FA2206	Human anatomy and Phsyology I	3
KU2071	Pancasila and Civic Education	2

Total = 18 CREDITS

### Semester 5

KI3061	Biochemistry	3
FA3101	Organic Pharmaceutical Analysis	3
FA3102	Pharmaceutical Tecnology of Liquid and Semisolid Dosage Form	4
FA3103	Pharmacology and Toxicology I	2
FA3104	Immunology	2
	Elective	4

Total = 18 CREDITS

Total Credits at Year 3 = 36 CREDITS

### Semester 6

FA3201	Pharmaceutical Tecnology of Solid Dosage Form	4
FA3202	Pharmacokinetics	3
FA3203	Analytical Pharmacognosy	3
FA3204	Physicochemical Analysis Methods	3
FA3205	Pharmacology and Toxicology II	2
	Elective	3

Total = 18 CREDITS

### Semester 7

FA4101	Medicinal Chemistry	2
FA4102	Analysis of Active compounds	2
FA4103	Biopharmacy	2
FA4104	Phytochemistry	4
FA4105	Pharmacology and Toxicology III	3
FA4191	Final Project I	1
	Elective	3

Total = 17 CREDITS

Total Credits at Year 4 = 35 CREDITS

Total CREDITS = 144 SKS

### Semester 8

FA4204	Management and Entrepreneurship	2
FA4203	Natural Products Technology	2
FA4201	Basic of Industrial Pharmacy	2
FA4202	Pharmaceutical Biotechnology	3
FA4292	Seminar	1
FA4291	Final Project	5
FA4293	Comprehensive Examination	1
	Elective	2

Total = 18 CREDITS

## Elective Courses

FA3105	Drugs Stability	2
FA3106	Chromatography & Electroforesis	2
FA3107	Radiopharmacy	2
FA3108	Parasitology & Virology	2
FA3109	Ocean Pharmacognosy	2
FA3206	Pharmaceutical Polymer	2
FA3207	Plant Cell, Tissue and Organ Culture	2
FA3208	Analytical Toxicology	2
FA4106	Capita Selecta	2
FA4107	Chrystalography	2
FA4108	Veterinary Pharmacy	2
FA4109	Medical Therapeutic Nutrition	2
FA4110	Imunotherapy	2
FA4204	Management and Entrepreneurship	2
FA4205	Development and Validation of Analytical Methods	2
FA4206	Drugs Biosynthesis	2
FA4207	Drug Efficacy & Safety Evaluation	2
FA4208	Pharmacoeconomy	2

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## PHARMACY CLINIC AND COMMUNITY

Clinical and Community Pharmacy program was established in 2006, provide knowledge and skills is pharmaceutical care, implementing the concept of clinical pharmacy and management of community pharmacy that is in line with healthy paradigm, to fulfil the national need of health profession. This is to provide qualified health services by three-party professions i.e. (medical care), pharmacists (pharmaceutical care), nurse (nursing care) and to be able in managing various pharmaceutical product and medical devices, to achieve provide primary quality service to the patient (patient oriented).

The scope of pharmacy services is continuously expanding, consequently need to educate a competent professional in all fields of pharmacy services is hardly possible. Therefore, more specific education process is needed to produce graduates to fulfill the competency requirements on how to use the medicine in all health services including in the community. The education process that give more stressing on how to use medicine is accommodated in the study program of Clinical and Community Pharmacy under The School of Pharmacy ITB that was established through rector decree no. 047/SK/K01/OT/2006 dated 9 February 2006. Formally, the study program received new student in 2006, but they have to attend common first year courses with the same curriculum for each school or faculty.



## Curriculum of Clinic and Community

### Semester 1

MA1102	Elementary Calculus I	3
FI1102	Elementary Physics IB	3
KI1101	Basic Chemistry I A	3
KU1101	Integrated Science 1	2
KU1073	Introduction to Information Technology C	2
KU1011	Scientific Writing	2
FA1101	Introduction to Pharmacy & Health	3
Total = 18 CREDITS		
Total Credits at Year 1 = 36 CREDITS		

### Semester 2

MA1202	Elementary Calculus II	3
FI1202	Elementary Physics IIB	3
KI1201	Basic Chemistry II A	3
KU1201	Natural and Universe Systems	2
KU1001	Sport	2
KU102X	English	2
BI1202	Cell Biology and its Application	3
Total = 18 CREDITS		

### Semester 3

FA2101	An-organic Pharmaceutical Analysis	3
FA2102	Pharmaceutical Microbiology	3
FA2103	Physical Pharmacy I	2
BI2106	Pharmaceutical Botany	4
FA2105	Human anatomy and Physiology I	2
KI2051	Organic Chemistry	3
KU206X	Elective	2
Total = 19 CREDITS		
Total Credits at Year 2 = 37 CREDITS		

### Semester 4

FA2201	Environmental Pharmacy	2
FA2202	Basic of Drug synthesis	3
FA2203	Pharmaceutical Statistics	2
FA2204	Physical Pharmacy II	4
FA2205	General Pharmacognosy	2
FA2206	Human anatomy and Physiology I	3
KU2071	Pancasila and Civic Education	2
Total = 18 CREDITS		

### Semester 5

KI3061	Biochemistry	3
FA3101	Organic Pharmaceutical Analysis	3
FA3102	Pharmaceutical Technology of Liquid and Semisolid Dosage Form	4
FA3103	Pharmacology and Toxicology I	2
FA3104	Immunology	2
	Elective	4
Total = 18 CREDITS		
Total Credits at Year 3 = 36 CREDITS		

### Semester 6

FA3201	Pharmaceutical Technology of Solid Dosage Form	4
FA3202	Pharmacokinetics	3
FA3203	Analytical Pharmacognosy	3
FA3204	Physicochemical Analysis Methods	3
FA3205	Pharmacology and Toxicology II	2
	Elective	2
Total = 17 CREDITS		

### Semester 7

FA4101	Medicinal Chemistry	2
FA4102	Analysis of Active compounds	2
FA4103	Biopharmacy	2
FA4104	Phytochemistry	4
FA4105	Pharmacology and Toxicology III	3
FA4191	Final Project I	1
	Elective	2
	Elective	2
Total = 18 CREDITS		
Total Credits at Year 4 = 35 CREDITS		
Total CREDITS = 144 SKS		

### Semester 8

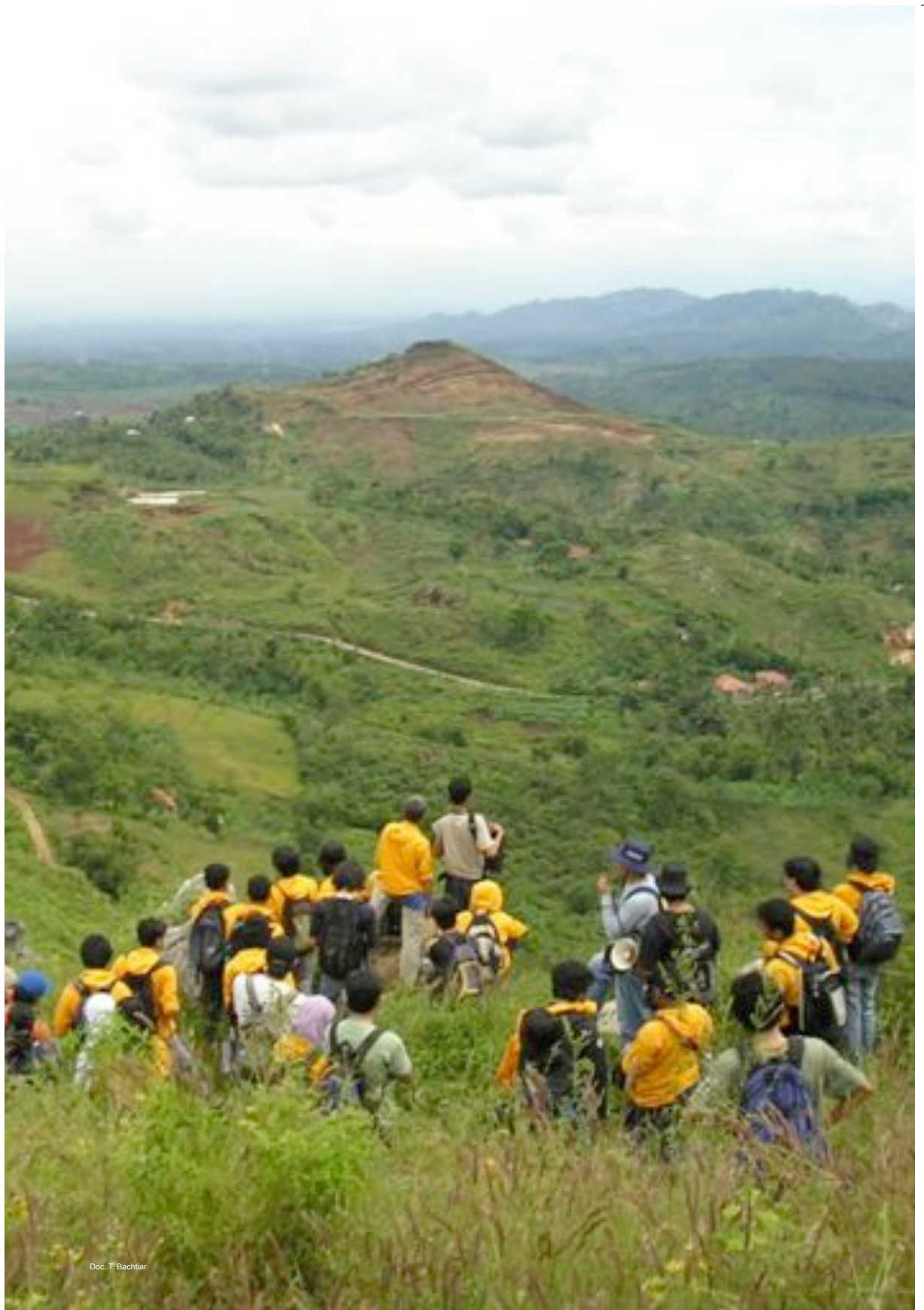
FA4204	Management and Entrepreneurship	2
FA4203	Natural Products Technology	2
FA4201	Basic of Industrial Pharmacy	2
FA4202	Pharmaceutical Biotechnology	3
FA4292	Seminar	1
FA4291	Final Project	5
FA4293	Comprehensive Examination	1
	Elective	2
Total = 18 CREDITS		

## Elective Courses

FA3105	Drugs Stability	2
FA3106	Chromatography & Electroforesis	2
FA3107	Radiopharmacy	2
FA3108	Parasitology & Virology	2
FA3109	Ocean Pharmacognosy	2
FA3206	Pharmaceutical Polymer	2
FA3207	Plant Cell, Tissue and Organ Culture	2
FA3208	Analytical Toxicology	2
FA4106	Capita Selecta	2
FA4107	Chrystalography	2
FA4108	Veterinary Pharmacy	2
FA4109	Medical Therapeutic Nutrition	2
FA4110	Imunotherapy	2
FA4204	Management and Entrepreneurship	2
FA4205	Development and Validation of Analytical Methods	2
FA4206	Drugs Biosynthesis	2
FA4207	Drug Efficacy & Safety Evaluation	2
FA4208	Pharmacoeconomy	2

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# FACULTY OF GEOLOGICAL SCIENCE AND TECHNOLOGY

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

FITB comprises of four study programs, namely Geological Engineering, Geodesy and Geomatics Engineering, Meteorology, and Oceanography. Looking at the distinctiveness of each of science, we may conclude that the grouping of the study program into FITB was heavily related as the academic study that put the earth as its object, and how human may be able to best understand the phenomena that occur on Earth, and to best utilize them.

In this faculty, in addition to learning about various scientific theories, one will also obtain the opportunity to apply them through simulations related to the studied field.

## GEOLOGICAL ENGINEERING

The focus of the Geological Engineering study program is “the present is the key to the past”, which requires a strong foundation of natural science, science, basic engineering, engineering, and other supporting sciences (humanities/general studies).

Geology is the study of the earth. On top of the basic sciences of chemistry, physics and mathematics, geology also studies the most basal element, rock, which includes its various types and its physical qualities and chemical properties, its process of occurrence, presence, and arrangement in the outer portion of Earth's crust. Besides, geology also studies the geological processes that occur on Earth, either those from within the earth such as volcanic events, earthquakes, and the dynamics of movement of the earth, or those processes that happen on the surface, such as erosions, sedimentations, and other alteration to the rock. In the utilization of natural resources, geology also learn more specifically of essential rocks and minerals, such as gold, silver, copper, and other materials for industrial mineral, and energy resources such as the presence of oil and gas, geothermal, coal, and water resources. In the field of engineering, geologist are required in relation with the construction of high-rise buildings, dams, bridges, and ground-water managements.

Bachelor of geology may pursue a career in state-owned enterprises or foreign enterprises in the area of exploration in the industries of mineral resources, oil and gas, and geothermal energy. A geology graduate may also work as a researcher in a governmental, private, or educational institution. Utilization of natural resources also provides opportunity for a geologist to become entrepreneur in the C-class minerals and valuable stones explorations.

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Doc. Faculty of Geological Science and Technology



Doc. Faculty of Geological Science and Technology



Doc. Faculty of Geological Science and Technology

## Curriculum of Geological Engineering

### Semester 1

MA1101	Calculus I	
FI1101	Elementary Physics IA	
KI1101	Basic Chemistry I A	
KU1101	Integrated Science I	
KU1001	Sport	
KU1011	Scientific Writing	
KU1072	Introduction to Information Technology B	
Total = 19 CREDITS		
Total Credits at Year 1 = 39 CREDITS		

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU102X	English	2
2	KU1284	Integrated Science II	2
2		Elective	3
Total = 20 CREDITS			

### Semester 3

GL2011	Principle of Geology	
GL2041	Crystallography and Mineralogy	
GL2101	Computational Geology	
GL2131	General Geochemistry	
GL2171	Paleontology	
GL2181	Geofluid	
	Elective	
Total = 20 CREDITS		
Total Credits at Year 2 = 40 CREDITS		

### Semester 4

3	GL2012	Tectonophysics	2
3	GL2013	Geomorphology	3
3	GL2042	Petrology	3
2	GL2051	Sedimentology	3
3	GL2261	Micropaleontology	3
2	TG2111	General Geophysics	2
4	KU2071	Pancasila and Civic Education	2
		Elective	2
Total = 20 CREDITS			

### Semester 5

GL3011	Structural Geology	
GL3041	Volcanology and Geothermal	
GL3051	Principal Stratigraphy	
GL3081	General Hydrogeology	
GL3141	Optical Mineralogy and Petrography	
GL3142	Mineral Deposits	
GL3191	Reference Study I (Indonesian)	
	Elective	
Total = 20 CREDITS		
Total Credits at Year 3 = 39 CREDITS		

### Semester 6

3	GL3001	Ocean Geology	2
2	GL3021	Engineering Geology	3
2	GL3052	Petroleum Geology	3
3	GL3201	Field Geology	4
3	GL3202	Methods on Geological Exploration	3
3	GL3271	Historical geology	2
2	GL3291	Reference Study II (English)	2
2			
Total = 19 CREDITS			

### Semester 7

GL4101	Geological Information System	2
GL4102	Geology of Indonesia	2
GL4104	Law and Regulation on Earth Management	2
GL4022	Environmental Geology	3
GL4103	Management and Mineral Economic	3
	Elective	3
Total = 15 CREDITS		
Total Credits at Year 4 = 26 CREDITS		
Total CREDITS = 144 SKS		

### Semester 8

GL4099	Final Project A	5
	Elective	6
Total = 11 CREDITS		

**Elective Courses**

GL2043	Introduction of Mineralogy and Petrology	3	120
GL3012	Geostatistic	2	123
GL3013	Tectonic	2	130
GL3042	Petrogenesis	2	131
GL3043	Gemstone Deposit Geology	2	120
GL3053	Sedimentology and Stratigraphy	3	123
GL3054	Introduction to Petroleum Geology	3	130
GL3061	Advanced Micropaleontology	3	131
GL3121	Introduction to Engineering Geology	2	132
GL3151	Coal Geology	2	
GL3221	Geology of Bandung Basin	2	
GL3222	Geo-tourism	2	
GL4021	Introduction to Rock Engineering	2	
GL4031	Petroleum Geochemistry	2	
GL4041	Geology of Materials Industry	2	
GL4042	Geothermal Geology	2	
GL4043	Geology of Construction Material	2	
GL4044	Hydrothermal Mineral Deposit	2	
GL4051	Stratigraphical Analysis	2	
GL4052	Well Logging Geology	2	
GL4071	Vertebrate Paleontology	2	
GL4072	Invertebrate Paleontology	2	
GL4073	Geoarcheology	2	
GL4096	Practical Training	2	
GL4097	Special Assignment of Geology	2	
GL4271	Sains in Geoarcheology	2	

**Minor Program**

120	Geology
123	Geophysics
130	Chemical Engineering
131	Mechanical Engineering
120	Geology
123	Geophysics
130	Chemical Engineering
131	Mechanical Engineering
132	Electrical Engineering

**Minor Courses**

Minor Program : General		
GL2011	Principle of Geology	3
GL2013	Geomorphology	3
GL2042	Petrology	3
GL2051	Sedimentology	3
GL3011	Structural Geology	3
GL3051	Principal Stratigraphy	2
Total = 17 CREDITS		



# GEODESY AND GEOMATICS ENGINEERING

Geodesy and Geomatics Engineering is a study program which develops the science of mapping, in the form of geometric information of the earth. Detailed studies including the determination of position, the dynamics of the earth, the variation between the position and dynamics of the earth (spatial and temporal variations), also known as geodynamics of earth, and the determination of gravity field of the earth.

In the present time where everything becomes more sophisticated, many phenomena that were once unexplainable are now rationally explained by the means of inventions in technology. It applies also for the phenomena associated with the field of geodesy and geomatics engineering. For example, in the earlier days, people would make up nonsense stories when a ship or aircraft was lost for its lack of supporting knowledge in earth positioning. But nowadays, when a ship or aircraft is missing then the science of geodesy can be applied to determine its position or coordinates so that it could be found. Additionally, the mapping of the density of an area can be analyzed by aerial photography or location mapping.

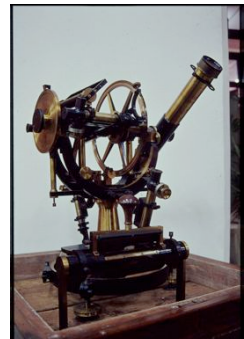
In the present day and in the future, progresses in technology of satellite and communications also have opened new insights that enable data acquisition with more extensive coverage in a short time, accurately, and less in cost. Currently there are also various satellite missions assigned to monitor the earth. This is of course closely related to the field of geodesy (in the terms of the utilization of Global Positioning System technology), manipulation of digital image data; hence the utilization and usage of the satellite technology cannot be ignored anymore. Based on such considerations, the development of the geodesy engineering field that was initially only supported the activities of survey and mapping, will evolve over the next decade towards geomatics, a field of study whose presence cannot be separated from the progress and development of the field of geodesy and Geographic Information Systems (GIS), including their supporting technology (computers, communications, and data processing).



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## Curriculum of Geodesy and Geomatics Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1001	Sport
KU1011	Scientific Writing
KU1072	Introduction to Information Technology B
Total = 19 CREDITS	
Total Credits at Year 1 = 39 CREDITS	

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU102X	English	2
2	KU1284	Integrated Science 2	2
2		Elective	3
Total = 20 CREDITS			

### Semester 3

GD2101	Surveying I
GD2102	Geodetic Computation
GD2103	Spatial Data Computation
GD2104	Theory of Adjustment I
GD2105	Cartography
GD2106	Introduction to Geography
	Elective
Total = 20 CREDITS	
Total Credits at Year 2 = 38 CREDITS	

### Semester 4

4	GD2201	Plane Surveying II	4
3	GD2202	Geometric Geodesy	4
3	GD2203	Spatial Database	3
3	GD2204	Adjustment Computation II	3
2	GD2205	Land Administration I	2
2	KU2071	Pancasila and Civic Education	2
3			3
Total = 18 CREDITS			

### Semester 5

GD3101	Geodetic Network Analysis
GD3102	Coordinate Transformation System
GD3103	Hydrography II
GD3104	Satellite Geodesy
GD3105	Land Administration II
GD3106	Geografi Lingkungan
	Elective
Total = 20 CREDITS	
Total Credits at Year 3 = 39 CREDITS	

### Semester 6

3	GD3201	Satellite Survey	3
3	GD3202	Remote Sensing I	3
3	GD3203	Geographic Information Systems I	3
3	GD3204	Photogrametry I	3
2	GD3290	Field Camp	3
3	GDXXX	Electives	4
3			3
Total = 19 CREDITS			

### Semester 7

GD4101	Construction Surveying
GD4102	Hydrography II
GD4103	Photogrametry II
GD4091	Field Work
	Elective
Total = 15 CREDITS	
Total Credits at Year 3 = 28 CREDITS	
Total CREDITS = 144 SKS	

### Semester 8

3	GD4201	Geographic Information Systems II	3
2	GD4092	Final Project	3
3	GD4202	Survey and Mapping Project Planning & Management	3
3		Elective	4
4		Elective	3
Total = 13 CREDITS			

### Elective Courses

GD2001	Surveying and Mapping	3
GD2002	Introduction to Surveying	2
GD3107	Hydrographic Survey	3
GD3205	Legal Cadastre	2
GD3206	Hydro-acoustic survey	2
GD3207	Underwater Imaging	2
GD3208	Coastal Environmental Survey	2
GD4104	Fiscal Cadastre	2
GD4105	Ocean Geodesy	2
GD4106	Deformation and Geodynamic Survey	2
GD4107	Watershed Hydrography	2
GD4108	Remote Sensing 2	2
GD4109	Non-Topographic Photogrammetry	2
GD4110	Operational Hydrography	2
GD4113	Introduction to GPS	2
GD4114	Introduction to GIS	2
GD4115	Introduction to Photogrammetry	2
GD4116	Introduction to Hydrography	2
GD4203	Estimation and Approximation in Geodesy	2
GD4204	Earth Gravity Field	2
GD4205	Technical Aspects of the Law of the Sea	2
GD4206	Utility Information Systems	2
GD4207	Offshore Industrial Survey	2
GD4208	Coastal Zone Engineering	2
GD4209	State, Provincial and Municipal Sea Boundary Delimitation	2
GD4210	Multipurpose Cadastre	2
GD4211	Introductions to Remote Sensing	2
GD4212	Introduction Thematic Mapping	2
GD4213	Introduction to Cadastral System	2

### Minor Program

106	Biology
120	Geology
121	Mining
122	Petroleum Engineering
124	Geophysics
128	Meteorology
129	Oceanography
135	Informatics Engineering
150	Civil Engineering
152	Architecture
153	Environmental Engineering
154	City Planning
155	Ocean Technology

### Minor Courses

Minor Program : General		
GD2101	Surveying I	4
GD2105	Cartography	2
GD2201	Plane Surveying II	4
GD2202	Geometric Geodesy	4
GD3103	Hydrography II	3
Total = 17 CREDITS		

# 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.**

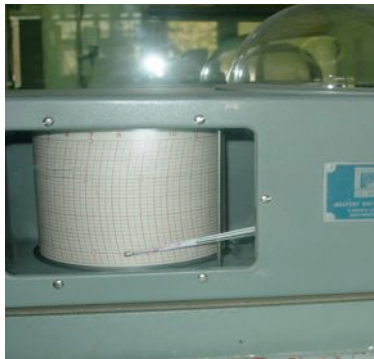
We are often confused and clueless of the reasons behind sudden changes in the weather, from hot to raining, or why it is snowing, and so forth. This will be studied at the study program of Meteorology. Weather and climate significantly affect human lives. One example is the estimation of the harvest 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 program 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 program 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 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1001	Sport
KU1011	Scientific Writing
KU1072	Introduction to Information Technology B
Total = 19 CREDITS	
Total Credits at Year 1 = 39 CREDITS	

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU102X	English	2
2	KU1284	Integrated Science I	2
2		Elective	3
Total = 20 CREDITS			

### Semester 3

ME2111	Continuum Mechanics
ME2112	General Meteorology
FI2181	Mathematical Physics IB
MA2021	Matrices and Vector Spaces
ME2121	Computational Meteorology
	Elective
Total = 19 CREDITS	
Total Credits at Year 2 = 39 CREDITS	

### Semester 4

3	ME2211	Dynamical Meteorology I	3
3	ME2212	Physical Meteorology	3
3	ME2221	Meteorological Observations	3
3	MA2081	Elementary Statistics	3
3	ME2222	Numerical Methods in Meteorology	3
4	KU2071	Pancasila and Civic Education	2
		Elective	3

### Semester 5

ME3111	Dynamical Meteorology II
ME3121	Meteorological Data Analysis I
ME3122	Meteorological Modelling I
ME3123	Meteorological Information System
	Elective
Total = 16 CREDITS	
Total Credits at Year 3 = 32 CREDITS	

### Semester 6

3	ME3221	Meteorological Data Analysis II	3
3	ME3222	Meteorological Modelling II	3
3	ME3223	Satellite Meteorology	3
3	ME3231	Hydrometeorology	3
4		Elective	4
Total = 16 CREDITS			

### Semester 7

ME4111	Tropical Meteorology	3
ME4131	Synoptic Meteorology and Weather Analysis	3
ME4112	Boundary Layer Meteorology	3
ME4091	Colloquium Meteorology	3
TL4001	Environmental Impact Assessment Method	3
	Elective	3
Total = 18 CREDITS		
Total Credits at Year 3 = 34 CREDITS		
Total CREDITS = 144 SKS		

### Semester 8

3	ME4092	Special Topic in Meteorology	3
6	ME4099	Final Project	6
3	TI4002	Industrial Engineering Management	3
4		Elective	4
Total = 16 CREDITS			

**Elective Courses**

ME2223	Meteorological Instrumentations	3
ME3124	Atmospheric Teledetection	3
ME3211	Environmental Meteorology	3
ME3233	Weather Modification	3
ME3236	Climate Change	3
ME4093	Field Works	2
ME4113	Introduction to Atmosphere & Ocean Interaction	2
ME4132	Wind and Solar Energy	3
ME4133	Water Management	3
ME4134	Agrometeorology	2
ME4231	Mesoscale Meteorology	3
ME4232	Engineering Meteorology	3
ME4233	Air Pollution Meteorology	3
ME4234	Climate Policy	3

**Minor Courses**

Minor Program : General		
ME2112	General Meteorology	3
ME2212	Physical Meteorology	3
ME2221	Meteorological Observations	3
ME3121	Meteorological Data Analysis I	3
ME3231	Hydrometeorology	3

Total = 15 CREDITS

**Minor Program**

3	101	Mathematics
3	102	Physics
3	103	Astronomy
3	105	Chemistry
3	106	Biology
2	120	Geology
2	121	Mining
	124	Geophysics
3	129	Oceanography
3	131	Mechanical Engineering
2	133	Engineering Physics
3	134	Industrial Engineering
3	135	Informatics Engineering
3	136	Aerospace Engineering
3	150	Civil Engineering
	151	Geomatics
	153	Environmental Engineering
	154	City Planning
3	174	Graphics Design
3	190	Management

# OCEANOGRAPHY

Lately, we became 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 islands that sank due to sea level rise.

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 the 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 the Indonesian 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.

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 occurred 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. Es-

pecially in the energy sector, by conducting research on ocean-originated alternative energy sources, i.e. sea tides, waves, and Ocean Thermal Energy Conversion (OTEC).

In lectures, the students will be provided with the basic concepts 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 movements 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.

Basic sciences such as physics, chemistry, biology, geology, and mathematics can be used to explain the natural processes that occur at sea. To support the education process, students will be equipped with field observations, laboratory studies, modeling and computer simulations, and remote sensing applications. Oceanographic parameter measurements are generally conducted at sea using a research vessel. Measurements can also be performed in the laboratory with the aid of physical models or hydraulics that are made as close as possible to the ones in the ocean.



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## Curriculum of Oceanography

### Semester 1

MA1101	Calculus I	
FI1101	Elementary Physics IA	
KI1101	Basic Chemistry I A	
KU1101	Integrated Science I	
KU1001	Sport	
KU1011	Scientific Writing	
KU1072	Introduction to Information Technology B	

Total = 19 CREDITS

Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU102X	English	2
2	KU1284	Integrated Science II	2
2		Elective	3

Total = 20 CREDITS

### Semester 3

FI2181	Mathematical Physics IB	
FI2101	Mechanics	
OS2103	Computational Oceanography	
OS2101	Introduction to Oceanography	
ME2112	General Meteorology	
OS2102	Fluid Mechanics	
KU206X	Electives	

Total = 20 CREDITS

Total Credits at Year 2 = 20 CREDITS

### Semester 4

3	FI2203	Thermodynamics	3
3	FI2281	Mathematical Physics IIB	3
3	MA2081	Elementary Statistics	3
3	GL2011	Principle of Geology	3
3	OS2202	Numerical Method in Oceanography	3
3	OS2201	Hydrodynamics	3
2	KU2071	Pancasila and Civic Education	2

### Semester 5

OS3103	Oceanographic Modelling I	
OS3104	Oceanographical Signal Analysis	
OS3101	Biological and Chemical Oceanography	
OS3102	Ocean Waves	
GD3107	Hydrographic Survey	
OS3057	Diving	
OS3106	Environmental Oceanography	

Total = 19 CREDITS

Total Credits at Year 3 = 38 CREDITS

### Semester 6

3	OS3204	Basic Ocean Tides and Analysis	3
3	OS3202	Ocean Currents	3
2	OS3203	Oceanographic Survey	3
3	OS3206	Regional Oceanography in Indonesia	2
		Elective	4
		Elective	4

Total = 19 CREDITS

### Semester 7

OS4101	Oceanographic Data Analysis	
OS4104	Long Waves and Tides	
OS4004	Special Topics	
OS4091	Colloquium	
	Elective	

Total = 15 CREDITS

Total Credits at Year 3 = 27 CREDITS

Total CREDITS = 144 SKS

### Semester 8

2	OS4099	Final Project I	4
3	TL4103	Management for Environmental Engineering 3	
2		Elective	5
2			
6			

Total = 12 CREDITS



### Elective Courses

OS3003	Coastal Management	2	101
OS3201	Advanced Oceanography	2	102
OS3205	Oceanographic Modelling II	3	103
OS4001	Introduction to Geophysical Fluid Dynamics	2	106
OS4002	Introduction to Sea Air Interaction	2	120
OS4003	Fisheries Oceanography	2	121
OS4005	Introduction	2	122
OS4006	Water Quality Management	2	124
OS4008	Ocean Energy	2	128
OS4009	Introduction to Non Linear Ocean Waves	2	131
OS4010	Sediment Transport	2	133
OS4090	Field Works	2	134
OS4102	Coastal Dynamics	2	135
OS4103	Coastal Oceanography	2	150
OS4105	Tsunami	2	151
OS4201	Disaster Mitigation	2	153

### Minor Program

101	Mathematics
102	Physics
103	Astronomy
106	Biology
120	Geology
121	Mining
122	Petroleum Engineering
124	Geophysics
128	Meteorology
131	Mechanical Engineering
133	Engineering Physics
134	Industrial Engineering
135	Informatics Engineering
150	Civil Engineering
151	Geomatics
153	Environmental Engineering
154	City Planning
155	Ocean Technology
174	Graphics Design
190	Management

### Minor Courses

Minor Program : General		
OS2101	Introduction to Oceanography	3
OS2201	Hydrodynamics	3
OS3102	Ocean Waves	3
OS3202	Ocean Currents	3
OS3204	Basic Ocean Tides and Analysis	3
OS3206	Regional Oceanography in Indonesia	2

Total = 15 CREDITS

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# FACULTY OF MINING AND PETROLEUM ENGINEERING

Science that is being studied and developed in the Faculty of Mining and Petroleum Engineering (FTTM) is that of the utilization of natural resources. More specifically, it deals with the science of exploration and exploitation technology and processing of natural resources, including minerals, coal, oil, gas, and geothermal, of which are based on the concept of eco-friendly conservation.

FTTM consists of the study programs of Mining Engineering, Petroleum Engineering, Geophysical Engineering, and Metallurgical Engineering. Observing the distinctiveness of each study program, the grouping is very closely related to the implementation mechanism of the efficient and effective natural resources exploitation process. Mining Engineering and Petroleum Engineering suggest that the referred natural resources are crude oil, natural gas, geothermal, and valuable minerals like gold, platinum, etc.

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

## MINING ENGINEERING

The study program of Mining Engineering studies everything associated with the exploration and extraction processes, especially of valuable minerals and coal. To carry out the mining process, there are pre-requisite provisions such as the knowledge of minerals subject to extraction, i.e. the properties, the values, and how to process the minerals for human benefit.

When about to mine gold, it should also have been known whether the mining process to be performed was beneficial. That is, the properties of the minerals, their uses, how to mine them, also how to process them economically for human consumption. Therefore, at this study program, the students are also given the economics course associated with mineral mining process.

In the mining process, there are three major activities, namely: exploration, exploitation, and processing. Exploration is the search for valuable minerals. Exploitation is the process of mining these minerals. Meanwhile, processing is the activity to separate the valuable minerals from other particles.



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At the study program, students will also learn of how to exploit valuable minerals. What is valuable mineral? Why does Mining Engineering only cover the extraction of valuable minerals? What about oil? Valuable minerals consist of gold, silver, platinum, and others. Study in oil and natural gas extraction is conducted in another study program, namely Petroleum Engineering. Different properties between crude oil and valuable mineral make the mining process to be also different, subsequently.

The study program Mining Engineering helps students to develop their knowledge in mining science by providing supporting facilities and endorsing various learning methods. Mining Engineering students also have the opportunity to apply their knowledge through apprenticeship and/or final assignment in form of research. Both can be done at the mine site.

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## Curriculum of Mining Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1001	Sport
KU1011	Scientific Writing
KU1183	Integrated Science 2

Total = 19 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU102X	English	2

Total = 17 CREDITS

### Semester 3

MA2021	Matrices and Vector Spaces
GL2011	Principle of Geology
TF2108	Engineering Mechanics
GD2001	Surveying and Mapping
TA2111	Crystallography and Mineralogy
TA2121	Mine System
KU206X	

Total = 18 CREDITS  
Total Credits at Year 2 = 36 CREDITS

### Semester 4

3	TA2211	Numerical Method	3
3	MA2081	Elementary Statistics	3
2	GL2012	Tectonophysics	2
3	GL2042	Petrology	3
3	SI2021	Soil Mechanics (TA)	2
2	TA2221	Mine Equipment and Material Handling	3
2	KU2071	Pancasila and Civic Education	2

Total = 18 CREDITS

### Semester 5

GL3011	Structural Geology
TA3111	Genesis of Mineral Deposit
TA3113	Principle of Reserve Estimation Methods
TA3114	Geostatistics
TA3121	Rock Mechanics
TA3122	Mine Investment Analysis
	Elective

Total = 18 CREDITS  
Total Credits at Year 3 = 33 CREDITS

### Semester 6

3	MG3017	Mineral Processing	3
3	TA3201	Resources Modeling and Reserve Evaluation	2
2	TA3222	Mining Geotechniques	2
2	TA3223	Mine Valuation	2
3		Elective	3
3		Elective	3

Total = 15 CREDITS

### Semester 7

TA4122	Mineral Economic
TA4124	Mine Environment
xxx	

Total = 9 CREDITS  
Total Credits at Year 4 = 16 CREDITS  
Total CREDITS = 112 SKS

### Semester 8

3	TA4222	Occupational Health-Safety and Labor Law	2
3	TA4091	Final Examination	5
3			

Total = 7 CREDITS

**Elective Courses**

TA3213	Groundwater Resources	3
TA4011	Exploration and Evaluation of Geothermal	2
TA4012	Geotechnical Site Investigation	2
TA4013	Exploration, Exploitation, and Conservation of Groundwater	2
TA4014	System Information Geography for Exploration	2
TA4121	Coal and Its Utilization	2
TA4224	Tunneling	2

**Elective Courses offered by other Program**

EP3274	Electrical Power Engineering (TA)	3
GL5014	Fracture and Geomechanic	2
MG3011	General Metallurgy	2
MG3112	Benefeciation of Industrial Minerals	2
MG3213	Flotation	3
MS2291	Prime Movers	2
TF4004	Instrumentation	2
TM4219	Geothermal Engineering	3
Total CREDITS = 19 SKS		

**Minor Program**

120	Geology
122	Petroleum Engineering
123	Geophysics
125	Metalurgy

**Minor Courses**

Minor Program: Penambangan		
TA2121	Mine System	2
TA2221	Mine Equipment and Material Handling	3
TA3111	Genesis of Mineral Deposit	3
TA3122	Mine Investment Analysis	2
TA4122	Mineral Economic	3
TA4222	Occupational Health-Safety and Labor Law	2
Total = 15 CREDITS		
Minor Program: General		
TA2121	Mine System	2
TA2221	Mine Equipment and Material Handling	3
TA3122	Mine Investment Analysis	2
TA4122	Mineral Economic	3
TA4222	Occupational Health-Safety and Labor Law	2
Total = 15 CREDITS		

## PETROLEUM ENGINEERING

The Petroleum Engineering study program is a part of FTTM that studies the petroleum, natural gas, and geothermal exploitation. The petroleum and natural gas resources are usually known as hydrocarbons, given that their component is dominated by the elements hydrogen and carbon. For the three areas above, various aspects that are studied include: reservoir, drilling, production, surface facilities including the economics and management their oil exploration and exploitation.

Reservoir is the accumulation of hydrocarbon below the surface of the earth. It must not be imagined as an underground lake or pond. The underground hydrocarbons may be trapped in the porous rock, stick to the rock surface, and surrounded by other impermeable rock types. Production is an activity of streaming the hydrocarbons from the reservoir to the surface. This hydrocarbon production can only be done after drilling. Drilling is simply an activity to make a hole creating communication between reservoir and earth surface. After the hydrocarbons reached the surface, they will be piped to the surface facilities, including the separator that

will separate the oil, water, and gas (the produced oil may have gas and water content), it then entered the main tank before being taken to the sale point. Economics and Management include analysis of management of an oil field as a whole.



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Learning activity in this study program is very fun and challenging, as the activities of exploration and exploitation of hydrocarbons include various fields of science, hence students are required to take courses from different study programs such as Geological Engineering (GL), Geophysical Engineering (TG), Electrical Engineering (EL), Mathematics (MA), Physics (FI), Chemistry (KI), Chemical Engineering (TK), Mechanical Engineering (MS), and Information Engineering (IF). In fact, because petroleum engineer will be working in a community (usually the source of hydrocarbons are located in remote areas) it is recommended that students also take courses from Socio-technology Research Group (SOSTEK), i.e. Social Psychology, Communication, and Anthropology, which can form initial skill to interact with the surrounding community.

## Curriculum of Petroleum Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1001	Sport
KU1011	Scientific Writing
KU1183	Integrated Science 2
Total = 19 CREDITS	
Total Credits at Year 1 = 36 CREDITS	

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU102X	English	2
Total = 17 CREDITS			

### Semester 3

MA2073	...
MA2081	Elementary Statistics
TK3081	Basic Thermodynamics
IF2132	Computer Programming (TM)
GL3053	Sedimentology and Stratigraphy
TM2108	Fluid Properties + Lab
KU206X	
Total = 18 CREDITS	
Total Credits at Year 2 = 36 CREDITS	

### Semester 4

3	MA3072	Numerical Methods	3
3	EL2244	Introduction to Electronics (TM)	3
3	GL3011	Structural Geology	3
3	TM2209	Petrophysics + Lab	3
3	MS2111	Strength of Materials	3
3	TK3082	Transport Phenomena	3
2	KU2071	Pancasila and Civic Education	2
Total = 18 CREDITS			

### Semester 5

TM3110	Reservoir Engineering I
TM3104	Production Engineering
TM3101	Drilling Operation Technique I + Lab
TM3113	Formation Testing
TM3114	Well Log Analysis
GL3052	Petroleum Geology
Total = 18 CREDITS	
Total Credits at Year 3 = 36 CREDITS	

### Semester 6

3	TM3211	Reservoir Engineering II	3
3	KU206X		2
3	TM3205	Surface Facilities & Transportation	3
3	KU2071	Pancasila and Civic Education	2
3	TM3206	Artificial Lift Well Design	3
3	TM3202	Drilling Operation Technique II	3
	TM3000	Practical Training & Report Writing	2
Total = 18 CREDITS			

### Semester 7

TM4112	Reservoir Characterization & Modeling
TM4117	Natural Gas Engineering
TM4107	Well Stimulation
XXX	
	Elective
	Elective
Total = 18 CREDITS	
Total Credits at Year 3 = 35 CREDITS	
Total CREDITS = 144 SKS	

### Semester 8

3	TM4216	Improvement of Oil Recovery	3
3	TM4219	Geothermal Engineering	3
3	TM4099	Final Project	3
3	YYYYYY		3
3		Elective	3
3		Elective	2
Total = 17 CREDITS			



## Elective Courses

TM4020	Unconventional Hydrocarbon Recovery	3
TM4021	Modern Drilling Technique	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	Petro. Artificial Intelligence	3
TM4032	Regulation of Petroleum Industry	3

## Minor Program

120	Geology
123	Geophysics
130	Chemical Engineering
131	Mechanical Engineering
132	Electrical Engineering

## Minor Courses

Minor Program: Teknik Reservoir		
TM2108	Fluid Properties + Lab	3
TM2209	Petrophysics + Lab	3
TM3110	Reservoir Engineering I	3
TM3113	Formation Testing	3
TM3211	Reservoir Engineering II	3
Total = 15 CREDITS		

Minor Program: Teknik Produksi		
TM2108	Fluid Properties + Lab	3
TM2209	Petrophysics + Lab	3
TM3104	Production Engineering	3
TM3205	Surface Facilities & Transportation	3
TM3206	Artificial Lift Well Design	3
Total = 15 CREDITS		

Minor Program: General		
TM2108	Fluid Properties + Lab	3
TM3101	Drilling Operation Technique I + Lab	3
TM3114	Well Log Analysis	3
TM3202	Drilling Operation Technique II	3
Total = 12 CREDITS		

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## 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 is also studied, and also is the natural disaster mitigation. In the study program of Geophysical Engineering, there are four major study groups, namely the earth resources exploration, reservoir, imaging and data processing, as well as engineering and the environment.

Various interesting things often happen on parts the earth without us realizing it. For instance, 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 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 learned.

In addition to learning the theory in classes, the students 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 are also familiar with several softwares that will be helpful in modeling the phenomena occurring in the earth.

When natural disasters such as earthquakes, landslides, and broken 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 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1001	Sport
KU1011	Scientific Writing
KU1183	Integrated Science 2
Total = 19 CREDITS	
Total Credits at Year 1 = 36 CREDITS	

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU102X	English	2
Total = 17 CREDITS			

### Semester 3

TG2111	General Geophysics
TG2101	Geomathematics I
GL2011	Principle of Geology
GL2041	Crystallography and Mineralogy
TG2102	Geophysics Electronics
GD2001	Surveying and Mapping
Total = 17 CREDITS	
Total Credits at Year 2 = 35 CREDITS	

### Semester 4

2	TG2205	Wave in Geophysics	3
3	KU206X		2
3	TG2203	Geomathematics II	3
3	TG2204	Potential Theory	2
3	TG2240	Refraction Seismic	3
3	GL2051	Sedimentology	3
	GL2012	Tectonophysics	2
Total = 18 CREDITS			

### Semester 5

TG3107	Geo-Statistics
TG3120	Seismology
TG3106	Geophysical Instrumentation
TG3121	Earth Crust Mechanics
TG3108	Geophysical Thermodynamics and fluid dynamic
TG2014	Computing in Geophysics
Total = 17 CREDITS	
Total Credits at Year 3 = 33 CREDITS	

### Semester 6

3	TG3241	Geo-electromagnetism	3
3	TG3222	Geodynamics	2
3	KU2071	Pancasila and Civic Education	2
2	TG3290	Fieldwork	3
3	TG3261	Seismic Data Acquisition	3
	TG3260	Gravity & Magnetism	3
Total = 16 CREDITS			

### Semester 7

TG4162	Seismic Interpretation
TG4112	Geophysical Signal Processing
TG4116	Communication in Geophysics
TG4142	Engineering & Environmental Geophysics
Total = 10 CREDITS	
Total Credits at Year 4 = 21 CREDITS	
Total CREDITS = 144 SKS	

### Semester 8

3	TG4243	Volcanology and Geothermal Exploration	3
2	TG4091	Final Project	5
2	ZZZZZZ		3
Total = 11 CREDITS			

**Elective Courses**

TG3113	Geophysical Inversion	3
TG4027	Geophysical Exploration	3
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
TG4264	Seismic Inversions for Reservoir	3
TG4265	Seismic Attributes for Reservoir	2
TG4269	Economical geophysics and Management	2

**Elective Courses offered by other Program**

GL2042	Petrology	3
GL3011	Structural Geology	3
GL3051	Principal Stratigraphy	2
GL3052	Petroleum Geology	3
GL4052	Well Logging Geology	2
TA4122	Mineral Economic	3
TG5244	Mining Geophysics	2
TM4218	Integrated Formation Evaluation	3

**Minor Program**

120	Geology
121	Mining
122	Petroleum Engineering

**Minor Courses**

Minor Program: Teknik Geofisika		
TG2240	Refraction Seismic	3
TG3120	Seismology	3
TG3222	Geodynamics	2
TG3241	Geo-electromagnetism	3
TG3260	Gravity & Magnetics	3
TG3261	Seismic Data Acquisition	3
Total = 17 CREDITS		

Minor Program: Umum		
TG2240	Refraction Seismic	3
TG3120	Seismology	3
TG3222	Geodynamics	2
TG3241	Geo-electromagnetism	3
TG3260	Gravity & Magnetics	3
TG3261	Seismic Data Acquisition	3
Total = 17 CREDITS		

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# METALLURGICAL ENGINEERING

Metallurgical Engineering is a field of science 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 (including processing of coal), metal extraction and manufacture of alloys, the relationship of the metal mechanical properties with its structures, 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 Metallurgical Chemistry, Metallurgical Physics, 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, which course is named Industry Visitation, and by the end of the third year there is Industrial Practice course.

In the course of Industry Visitation, students will have the opportunity to be familiar with industrial activities in relatively short time, i.e. within two days. Meanwhile in the Industrial Practice, the students are expected to observe more of a real job in the industry by directly involved in the industrial activities for approximately one and a half months. While following several courses, students also will have the opportunity to carry out excursion to particular industries related to the subject being taught. For example, the excursion to the metal casting industry in Metal Casting course and visit to the cement industry in 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 will also be given guest lectures from industrial practitioners once in two weeks. In the guest lectures, the materials taught are not only related to engineering operations and processes in industry, but also about management, work ethic, organization, asset management, economics, business, marketing, work safety, environmental management, and others.



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## Curriculum of Metallurgical Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1001	Sport
KU1011	Scientific Writing
KU1183	Integrated Science 2

Total = 19 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU102X	English	2

Total = 17 CREDITS

### Semester 3

KI2122	Analytical Chemistry
KU206X	
MG2111	Unit Operation on Metallurgy
EP2274	Electrical Power Engineering (MS/MG)
MA2081	Elementary Statistics
TA2111	Crystallography and Mineralogy
	Elective

Total = 18 CREDITS  
Total Credits at Year 2 = 37 CREDITS

### Semester 4

3	MG2211	Metallurgical Thermodynamics	3
2	MG2212	Mineral Processing	4
3	MG2213	Strength of Material	3
2	MG2214	Applied Mathematic	3
		Elective	2
		Elective	2
2		Elective	2

### Semester 5

MG3111	Extractive Metallurgy
MG3112	Beneficiation of Industrial Minerals
MG3113	Metallurgical Kinetics
MG3114	Physical Metallurgy
MG3115	Transport Phenomena in Metallurgy
	Elective

### Semester 6

4	MG3211	Industrial Training	1
2	MG3212	Phase Transformation and Heat Treatment	4
3	KU2071	Pancasila and Civic Education	2
4	MG3213	Flotation	3
3	MG3214	Pyrometallurgy	3
3	MG3216	Furnace and Fuel	2
	ZZZZZ		3

Total = 18 CREDITS

### Semester 7

MG4111	Hydro-Electrometallurgy
MG4113	Iron and Steel Metallurgy
MG4114	Foundry Engineering
MG4112	Management of Environments in Metallurgical Industry
	Elective
	Elective

Total = 16 CREDITS  
Total Credits at Year 3 = 34 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

3	MG4211	Final Assignment	6
3	MG4212	Metal Forming	3
3	MG4213	Coal Processing and Beneficiation	3
3	MG4214	Corrosion Control	3
		Elective	3

Total = 18 CREDITS

### Elective Courses

MG3011	General Metallurgy	2
MG3017	Mineral Processing	3
MG4014	Advanced Mineral Processing	2
MG4015	Simulation and Modeling of Mineral Processing	2
MG4016	Advanced Extractive Metallurgy	2
MG4017	Process Control	2
MG4018	Surface Engineering	2
MG4019	Characterization of Materials	2
MG4020	Fracture Mechanics	2
MG4021	Powder Metallurgy	2
MG4022	Metals Failure Analysis	2
MG4023	Welding Metallurgy	2
MG4024	Ceramic Engineering	2
MG4116	Mill Plant Design	3
MG4117	Extractive Metallurgical Plant Design	3
MG4118	Alloy Design	3

### Elective Courses offered by other Program

KI2141	Structure and Chemical Bonding	3
KI2142	Physical Chemistry	4
MS6027	CAD/CAM	3
MT3102	Polymer Process	3
TA2211	Numerical Method	3
TA4122	Mineral Economic	3
TI2101	Introduction to Industrial Engineering	2
TI3005	Engineering Economics	2
TI3101	Production System Automation	2
TI4002	Industrial Engineering Management	3
TI4005	Project Management	3

### Minor Program

101	Mathematics	2
102	Physics	3
105	Chemistry	2
121	Mining	2
130	Chemical Engineering	2
133	Engineering Physics	2
134	Industrial Engineering	2
135	Informatics Engineering	2

### Minor Courses

Minor Program: Pengolahan Mineral		
MG2111	Unit Operation on Metallurgy	3
MG2212	Mineral Processing	4
MG3112	Benefeciation of Industrial Minerals	2
MG3213	Flotation	3
MG4213	Coal Processing and Benefeciation	3
Total = 15 CREDITS		

Minor Program: Metalurgi Ekstraksi		
MG3111	Extractive Metallurgy	4
MG3214	Pyrometallurgy	3
MG3216	Furnace and Fuel	2
MG4111	Hydro-Electrometallurgy	3
MG4113	Iron and Steel Metallurgy	3
Total = 15 CREDITS		

Minor Program: General		
MG2111	Unit Operation on Metallurgy	3
MG2212	Mineral Processing	4
MG3111	Extractive Metallurgy	4
MG3112	Benefeciation of Industrial Minerals	2
MG3113	Metallurgical Kinetics	3
MG3116	Mata Kuliah Belum Terdaftar di SI-X	2
MG3214	Pyrometallurgy	3
MG4111	Hydro-Electrometallurgy	3
Total = 22 CREDITS		





# 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 three study programs, i.e. Chemical Engineering, Engineering Physics, and Industrial Engineering. 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 a mechanic.

# CHEMICAL ENGINEERING

Chemical Engineering is the branch of engineering with the design, construction, and operation of machines and process plants that perform chemical reactions and biological processes to solve practical problems or make useful products. Chemical Engineering is all about changing raw materials into products you use every day in a safe and cost effective way. For example petrol, plastics and synthetic fibers such as polyester and nylon, all come from oil. Hence, chemical engineers understand how to alter the chemical, biochemical or physical state of a substance, to create everything from face creams to new and renewable fuels.

The modern discipline of chemical engineering encompasses much more than just process engineering. Chemical engineers are now engaged in the development and production of a diverse range of products, as well as in commodity and specialty chemicals. These products include chemicals, bioprocess products, food additives, high performance materials needed or aerospace, automotive, biomedical, electronics, environmental, space and military applications. Examples include ultra-strong fibers, fabrics, dye-sensitized solar cells, adhesives and composites for vehicles, bio-compatible materials for implants and prosthetics, gels for medical applications, pharmaceuticals, and films with special dielectric, optical or spectroscopic properties for opto-electronic devices. Additionally, chemical engineering is often interwound with biology and biomedical engineering. Many chemical engineers work on gas and oil processes, new and renewable energy technology research and development, biomass conversions, bioprocess and food technology, biological projects such as understanding biopolymers (protein) and microbiology. The line between chemists and chemical engineers is growing ever thinner as more and more chemical engineers begin to start their own invention using their knowledge of chemistry, physics and mathematics to create, implement and mass produce their ideas.

Since 2003, Department of Chemical Engineering ITB provides three sub-programs, such as Chemical Engineering, Bioprocess Engineering and Food Engineering. The second year students have to choose and to deal with the sub-program that they interested by means of following the subsequence curricula intended to each sub-program.

Three primary physical laws underlying chemical engineering design are conservation of mass, conservation of momentum and conservation of energy. The movement of mass and energy around a chemical process are evaluated using mass balances and energy balances, laws that apply to discrete parts of equipment, unit operations, or an entire plant. In doing so, chemical engineers must also use principles of

thermodynamics, reaction kinetics, fluid mechanics and transport phenomena. The task of performing these balances is now aided by process simulators, which are complex software models that can solve mass and energy balances is now aided by process simulators, which are complex software models that can solve mass and energy balances and usually have built-in modules to simulate a variety of common unit operations. At this stage, the engineer is able to find out production capacity, amount of raw materials required, up to the number of products made. In designing industrial processes, several other factors should also be considered, such as production process reliability, how high or low is the production cost, and also the safety factor, to avoid accidents within the factory, such as explosion, etc. In the following stage, (bio) reactor design is carried out, as well as designing the piping system, determining energy utilization and process control system.

In the instance where the production process waste, chemical Engineers should also design the waste processing system to minimize their affects on the environment. Chemical Engineers may also be assigned to optimize and to increase the production capacity of process plant, for example from 100 ton/ year to 1350 ton/year products.



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## Curriculum of Chemical Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU102X	English
KU1073	Introduction to Information Technology C
	Elective

Total = 20 CREDITS  
Total Credits at Year 1 = 39 CREDITS

### Semester 2

4 MA1201	Calculus II	4
4 FI1201	Elementary Physics IIA	4
3 KI1201	Basic Chemistry II A	3
2 KU1201	Natural and Universe Systems	2
2 KU1001	Sport	2
2 KU1011	Scientific Writing	2
3 KU1287	Introduction to Industrial Technology	2

Total = 19 CREDITS

### Semester 3

TK2101	Introduction to Chemical Engineering
TK2102	Chemical Engineering Mathematics
TK2103	Mass & Energy Balances
TK2104	Chemical Engineering Thermodynamics 1
TK2105	Process Computation
TK2106	Fluid & Particle Mechanics
KI2122	Analytical Chemistry
	Elective

Total = 20 CREDITS  
Total Credits at Year 2 = 39 CREDITS

### Semester 4

2 KI2051	Organic Chemistry	3
2 TK2201	Chemical Reaction Kinetics & Catalysis	3
3 KU2071	Pancasila and Civic Education	2
2 TK2202	Heat Transfer	3
	Elective	4
	Elective	4

Total = 19 CREDITS

### Semester 5

TK3101	Separation Processes 1
TK3102	Chemical Reaction Engineering
TK3103	Utility Systems
KUXXX	Electives
	Elective
	Elective

Total = 20 CREDITS  
Total Credits at Year 3 = 39 CREDITS

### Semester 6

3 TK3201	Transport Phenomena	2
3 TK3202	Chemical Process Control	3
3 TK3203	Product Engineering	2
4 TK3204	Chemical Process Industries	2
4 TK3004	Unit Operations Laboratory	2
	Elective	4
	Elective	4

Total = 19 CREDITS

### Semester 7

TK4090	Industrial Internship
TK4101	Industrial Waste Management
TK4102	Chemical Process Design
TK4103	Chemical Plant Economic Evaluation
	Elective

Total = 13 CREDITS  
Total Credits at Year 4 = 39 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

2 KU206X		2
2 TK4099	Comprehensive Examination	1
	Elective	4
	Elective	4
4	Elective	3

Total = 14 CREDITS

## Elective Courses

TK3081	Basic Thermodynamics	3
TK3082	Transport Phenomena	3
TK3083	Chemical Industries	3
TK4051	Industrial Internship	3
TK4052	Selected Topics : Chemical Engineering	2
TK4053	Seminar	1
TK4054	Industrial Waste Treatment	2
TK5001	Chemical Process Risk Assessment	3
TK5002	Polymer Science & Engineering	3
TK5003	Selected Topics : Separation Processes	3
TK5004	Nanotechnology	3
TK5005	Selected Topics : Process Equipment	3
TK5006	Particulate Product Engineering	3
TK5007	Selected Topics : Process Computation	3
TK5008	Coal Processing & Utilization	3
TK5009	Selected Topics : Product Technology	3
TK5010	Project Feasibility Evaluation	3
TK5011	Plastic Waste Management	3
TK5012	Energy Management	3
TK5013	Industrial Furnace Analysis & Design	3
TK5014	Thermal System Analysis	3
TK5015	Starch Processing Technology	3
TK5016	Industrial Membrane Technology	3
TK5017	Professionalism & Entrepreneurship	3
TK5018	Polymer Processing	3
TK5019	Chemical Process Project Management	3
TK5020	Industrial Electrochemistry	3
TK5021	Corrosion Process and Control	3
TK5022	Supercritical Fluid Technology	3
TK5023	Aquatic Food Resources	3
TK5024	Metabolite Products Engineering	3
TK5025	Biological System Engineering	3
TK5026	Chemical Engineering System Optimization	3
TK5027	Principles Of Ceramic Processing	3
TK5028	Sustainable Chemical Process System	3
TK5029	Oil & Gas Surface Facilities	3
TK5030	Biopolymer	3
TK5031	Cryogenic Technology	3

## Minor Program

105	Chemistry
131	Mechanical Engineering
133	Engineering Physics
134	Industrial Engineering

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## Elective Courses

3	TK5032	Gas Processing Technology	3
3	TK5033	LNG Processing Technology	3
3	TK5034	Industrial Experience	3
3	TK5035	Petroleum Refining Technology	3
2	TK5036	Catalysts & Catalysis	3
3	TK5037	Selected Topics : Process Industries	3
3	TK5038	Chemurgy Technology	3
3	TK5039	Plantation Product Processing Technology	3
3	TK5040	Chemical Process Development	3
3	TK5041	Selected Topics : Process Technology	3
3	TK5042	Oil & Fats Processing Technology	3
3	TK5043	Plasma Technology	3
3	TK5044	Process System Troubleshooting	3
3	TK5045	Dynamic Modelling Of Proc Systems	3
3	TK5046	Selected Topics : Process Design	3
3	TK5047	Selected Topics : Bioprocess Engineering	3
3	TK5048	Environmental Biotechnology	3
3	TK5049	Selected Topics : Industrial Waste Treatment	3
3	TK5050	Intro to Ceramic Engineering	3
3	TK5051	Process Statistics	3
3	TK5052	Food Product Development	3
3	TK5053	Entrepreneurship and Food Production Technology	3
3	TK5054	Combustion Engineering	3
3	TK5055	Multiphase Flow	3
3	TK5056	Radiative Heat Transfer	3
3	TK5057	Selected Topics : Chemical Reaction Engineering	3
3	TK5058	Process Intensification	3
3	TK5059	Mycrosystem Process Technology	3
3	TK5060	Food Packaging	3
3	TK5061	Chemical Engineering Business Development	3
3	KI5223	Electrometric Analysis	3
3	KI5263	Food Biochemistry	3
3	MS3247	Prime Movers	3
3	TF3001	Measurement and Data Interpretation	3
3	TI4005	Project Management	3
3	TI5135	Project Management System	3
3	Total CREDITS = 18 SKS		

## Minor Courses

Minor Program: General			
TK2103	Mass & Energy Balances	3	
TK2104	Chemical Engineering Thermodynamics 1	2	
TK2106	Fluid & 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			

## ENGINEERING PHYSICS

Engineering Physics (TF) is a study programs which studies subjects associated with physics and technological aspects. This field of study focuses on engineering problems observed from various aspects of physics. Having said that, it is expected that many courses in Engineering Physics seem similar to those of other study programs, such as in Electrical Engineering, Mechanical Engineering, Chemical Engineering, and Material Engineering.

Yet, that does not mean that an Engineering Physics graduate has no specific skills. In discussing subjects of instrumentation and control, Engineering Physics graduates are the first ones which come to mind. In the subject of acoustics, people would normally refer to them as well. Lighting is also a subject mastered by Engineering Physics graduates. They too are the icon in topics of air conditioning.

The scope of Engineering Physics is very broad. Students who are interested in music and wishes to make a representative space for music concerts may find this degree program suitable for them. Also in thermal comfort and lighting, indoor as well as outdoor, or the study on instrumentation and control problems in processing industries, such as oil and gas industries and fertilizer industry; these subjects are studied in detail in the final year. Numerous other interesting fields of study are also available, such as optics and laser, material and material computation, ultrasonic, medical physics, imaging, and solar cell technology.



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An expert in Engineering Physics should possess a strong scientific knowledge and engineering basic. Mathematical knowledge required covers calculus and engineering mathematics, probability and statistics, and numerical methods. Scientific knowledge essential in this area of study is basic sciences of physics, chemistry and biology, as well as engineering sciences which cover electromagnetism, modern and quantum physics, thermodynamics, energy conversion, electrical and electronic circuitry, wave phenomenon, transport phenomenon, and material physics. Familiarity with these subjects will be sufficient in recognizing various physical signal/symptom phases and numerous engineering systems.

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## Curriculum of Engineering Physics

### Semester 1

MA1101	Calculus I	
FI1101	Elementary Physics IA	
KI1101	Basic Chemistry I A	
KU1101	Integrated Science I	
KU1073	Introduction to Information Technology C	
KU102X	English	
	Elective	
	Elective	

Total = 20 CREDITS  
Total Credits at Year 1 = 39 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1001	Sport	2
2	KU1011	Scientific Writing	2
3	KU1287	Introduction to Industrial Technology	2
2		Elective	2

Total = 19 CREDITS

### Semester 3

TF2101	System Engineering Mathematics I	
TF2102	Probability and Statistics	
TF2103	Mechanic of Materials	
TF2104	Thermodynamics	
TF2105	Electronics and Electric Circuit	
TF2106	Energy Conversions	
TF2107	Engineering Physics Laboratory I	
	Elective	

Total = 20 CREDITS  
Total Credits at Year 2 = 40 CREDITS

### Semester 4

3	TF2201	System Engineering Mathematics II	3
3	TF2202	Komputation Engineering	2
2	TF2203	Digital and Logic System	3
3	TF2204	Fluid Mechanics	3
4	TF2205	Quantum and Nano Physics	3
2	TF2206	Electromagnetic Fields	3
1	TF2207	Engineering Physics Laboratory II	1
2		Elective	2

Total = 20 CREDITS

### Semester 5

TF3101	Simulation and System Dynamics	
TF3102	Measurement Methods	
TF3103	Wave Phenomena	
TF3104	Physics of Materials	
TF3105	Heat and Mass Transfer	
TF3106	Engineering Physics Laboratory III	
TI4002	Industrial Engineering Management	
	Elective	

Total = 20 CREDITS  
Total Credits at Year 3 = 40 CREDITS

### Semester 6

2	TF3201	Signal Pocesing	3
3	TF3202	Sensors and Actuators	3
3	TF3203	Automatic Control	3
3	TF3204	Acoustics	3
3	TF3205	Thermal Analysis	3
1	TF3206	Engineering Physics Laboratory IV	1
3	KU2071	Pancasila and Civic Education	2
2		Elective	2

Total = 20 CREDITS

### Semester 7

TF4001	Engieering Ethics and Job Training	
TF4003	Lasers and Optics	
TF4101	Building Physics	
TK4054	Industrial Waste Treatment	
KU206X	Elective	

Total = 14 CREDITS  
Total Credits at Year 4 = 25 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

2	TF4002	Capita Selecta of Engineering Physics	1
3	TF4099	Final Project	5
3	TF4201	Instrumentation and Industrial Control	3
4		Elective	2

Total = 11 CREDITS

**Elective Courses**

TF2108	Engineering Mechanics	2
TF3001	Measurement and Data Interpretation	3
TF3107	Lighting and Interior Acoustics	2
TF4004	Instrumentation	2
TF4005	Applied Physics	2
TF4111	Imaging Technology	3
TF4112	Modern Control	3
TF4113	Digital Control	3
TF4114	Engineering Optics	3
TF4115	Energy Conservation	3
TF4116	Material Processing Technology Engineering	3
TF4117	Engineering Materials Simulation	3
TF4118	Thermal Environmental Engineering	3
TF4119	Special Topic A	3
TF4120	Digital Spectral Analysis	3
TF4211	Ultrasonics	3
TF4212	Medical Physics	3
TF4213	Energy System	3
TF4214	Intelligent Control System	3
TF4215	Lighting	3
TF4216	Materials Characterization	3
TF4217	Statistical Thermodynamics	3
TF4218	Robust Hybrid Control	3
TF4219	Special Topic B	3

**Minor Program**

2	130	Chemical Engineering
3	132	Electrical Engineering
2	134	Industrial Engineering

**Minor Courses**

3	Minor Program: General		
3	TF3101	Simulation and System Dynamics	2
3	TF3102	Measurement Methods	3
3	TF3201	Signal Processing	3
3	TF3202	Sensors and Actuators	3
3	TF3203	Automatic Control	3
3	TF4201	Instrumentation and Industrial Control	3
3	Total = 17 CREDITS		
3	Minor Program: General		
3	TF3101	Simulation and System Dynamics	2
3	TF3102	Measurement Methods	3
3	TF3202	Sensors and Actuators	3
3	TF3203	Automatic Control	3
3	TF4201	Instrumentation and Industrial Control	3
3	Total = 14 CREDITS		



# INDUSTRIAL ENGINEERING

Industrial Engineering is the science which studies knowledge, approaches, mindsets, principles, and skills rooted in engineering sciences and designing processes. The object designed in this field of study is not a physical object such as bridges, buildings 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 performance, in an effective, efficient, and productive way. The term industry in Industrial Engineering encompasses banks, hospitals, offices, and various others. In this study program students will also learn topics of management and social sciences, such as financial management, marketing management, human resources management, economy, cost accounting, and industrial psychology. These sciences are necessary to support the design process of an integrated system. Keep in mind that one main element of this integral system is human. That particular knowledge is important and serves as a particular valuable competency since the science of Industrial Engineering bridges the technical aspects with the 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 group design projects. Examples of these projects are factory facility layout design, development of information system application for a company, constructing business proposals, organization management.

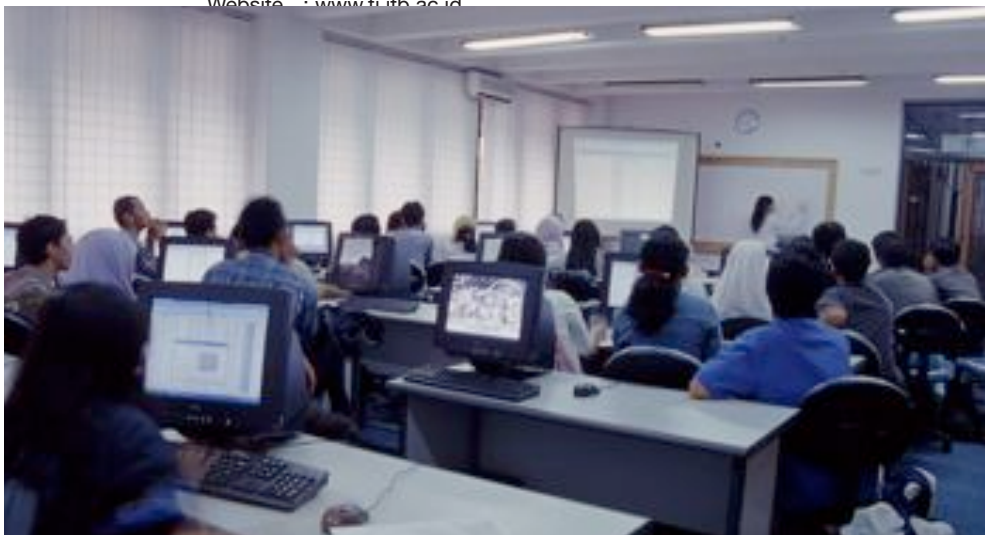
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## Curriculum of Industrial Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1073	Introduction to Information Technology C
KU102X	English
	Elective

Total = 20 CREDITS  
Total Credits at Year 1 = 39 CREDITS

### Semester 2

4 MA1201	Calculus II	4
4 FI1201	Elementary Physics IIA	4
3 KI1201	Basic Chemistry II A	3
2 KU1201	Natural and Universe Systems	2
2 KU1001	Sport	2
2 KU1011	Scientific Writing	2
3 KU1287	Introduction to Industrial Technology	2

Total = 19 CREDITS

### Semester 3

MA2021	Matrices and Vector Spaces
MS2130	Engineering Materials
TI2101	Introduction to Industrial Engineering
TI2102	Basic Industrial Engineering Design
TI2103	Probabilistic Theory
TI2104	Programming
MS2161	Engineering Mechanics
TI2105	Introduction to Economics
	Elective

Total = 20 CREDITS  
Total Credits at Year 2 = 40 CREDITS

### Semester 4

3 MA2031	Calculus III	3
2 EL2246	Industrial Electronics (TI)	2
2 TI2202	Manufacturing Process	2
3 TI2203	Industrial Statistics	3
2 TI2001	Operational Research I	3
2 TI2201	Ergonomics	2
2 TI2204	Industrial Psychology	2
2 MS2170	Manufacturing Process Lab	1
	Elective	2

Total = 20 CREDITS

### Semester 5

TI3101	Production System Automation
TI3105	Operational Research II
TI3103	System Modelling
TI3002	Work System Design
TI3003	Production Planning & Control
TI3102	Cost Analysis & Estimation
TI3104	Industrial Engineering Design I
KU2071	Pancasila and Civic Education

Total = 19 CREDITS  
Total Credits at Year 3 = 39 CREDITS

### Semester 6

2 TI3201	Quality Assurance & Control	3
3 TI3202	Computer Simulation	3
3 TI3206	Production System	2
2 TI3005	Engineering Economics	2
2 TI3205	Industrial Engineering Design II	2
3 TL4203	Occupational Health	2
2 TI3204	Product Development System	3
2 TI3203	Organization and Industrial Enterprise Management	3

Total = 20 CREDITS

### Semester 7

TI4001	Internship	1
TI4101	Plant Lay Out Design	3
TI4102	Interprise Development & Entrepreneurship	3
TI4006	Information System Analysis & Design	3
TI4090	Final Project I	2
	Elective	4

Total = 16 CREDITS  
Total Credits at Year 4 = 26 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

1 KU206X		2
3 TI4091	Final Project II	4
	Elective	4

Total = 10 CREDITS

### Elective Courses

TI4002	Industrial Engineering Management	3
TI4005	Project Management	3
TI4040	Industrial Engineering Capita Selection	1
TI4104	Stochastic Modelling	3
TI4105	Multivariate Analysis	3
TI4107	Flexible Manufacturing System	3
TI4108	Jig and Fixture	3
TI4201	Experimental Design	3
TI4203	Total Quality Control	3
TI4204	Value Engineering	3
TI4205	Innovation Management	3
TI4206	Suply Chain & Logistic Management	3

### Elective Courses offered by other Program

EL2010	Organization & Computer Architecture	3
IF3035	Data Base Systems	3
IF3054	Artificial Intelligence	3
IF3097	Computer Networks	3
IF3099	Human Computer Interaction	3
MS4120	Machining Processes	3
TK3083	Chemical Industries	3
TK4231	Food Industries	3
Total CREDITS = 24 SKS		

### Minor Program

131	Mechanical Engineering
135	Informatics Engineering
154	City Planning
175	Product Design

### Minor Courses

Minor Program: General		
TI2001	Operational Research I	3
TI3002	Work System Design	2
TI3003	Production Planning & Control	2
TI3005	Engineering Economics	2
TI3203	Organization and Industrial Enterprise Maagement	3
TI4006	Information System Analysis & Design	3
Total = 15 CREDITS		



# 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.

## MECHANICAL ENGINEERING

Mechanical engineering is one of the oldest and broadest engineering disciplines. It applies basic principles of physics and materials science to analyze, design, manufacture, operate, and maintain mechanical systems. Some examples of mechanical systems are cars, trains, steam and gas turbines, elevators, bulldozers, air conditioner, washing machines, etc. The field requires a solid understanding of core concepts including mechanics, kinematics, thermodynamics, materials science, and structural analysis. Mechanical engineers use these core principles along with tools like computer-aided engineering.

Mechanical engineers generally specialize in one area of engineering. For example, they may work with automobiles or aircraft engines. Other fields of specialty include fluid power (pumps, water turbines, and hydraulics), instrumentation, and bioengineering. Some work in a particular industry, such as petroleum or plastics.





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Within each branch of mechanical engineering there are specific jobs. Some engineers design products. They must determine the needs of the user, the physical problems of building the equipment, the cost of the equipment, and its effect on the environment. Other mechanical engineers supervise the production and installation of equipment or are in charge of its maintenance and operation. Still other mechanical engineers are involved in sales, research and development, or teaching at the university level. Mechanical engineers also work as administrators and as consultants.

In order to satisfy the standard requirements, mechanical engineering students should take compulsory subjects such as engineering drawing, statics and dynamics, strength of materials, materials engineering, instrumentation, mechatronics, thermodynamics, fluid mechanics, heat transfer, mechanical vibration, control theory, engineering design, and manufacturing process to build their strong knowledge as future mechanical engineers. Students are facilitated by a number of laboratories to do practical work, research, and experiment to back up their knowledge and sense of engineering. Physical metallurgy laboratory, basic manufacturing processes laboratory, thermal energy laboratory, mechanical design laboratory, and computational laboratory are partial list of the laboratories within the Department of Mechanical Engineering.

Mechanical Engineering students are very active in various engineering contests. ITB is sending several teams to 2010 Shell-Eco Marathon Asia contest, a world level competition where students are challenged to design, build, and test energy efficient vehicles. Some mechanical engineering students join these teams and play important roles in the above teams. In the future, ITB will continuously send teams to participate in this competition. Mechanical engineering students also succeed in a number of national competitions. They are the champion of National Innovation Contest, a competition where university students from all over Indonesia send their innovative products. Another event held by the Mechanical Engineering Student organization (HMM: Himpunan Mahasiswa Mesin) is engine tune up. In this event, students apply their skills to carry out tune up and minor repair to cars and motorcycles.

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## Curriculum of Mechanical Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1001	Sport
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 3

MS2100	Basic Engineering Analysis
MS2101	Computer Aided Drafting
MS2102	Mechatronics I
MS2111	Strength of Materials
MS2112	Kinematics & Dynamics of Machinery
MS2130	Engineering Materials
MS2140	Engineering Thermodynamics I
KU206X	Belum

Total = 20 CREDITS  
Total Credits at Year 2 = 40 CREDITS

### Semester 5

MS3100	Engineering Measurements
MS3115	Mechanical Design Project I
MS3116	Design of Machine Elements II
MS3117	Basic Mechanical Vibration
MS3120	Manufacturing Processes I
MS3121	Industrial Metrology & Statistics
MS3133	Structure & Properties of Mat. Lab.
MS3143	Fluid Mechanics II
MS3144	Heat Transfer I

Total = 19 CREDITS  
Total Credits at Year 3 = 39 CREDITS

### Semester 7

MS4100	Mechanical Engineering Lab I
MS4101	Design for Manufacturability
MS4102	Mechanical Maintenance
MS4147	Energy Conversion Machineries II
MS4090	Practical Training
MS4091	Final Project I
	Elective

Total = 17 CREDITS  
Total Credits at Year 3 = 29 CREDITS  
Total CREDITS = 144 SKS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU1011	Scientific Writing	2
	MS1210	Statics	2

Total = 19 CREDITS

### Semester 4

2	MS2200	Numerical Analysis & Programming	3
3	MS2201	System Dynamics	2
2	MS2214	Design of Machine Elements I	3
3	MS2231	Material Testing Laboratory	1
4	MS2232	Structure & Properties of Materials	2
2	MS2241	Engineering Thermodynamics II	2
2	MS2242	Fluid Mechanics I	3
2	EP2274	Electrical Power Engineering (MS/MG)	2
		Elective	2

Total = 20 CREDITS

### Semester 6

2	MS3200	Introduction to Control Systems	2
1	MS3201	Mechatronics II	2
3	MS3218	Mechanical Design Project II	1
2	MS3221	Manufacturing Processes II	2
3	MS3222	Industrial Metrology Lab.	1
3	MS3245	Heat Transfer II	2
1	MS3246	Energy Conversion Machineries I	2
2	KU2071	Pancasila and Civic Education	2
2		Elective	3
		Elective	3

Total = 20 CREDITS

### Semester 8

1	MS4240	Mechanical Engineering Lab II	1
3	MS4092	Final Project II & Seminar	3
3	MS4241	Environmental Aspects of Mech. Eng.	3
3	MS4200	Engineering Management & Economics	2
1		Elective	3
4			

Total = 12 CREDITS



### Elective Courses

MS4110	Theory of Ground Vehicles	3
MS4120	Machining Processes	3
MS4130	Foundry Technology	3
MS4141	Thermal Syst. Design & Optimization	3
MS4200	Engineering Management & Economics	2
MS4210	Process Industries Equipment	3
MS4211	Hoisting & Heavy Equipment	3
MS4220	Production System	3
MS4221	Machine Tools	3
MS4230	Metal Forming	3
MS4231	Welding Technology	3

### Minor Program

130	Chemical Engineering
134	Industrial Engineering
136	Aerospace Engineering
137	Material Engineering

### Minor Courses

Minor Program : General

MS2111	Strength of Materials	3
MS2130	Engineering Materials	2
MS2140	Engineering Thermodynamics I	2
MS2242	Fluid Mechanics I	3
MS3120	Manufacturing Processes I	3
MS3144	Heat Transfer I	2
MS3246	Energy Conversion Machineries I	2
MS4101	Design for Manufacturability	3

Total = 20 CREDITS

## AERONAUTICS AND ASTRONAUTICS

Aerospace engineering is the branch of engineering behind the design, construction, and science of aircraft and spacecraft. 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 vehicles 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. Others work for commercial airline companies, research and development organizations, and consulting firms, as well as for colleges and universities.

Aerospace engineering is a broad field. It overlaps with areas of other engineering fields, including mechanical, chemical, and electrical. 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 mainly on guidance and control systems. These systems include automatic navigation equipment and the automated Instrumentation Landing Systems (ILS) for aircraft which allow it 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 distributed. For example, they may concentrate on design, production, or sales. 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, celestial mechanics, flight mechanics, propulsion, or guidance and control systems.



Doc. Indra Yudha



Doc. Indra Yudha

Undergraduate students in Aeronautics and Astronautics learn basic aeronautics science such as aerodynamics, structural design, materials, stability and control system, and also astrodynamics. They also obtain supporting knowledge in the field of electronics, programming, and strong basic in applied mathematics. In the final year of study, students have to take Aircraft Design Subject where students are distributed into groups to design an aircraft that meets a specific requirement which is different for each 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 robot to conduct a specific mission. Another activity is the AeroExpo, an exhibition to cultivate interest and gain support for the development of Indonesia's aerospace.

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## Curriculum of Aerospace Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1001	Sport
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 3

AE2101	Introduction to Aerospace Engineering
MA2032	Vector Calculus
AE2103	Thermal Engineering
MS2111	Strength of Materials
AE2121	Aircraft Materials and Manufacturing Methods 1
AE2141	Engineering Drawings
KU206X	Belum
KU206X	Belum

Total = 19 CREDITS  
Total Credits at Year 2 = 39 CREDITS

### Semester 5

MA3073	Differential Equation
AE3111	Incompressible Flow
AE3121	Mechanical Vibrations
AE3122	Analysis and Design of Aircraft Structures 1
AE3131	Flight Performance
AE3161	Astrodynamics
	Elective

Total = 20 CREDITS  
Total Credits at Year 3 = 40 CREDITS

### Semester 7

AE4041	Aircraft Design
AE4131	Flight Navigation and Guidance
AE4132	Control Theory
AE4141	Aircraft Maintenance Engineering
AE4001	Aero-Environmental
	Elective
	Elective

Total = 18 CREDITS  
Total Credits at Year 3 = 29 CREDITS  
Total CREDITS = 144 SKS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU1011	Scientific Writing	2
	MS1210	Statics	2

Total = 19 CREDITS

### Semester 4

2	MA2022	Elementary Linear Algebra B	3
3	AE2211	Fluid Mechanics	3
4	AE2212	Aircraft Aerodynamics	2
3	AE2221	Kinematics and Dynamics	3
3	AE2222	Aircraft Materials and Manufacturing Methods 2	2
2	EL2242	Fundamental of Electronics (AE)	3
2	KU2071	Pancasila and Civic Education	2
2		Elective	2

Total = 20 CREDITS

### Semester 6

3	AE3201	Statistics	2
3	AE3211	Compressible Flow	3
3	AE3212	Aircraft Propulsion (Incl. Noise & Pollutant Emission)	3
3	AE3221	Analysis and Design of Aircraft Structures 2	2
3	AE3231	Flight Dynamics	3
3	AE3241	Air Transportation System	3
2	AE3242	Aircraft System	2
		Elective	2

Total = 20 CREDITS

### Semester 8

3	AE4090	Final Project	5
2	AE4091	Industrial Apprenticeship	1
3	TI4004	Industrial Management	2
2		Elective	3

Total = 11 CREDITS

### Elective Courses

AE4011	Bounday Layer	3
AE4012	Computational Aerodynamics	3
AE4013	Experimental Aerodynamics	3
AE4014	Non Stationaire Aerodynamics	3
AE4015	Propulsion Aerodynamics	3
AE4016	High Speed Aerodynamics	3
AE4021	Aircraft Maintenance Engineering	3
AE4022	Final Elemen Method	3
AE4023	Theory of Structural Stability	3
AE4024	Fatigue and Damage Tolerance of Structures	3
AE4025	Aircraft Loads	3
AE4026	Structural Optimization	3
AE4027	CAD Programming	3
AE4031	Advanced Flight Performance	3
AE4032	Advanced Flight Dynamics	3
AE4033	Automatic Flight Control Systems	3
AE4042	Design Optimization	3
AE4043	Airworthiness	3
AE4051	Reliability Engineering	3
AE4052	Aircraft Safety Management	3
AE4054	Airport System	3
AE4055	Flight Operation Planning	3
AE4056	Aircraft Maintenance Management	3
AE4061	Advanced Astroynamics	3
AE4062	Satellite's Dynamics and Control	3
AE4063	Rocket Flight Mechanics	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



Doc. Faculty of Mechanical and Aerospace Engineering



Doc. Indira Yudha

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.

Material Engineering Department organizes several exhibitions and seminars related to the profession of materials engineers. The main objective of these events is to introduce the profession to the community. Some of the events are Material Fair, an exhibition of companies in relation to materials science and engineering, SENAM, a national seminar in the field of science and engineering; and INSTRUCT (International Microstructure Competition and Exhibition), an activity that aims to share knowledge on microstructure. One latest innovative product of Material Engineering students is the composite made from natural materials (pineapple and palm fiber). The students won the third place in the Tanoto Research Award.

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## Curriculum of Material Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1001	Sport
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 3

MA2071	Basic Mathematics for Scientists
KI2142	Physical Chemistry
MT2101	Metals & Its Alloys
MT2102	Materials Mechanical
MT2103	Materials Characterization 1
MS2101	Computer Aided Drafting
	Elective
KU206X	

Total = 20 CREDITS  
Total Credits at Year 2 = 40 CREDITS

### Semester 5

MT3101	Transport Materials Phenomena
MT3102	Polymer Process
MT3103	Materials Engineering Laboratory -2
KU2071	Pancasila and Civic Education
	Elective
	Elective
	Elective
	Elective

Total = 20 CREDITS  
Total Credits at Year 3 = 20 CREDITS

### Semester 7

MT4001	Experimental Design)
MT4002	Modeling & Design of Materials
MT4103	Materials Technology Seminar
MS5019	Finite Element Method
TI4005	Project Management
	Elective
	Elective

Total = 17 CREDITS  
Total Credits at Year 3 = 28 CREDITS  
Total CREDITS = 144 SKS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1072	Introduction to Information Technology B	2
2	KU1011	Scientific Writing	2
	MS1210	Statics	2

Total = 19 CREDITS

### Semester 4

3	MS2200	Numerical Analysis & Programming	3
4	KI2051	Organic Chemistry	3
3	MT2201	Manufacturing Processes of Metals	3
3	MT2202	Thermodynamics of Materials	3
2	MT2203	Materials Characterization 2	2
3	MT2204	Ceramics Materials	3
2	MT2205	Materials Engineering Laboratory -1	1
2		Elective	2

Total = 20 CREDITS

### Semester 6

3	MT3201	Phase Transformation	3
3	MT3202	Electronic & Magnetic Materials	3
1	MT3203	Materials Engineering Laboratory -3	1
2	MT3204	Composite Materials	3
3	MT3205	Materials Engineering Project	2
3		Elective	3
3		Elective	3
2		Elective	2

Total = 20 CREDITS

### Semester 8

3	MT4003	Materials & Processes Selection	2
2	MT4090	Job Training	1
1	MT4091	Final Project	5
3	MT4202	Environmental Aspect in Materials Technology	3
3			3
2			2

Total = 11 CREDITS



### Elective Courses

MT3104	Plasticity & Deformation Processing
MT3105	Conventional Ceramics
MT3206	Melting & Solidification Process
MT3207	Advanced Ceramics
MT4004	
MT4005	Corrosion the Prevention Techniques
MT4006	
MT4007	Refractory Materials
MT4008	Cement Concrete Materials

### Minor Courses

3	Minor Program : General	
3	MT2101	Metals & Its Alloys 3
3	MT2103	Materials Characterization 1 2
3	MT2201	Manufacturing Processes of Metals 3
3	MT2203	Materials Characterization 2 2
3	MT2204	Ceramics Materials 3
3	MT3102	Polymer Process 3
3	Total = 16 CREDITS	
3		

### Minor Program

101	Mathematics
102	Physics
105	Chemistry
122	Petroleum Engineering
125	Metalurgy
130	Chemical Engineering
131	Mechanical Engineering
132	Electrical Engineering
133	Engineering Physics
134	Industrial Engineering
135	Informatics Engineering
136	Aerospace Engineering
150	Civil Engineering



# SCHOOL OF ELECTRICAL ENGINEERING AND INFORMATICS

School of Electrical Engineering and Informatics (STEI) in Bandung Institute of Technology was previously part of the Faculty of Industrial Technology (FTI). STEI has five courses, namely:

1. Electrical Engineering
2. Electric Power Engineering
3. Telecommunication Engineering
4. Information Systems and Technology
5. Informatics Engineering

The scope of this faculty are the studies of development and utilization of information and communication technology. School of Electrical Engineering and Informatics also examines the study areas of Biomedical Engineering, Computer Engineering, Control System and Computer, Software and Data Engineering, Electronic Engineering, Informatics, Information Technology, Electrical Power Engineering, and Telecommunication Engineering, with the aim of disseminating scientific knowledge, technology, also the owned Electrical Engineering and Informatics outlook/insight to the society either through its graduates, partnerships with industries or other institutions, or through community service activities to form a technology-wise society.

# ELECTRICAL ENGINEERING

The higher education of Electrical Engineering in Indonesia began with the Electrical Laboratory at the Technische Hoogenschol te Bandoeng in 1942; it continued in 1944 with the Kikaika Denki (Electric & Machinery Section) as part of Kogyu Daigaku. Education program of Electrical Engineer-

Electrical Engineering is a very influential engineering field in the development of human civilization in the last hundred years. Contribution of Electrical Engineering is expected to grow in the future. There are varieties of human effort that are only possible if using the technology developed by Electrical Engineering.

Graduates of Electrical Engineering is the highly-needed transformation agent that can provide best engineering practices in every aspect of engineering activities such as operation and maintenance, design and innovation of new products, conducting up-to-date researches, and others. The need for Electrical Engineering graduates is one of the highest among the other engineering fields.

The study program of Electrical Engineering at the School of Electrical Engineering and Informatics has distinguished faculty members in each expertise field—in both education and research. They conduct research activities in, broad, various fields, such as automatic control, biomedical engineering, communications, computer aided design (CAD), image processing and machine vision, computer systems and networking, digital signal processing, electronics, power engineering, information technology, artificial intelligence system, parallel and distributed processing, microelectronic materials and devices, microwave engineering, and VLSI planning.

The objective of the study program of Electrical Engineering is to produce graduates who possess:

1. **Technical Knowledge:** Provide a basic knowledge of electrical engineering principles along with the required supporting knowledge of mathematics, science, computing and engineering fundamentals.
2. **Laboratory and Design Skills:** Develop the basic skills needed to perform and design experimental projects. Develop the ability to formulate problems and projects and to plan a process for solutions taking advantage of diverse technical knowledge and skills.
3. **Communications Skills:** Develop the ability to organize and present information, and to write and speak effective Indonesian and English.
4. **Preparation for the Profession:** Provide an appreciation for the broad spectrum of issues arising in professional practice, including teamwork, leadership, safety, ethics, service, economics, environmental awareness, and professional organizations.
5. **Preparation for Further Study:** Provide sufficient breadth and depth for successful subsequent graduate study, post-graduate study, or lifelong learning programs.
6. **Preparation for National Industrial Development:** Provide a sufficient basic to have active roles in developing electrical engineering and other related industries in Indonesia.

## Curriculum of Electrical Engineering

### Semester 1

MA1101	Calculus IA
FI1101	Basic Physics IA
KI1101	Basic Chemistry IA
KU1101	Science Development Concept
KU1071	Introduction to Information Technology IA
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus IIA	4
4	FI1201	Basic Physics IIA	4
3	KI1201	Basic Chemistry IIA	3
2	KU1201	Natural and Universe Systems	2
2	KU1001	Physical Education	2
2	KU1011	Technical Writing	2
	EL1092	Basic Electric Circuits	2

Total = 19 CREDITS

### Semester 3

MA2072	Engineering Mathematics I
EL2093	Electric Circuit
EL2193	Electric Circuit Laboratory
EL2095	Digital Systems
EL2195	Digital Systems Laboratory
EL2091	Discrete Structure
IF2030	Algorithm & Data Structure

Total = 18 CREDITS  
Total Credits at Year 2 = 36 CREDITS

### Semester 4

3	MA2074	Engineering Mathematics II	3
3	EL2090	Electromagnetics	3
1	EL2040	Electronics	3
3	EL2140	Electronics Laboratory	1
1	EL2094	Signal & Systems	3
3	EL2092	Probability & Statistics	3
4	KU206X	Religion & Ethics	2

Total = 18 CREDITS

### Semester 5

ELxxxx	Breadth Courses
XXxxxx	Digital Signal Processing Laboratory

Total = 17 CREDITS  
Total Credits at Year 3 = 36 CREDITS

### Semester 6

14	ELxxxx	Breadth Courses	3-6
3	ELxxxx	Depth Electives	10-13
	XXxxxx	Non - EE Electives	3

Total = 19 CREDITS

### Semester 7

EL4096	Final Project I
EL4092	Engineering Ethics & Selected Topics
ELxxxx	Depth Electives
XXxxxx	Basic Science Elective
XXxxxx	Environment Course
XXxxxx	Non - EE Electives

Total = 19 CREDITS  
Total Credits at Year 4 = 36 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

2	EL4099	Final Project II	4
2	EL4091	Industrial Practice	2
6	ELxxxx	Depth Electives	6
3	XXxxxx	Magagement Course	3
3	KU2071	Pancasila and Civics	2

Total = 17 CREDITS

**Elective/Breadth Courses Selection**

EL3020	Control System	
EL3120	Control System Laboratory	
EL3040	Analog and Mixed Signal Electronics	
ET3081	Communication System	
EL3180	Telecommunication Lab I	
EL3010	Computer Architecture	
EL3110	Computer Architecture Lab	
EL3076	Electric System Analysis	
EL3170	Power Engineering Lab I	
EL3092	Digital Signal Processing	
EL3192	Digital Signal Processing Lab	
EL3096	Microprocessor System and Lab	
EL3095	Electrotechnic Materials	
EL3004	Biomedical Materials	
EL3000	Basic Biomedical Engineering and Lab	

**Elective Courses**

131	Mechanical Engineering
134	Industrial Engineering
135	Informatics Engineering
136	Aerospace Engineering

**Minor Courses**

3	Minor Program : Electrical Engineering		
1	EL2040	Electronics	3
3	EL2093	Electric Circuits	3
3	EL2094	Signal & Systems	3
1	EL2095	Digital Systems	3
3	EL2140	Electronics Laboratory	1
1	EL2193	Electric Circuit Laboratory	1
3	EL2195	Digital Systems Laboratory	1
1	EL3092	Digital Signal Processing	3
3	EL3096	Microprocessor Systems & Laboratory	3
1	EL3192	Digital Signal Processing Laboratory	1
3	Total CREDITS = 22 CREDITS		
3	Minor Program : General		
	EL2040	Electronics	3
	EL2093	Electric Circuits	3
	EL2094	Signal & Systems	3
	EL2095	Digital Systems	3
	EL2140	Electronics Laboratory	1
	EL2193	Electric Circuit Laboratory	1
	EL2195	Digital Systems Laboratory	1
	EL3092	Digital Signal Processing	3
	EL3096	Microprocessor Systems & Laboratory	3
	EL3192	Digital Signal Processing Laboratory	1
	Total CREDITS = 22 CREDITS		

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# ELECTRIC POWER ENGINEERING

Developments in electric power engineering science field has been rapid in recent decades. This is partly driven by the ever-increasing importance of electricity in modern life. In a sense, human life activities become somewhat integrated with electric power. But on the other hand, the price primary energy increases; hence, electricity provision needs technology developments to achieve efficiency in the conversion of the primary energy to electricity.

As the impact of the demand for such efficiency increase, the science and technology in electric power engineering field also grows rapidly. The case is also similar for technology developments in the field of power engineering; technology improvement in the parts and control hardware in that field has also triggered research and enhancement of a better and more reliable energy conservation concepts.

Meanwhile, in terms of energy procurement and electric power system operation of the present and future, information technology and computers are becoming more factual and essential. Modern electric power system operation requires Real Time Computers to assist executors in managing the power system. The Supervisory Control and Data Acquisition (SCADA) system is a working tool whose utilization cannot be evaded in large-scale electric power systems. SCADA technology is growing very rapidly and lead to Automatic Substation and Open System technology. Hardware and software of the SCADA system which was only produced by the Power System Equipment manufacture, is now largely sold by the Personal Computer-based Software House and Remote Terminal Unit manufacture. Thus, scholar who worked in the electricity sector should also be able to communicate with a computer engineering graduate.

## Expected Competence Qualification of Electric Power Engineering Graduates

The study program of Electric Power Engineering shall produce graduates with competencies of following qualifications:

- Possess strong electric power engineering knowledge base is strong, so that one is able to quickly follow the development of science and technology, especially in the field of electricity, has the potential to grow and capable of lifelong learning.
- Possess competence in mathematical and basic sciences application to solve the electric power issues.
- Able to develop engineering methods through the ability to formulate problems and seek alternative solutions, particularly in the field of electricity; for this purpose, the content of engineering design which based on real problems will be emphasized in the study program of Electric Power Engineering.
- Possess a good understanding on the trends and the impact of technology, particularly electricity technology, both in the society and the environment.
- Possess ability to independently and programdly complete tasks, through the process of learning theory, laboratory practice, and the final project.
- Possess good and reliable norms and engineering ethics; possess interdisciplinary thinking perspective and good communication skills to work effectively in the industry, the electricity company, and in the field of education and research.

## Curriculum of Electrical Power Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1071	Introduction to Information Technology A
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1001	Sport	2
2	KU1011	Scientific Writing	2
	EL1092	Fundamental of Electric Circuits	2

Total = 19 CREDITS

### Semester 3

MA2072	Engineering Mathematics I
EP2092	Probability & Statistics
EL2093	Electric Circuits
EL2193	Electric Circuit Laboratory
EL2095	Digital Systems
EL2195	Digital Systems Laboratory
MS2041	Thermal Engineering & Fluid Mechanics

Total = 17 CREDITS  
Total Credits at Year 2 = 35 CREDITS

### Semester 4

3	MA2074	Engineering Mathematics II	3
3	EL2040	Electronics	3
3	EL2140	Electronics Laboratory	1
1	EP2076	Measurement & Microprocessor Systems	3
3	EL2090	Electromagnetics	3
1	EP2094	Signals & Systems	3
3	KU2071	Pancasila and Civic Education	2

Total = 18 CREDITS

### Semester 5

EP3071	Electrical Machines
EP3073	Computation & Numerical Analysis
EP3075	Electromagnetics Compatibility
EP3077	High Voltage Engineering
EP3095	Electrical Engineering Material
EP3170	Power Engineering Laboratory I
KU206X	

Total = 18 CREDITS  
Total Credits at Year 3 = 37 CREDITS

### Semester 6

3	EL3020	Control Systems	3
3	EP3070	Electrical Power Generation	3
3	EP3072	Power Electronics	3
3	EP3074	Computer & System Engineering	3
3	EP3076	Power Systems Analysis	3
1	EP3270	Power Engineering Laboratory II	1
2	EP3272	Elective non EP/Minor	3

Total = 19 CREDITS

### Semester 7

EP4095	Final Project I & Seminar	1
EP4071	Design of Equipment & Electrical Systems	3
EP4073	Power System Protection I	3
EP4171	Elective EP	3
YYYYYY		3
	Elective	3
	Elective	3

Total = 19 CREDITS  
Total Credits at Year 3 = 37 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

1	EP4099	Final Project II	4
3	EP4090	Industrial Experiences	1
3	EP4172	Elective EP	3
3	ZZZZZZ		3
3		Elective	3
3		Elective	3
3	EP3272	Elective non EP/Minor	3

Total = 17 CREDITS



## Elective Courses

EP2274	Electrical Power Engineering (MS/MG)	2
EP3274	Electrical Power Engineering (TA)	3
EP4050	-	3
EP4072	Power System's SCADA	3
EP4074	Power System Protection II	3
EP4075	Applications of Electric Machines	3
EP4076	Electrical Transportation Systems	3
EP4077	Electrical Power Distribution Systems	3
EP4078	Non Conventional Generator	3
EP4079	Economy of Energy	3
EP4094	Humanity	3
EP4272	Selected Topics in Electrical Power	1
EP5050	-	2

## Elective Courses offered by other Program

EL3092	Digital Signal Processing	3
EL3192	Digital Signal Processing Laboratory	1
ET2080	Telecommunications Networks	3
ET3081	Communication Systems	3
ET3083	Data Communications	3
FK3206	Sport Physiology	2
IF2031	Algorithm & Data Structure	3
IF2033	Object Oriented Programming	3
IF2034	Data Bases	3
IF2036	Software Engineering	3
IF3055	Operating System	4
II2040	Analysis & System Design	3
II3042	Management of Information Resources	3
II3062	Security of Information	3
II3063	Multimedia Systems	3
TI2105	Introduction to Economics	2
TI3005	Engineering Economics	2
TI3203	Organization and Industrial Enterprise Management	3
TI4002	Industrial Engineering Management	3
TI4005	Project Management	3
TI4102	Interprise Development & Entrepreneurship	3
TI4205	Innovation Management	3
TL2105	Environmental Health	3
TL4001	Environmental Impact Assessment Method	3
TL4002	Environmental Engineering	3

Total CREDITS = 71 SKS

## Minor Program

131	Mechanical Engineering
132	Electrical Engineering
135	Informatics Engineering
150	Civil Engineering
181	
182	-

## Minor Courses

Minor Program: Electrical Power Engineering		
EP2076	Measurement & Microprocessor Systems	3
EP3070	Electrical Power Generation	3
EP3071	Electrical Machines	3
EP3072	Power Electronics	3
EP3075	Electromagnetics Compatibility	3
EP3076	Power Systems Analysis	3
EP3077	High Voltage Engineering	3

Total CREDITS = 21 CREDITS

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# TELECOMMUNICATIONS ENGINEERING

Telecommunication field has progressed rapidly in the last three decades. The development of the next decade is expected be swifter, especially in the field of wireless telecommunications; there will be convergence between telecommunications and computer, and there will also be demands for various new services which is triggered by the internet development. This development acceleration was mainly driven by advances in parts and computer technology. In addition, these changes are also supported by the urgent demands of the market (market-pull) as a result of globalization. In the global level, telecommunications infrastructure will become the 'nervous system' center of economic globalization. While in the national context, telecommunications and its application system will become a key technology in improving efficiency,

To anticipate the phenomenon of rapid growth of the telecommunications, the most significant aspect, which needs to be prioritized by leading universities such as ITB, is to prepare the human resources as actors and supporters. This preparation of human resources needs to be studied from the aspects of a sufficient amount and quality excellence.

With the very fast progress of telecommunications, the industry and demand for telecommunication services will grow rapidly in accordance with the demand of information age. To anticipate this development, adequate resources need to be prepared; both in terms of quantity and quality that meets a recognized standard of competence.

In developing and planning the curriculum of the study program of Telecommunication Engineering, the vision and mission of the study program were determined by referring to the vision and mission of STEI ITB. Thus, qualifications and competence of the graduates to be produced is determinable.

## Expected Competence Qualification of Telecommunications Engineering Graduates

The study program of Telecommunication Engineering will have graduates with competence and qualifications as follows:

- Possess wide foundation of sciences needed to understand the consequences of telecommunications engineering solutions one will give to overcome social and environmental issues.
- Possess the ability to analyze and solve practical problems of telecommunications engineering, by using the techniques, expertise (skill), and modern tools, based on one's basic knowledge of Mathematics, Science, and Engineering.
- Possess the ability to identify, formulate, and resolve telecommunications engineering problems through innovative processes that include planning stages, specification, design, implementation, verification, financing, scheduling, safety, and guaranteed quality of service.
- Possess the ability to design and conduct experiments in science and engineering, and able to analyze and interpret results.
- Possess the ability to function and to communicate, either individually or in a multidisciplinary team.
- Possess the ability to understand professional responsibility and ethics, and also recognize the need and ability for lifelong learning.
- Possess experience in an academic environment that provides and encourages one to learn.
- Possess an understanding on the latest developments from the field of telecommunication engineering.

## Curriculum of Telecommunications Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1071	Introduction to Information Technology A
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1001	Sport	2
2	KU1011	Scientific Writing	2
	EL1092	Fundamental of Electric Circuits	2

Total = 19 CREDITS

### Semester 3

MA2072	Engineering Mathematics I
ET2091	Discrete Structure
EL2093	Electric Circuits
EL2193	Electric Circuit Laboratory
EL2095	Digital Systems
EL2195	Digital Systems Laboratory
IF2031	Algorithm & Data Structure

Total = 17 CREDITS  
Total Credits at Year 1 = 35 CREDITS

### Semester 4

3	MA2074	Engineering Mathematics II	3
3	EL2040	Electronics	3
3	EL2140	Electronics Laboratory	1
1	ET2080	Telecommunications Networks	3
3	EL2090	Electromagnetics	3
1	ET2094	Signal & Systems	3
3	KU206X		2

Total = 18 CREDITS

### Semester 5

ET2092	Probability and Statistics
ET3080	Electromagnetics II
ET3081	Communication Systems
ET3083	Data Communications
ET3085	Signal Processing
ET3180	Telecommunications Laboratory I
IF2036	Software Engineering

Total = 19 CREDITS  
Total Credits at Year 1 = 37 CREDITS

### Semester 6

3	ET3082	Communications II	3
3	ET3084	Telecom Traffic Engineering	3
3	ET3086	Communication Electronics & Microwave	3
3	ET3087	Antenna & Wave Propagation	3
3	ET3088	Optical Communication Systems	3
1	ET3280	Telecommunications Laboratory II	1
3	KU2071	Pancasila and Civic Education	2

Total = 18 CREDITS

### Semester 7

ET4095	Final Project I & Seminar
ET4080	Design of Baseband Systems
ET4281	Elective ET
ET4283	Elective ET
ZZZZZZ	
	Elective
	Elective
	Elective

Total = 19 CREDITS  
Total Credits at Year 1 = 38 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

1	ET4099	Final Project II	4
3	ET4090	Industrial Experiences	1
3	ET4284	Elective ET	3
3	YYYYYY		3
3		Elective	3
3		Elective	3

Total = 17 CREDITS

**Elective Courses**

ET4060	Probability and Random Processes	3
ET4065	Signal Processing II	3
ET4066	Project Management of Telecommunication Services	3
ET4067	Communication Electronics & Microwave II	3
ET4081	Cellular Communications Systems	3
ET4082	Satellite, Terrestrial & Broadcasting Communications Systems	3
ET4083	Multimedia Communications Systems	3
ET4084	Radar Systems, Navigation & Telemetry	3
ET4085	Security of Telecommunications Network	3
ET4086	Data Communications Networks	3
ET4087	Telecommunications Network Management	3
ET4088	Economics & Telecommunications Revenue Assurance	3
ET4089	Regulation & Telecommunications Policy	3
ET4094	Humanity	3
ET4180	Electromagnetics	3
ET4181	Queueing Networks	3
ET4182	Observation Systems	3
ET4183	Advanced Digital Communication Systems	3
ET4184	Information Theory & Source Coding	3
ET4185	Information Theory & Source Coding	3
ET4186	Channel Coding Theory	3
ET4187	Advances in Networking	3
ET4188	Wireless Communications Systems	3
ET4282	Selected Topics in Telecommunications	1
ET4288	IP based infrastructure and Optical networks	3
ET4289	Wavelet & Multiresolution Analysis	3

**Minor Program**

132	Electrical Engineering
135	Informatics Engineering
136	Aerospace Engineering
180	-
182	-

**Elective Courses offered by other Program**

EL3010	Computer System Architecture	3
EL3020	Control Systems	3
EL3040	Analog & Mixed Signal Electronics	3
EL3110	Computer System Architecture Laboratory	1
EL3120	Control System Laboratory	1
EP3071	Electrical Machines	3
EP3072	Power Electronics	3
EP3095	Electrical Engineering Material	3
FK3206	Sport Physiology	2
IF2033	Object Oriented Programming	3
IF2034	Data Bases	3
IF3055	Operating System	4
IF3057	Information System	3
II2040	Analysis & System Design	3
II3042	Management of Information Resources	3
II3090	Analysis of Information Requirement	3
II3098	Ethics & Cyber Law	2
TI2105	Introduction to Economics	2
TI3005	Engineering Economics	2
TI3203	Organization and Industrial Enterprise Management	3
TI4002	Industrial Engineering Management	3
TI4005	Project Management	3
TI4102	Enterprise Development & Entrepreneurship	3
TI4205	Innovation Management	3
TL2105	Environmental Health	3
TL4001	Environmental Impact Assessment Method	3
TL4002	Environmental Engineering	3
Total CREDITS = 74 SKS		

**Minor Courses**

Minor Program : Telecommunication Engineering		
ET2080	Telecommunications Networks	3
ET3081	Communication Systems	3
ET3082	Communications II	3
ET3083	Data Communications	3
ET3084	Telecom Traffic Engineering	3
ET3085	Signal Processing	3
ET3086	Communication Electronics & Microwave	3
ET3087	Antenna & Wave Propagation	3
Total CREDITS = 24 CREDITS		

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# SYSTEMS AND INFORMATION TECHNOLOGY

The study program of Systems and Information Technology is one of the new study programs in the environment of School of Electrical Engineering and Informatics, ITB. Systems and Information Technology was developed in anticipation of the extremely rapid development of information systems.

Information systems, as one of the academic field in the bachelor degree program, includes two main areas, namely area associated with the effort of:

1. Planning, development, and evaluation of the system that becomes the solution to the problem of the information management for the organization, and
2. Planning, development, evaluation of the management of information technology which is being used for purposes of organizational information systems.

As part of the process of social and economic activities boost, the world society has evolved to a society oriented toward the information, or even toward knowledge (knowledge society). Systems and information technology become determining factors in the dynamics of business also organization and community development in today's global life. Systems and information technology have become important parts of everyday life which includes e.g. science, engineering/design, technology, products, operational services, and management. The utilization of effective and efficient systems and information technology is an important element in



Doc. Indra Yudha

achieving competitive advantage. Systems and information technology have been integrated in various aspects of life, ranging from business (Electronics-commerce), education and learning (e-education and e-learning), health (e-health), culture, transport, industry, tourism, environment, collaboration (collaborative working), to the entertainment sector.

#### Expected Competence Qualification of Systems and Information Technology Graduates

In accordance with the study area and the challenges faced, the competencies that are designed to be held by graduates of Systems and Information Technology include:

1. Understanding of the dynamics of systems problems (business, management, regulation).
2. Systematic analysis and synthesis on a field of problem and solution-making in the form of design and implementation in the real life.
3. Adaptation and interaction with user society.
4. Mastery of interaction aspects in large (multi-dimension) systems.

Thus, those competencies are expected to be formed into the ability (skill), not only to develop applications of systems and information technology, but to as well build the capacity of thinking and innovation to generate new opportunities in the development and utilization of systems and information technology.

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## Curriculum of Systems and Information Technology

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1071	Introduction to Information Technology A
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1001	Sport	2
2	KU1011	Scientific Writing	2
	EL1092	Fundamental of Electric Circuits	2

Total = 19 CREDITS

### Semester 3

MA2072	Engineering Mathematics I
IF2091	Discrete Structure
IF2092	Probability & Statistics
EL2095	Digital Systems
EL2195	Digital Systems Laboratory
IF2030	Algorithm & Data Structure
KU206X	

Total = 19 CREDITS  
Total Credits at Year 2 = 38 CREDITS

### Semester 4

3	EL2010	Organization & Computer Architecture	3
3	IF2032	Object Oriented Programming	4
3	IF2034	Data Bases	3
3	IF2036	Software Engineering	3
1	IF2050	Logic of Informatics	3
4	IF2052	Language Theory and Otomata	3
2			

Total = 19 CREDITS

### Semester 5

IF3055	Operating System
IF3057	Information System
IF3097	Computer Networks
IF3193	Free Elective/ Humaniora

Total = 12 CREDITS  
Total Credits at Year 3 = 25 CREDITS

### Semester 6

4	IF3094	Inter Personal Communication	2
3	IF3099	Human Computer Interaction	3
3	IF3054	Artificial Intelligence	3
2	IF3056	Distributed Systems	3
	KU2071	Pancasila and Civic Education	2

Total = 13 CREDITS

### Semester 7

IF4096	Final Work I & Seminar
ZZZZZZ	

Total = 5 CREDITS  
Total Credits at Year 4 = 15 CREDITS  
Total CREDITS = 114 SKS

### Semester 8

2	IF4099	Final Work II	4
3	IF4090	Industrial Practice	1
	IF4092	Sociotechnology of Information	2
	YYYYYY		3

Total = 10 CREDITS

**Elective Courses**

IF2132	Computer Programming (TM)	3
IF3035	Data Base Systems	3
IF3037	Advanced Software Engineering	3
IF3038	Internet Programming	3
IF3051	Strategy of Algorithm	3
IF3053	Computer Graphic & Visualization	3
IF3058	Criptography	3
IF3090	Analysis of Information Requirements	3
IF3098	Ethics & Cyber Law	2
IF4030	Distributed Database System	3
IF4031	Project Management of Software	3
IF4032	Project of Software	3
IF4033	Method & Software Development Processes	3
IF4034	Software System Engineering	3
IF4035	Non Relational Data Base	3
IF4036	Analysis, Design of Object Oriented	3
IF4037	Data Base Technology	3
IF4038	Programming of System	3
IF4050	Knowledge Based Systems	3
IF4051	Interpretation and Image Processing	3
IF4052	Modeling and Simulation	3
IF4053	Retrival Information Systems	3
IF4054	Wireless and Mobile Computing Systems	3
IF4055	Multimedia System	3
IF4056	Interaction Engineering	3
IF4057	Recycling System Engineering	3
IF4058	Special Topics in Computer Science I	3
IF4059	Special Topic in Computer Science II	3
IF4097	Advanced Computer Networks	3
IF4130	Computer Systems	3
IF4131	Algorithm and Programming	4
IF4132	Management of Information	3
IF4133	Engineering of Sistem Requirement & Software	3
IF4134	Analysis of Software	4
IF4135	Development of Software	4
IF4136	Quality of Software	3
IF4150	Computation Theory	4
IF4151	Advanced Computer Architechture	4
IF4152	Analysis of Algorithm	4
IF4153	Advanced Operating Systems	4

**Minor Program**

132	Electrical Engineering
134	Industrial Engineering
136	Aerospace Engineering
180	-
181	-
182	-

**Elective Courses offered by other Program**

EL2040	Electronics	3
EL2090	Electromagnetics	3
EL2093	Electric Circuits	3
EL2094	Signal & Systems	3
EL3020	Control Systems	3
EL3092	Digital Signal Processing	3
EL3096	Microprocessor Systems & Laboratory	3
EP3071	Electrical Machines	3
EP3072	Power Electronics	3
ET2080	Telecommunications Networks	3
ET3081	Communication Systems	3
ET3084	Telecom Traffic Engineering	3
FK3206	Sport Physiology	2
II2040	Analysis & System Design	3
II3042	Management of Information Resources	3
II3044	Project Management	3
II3061	System Engineering	3
II3062	Security of Information	3
II3063	Multimedia Systems	3
II3090	Analysis of Information Requirement	3
II3098	Ethics & Cyber Law	2
TI2001	Operational Research I	3
TI2105	Introduction to Economics	2
TI2106	Management (II)	3
TI3005	Engineering Economics	2
TI3105	Operational Research II	3
TI3106	Organization Behaviour (II)	3
TI3203	Organization and Industrial Enterprise Maagement	3
TI4002	Industrial Engineering Management	3
TI4005	Project Management	3
TI4102	Interprise Development & Entrepreneurship	3
TI4205	Innovation Management	3
TL2105	Environmental Health	3
TL4001	Environmental Impact Assessment Method	3
TL4002	Environmental Engineering	3
Total CREDITS = 101 SKS		

**Minor Courses**

Minor Program: Information Technology		
EL2010	Organization & Computer Architecture	3
IF2030	Algorithm & Data Structure	4
IF2032	Object Oriented Programming	4
IF2034	Data Bases	3
IF2036	Software Engineering	3
IF3055	Operating System	4
Total = 21 CREDITS		



# INFORMATICS ENGINEERING

In the current era of globalization, IT (Information Technology) has become absolute necessity for any organizations, including companies in the field of goods and services, and also nonprofit organizations. Besides that, this technology is also one of the sciences that are able to touch society individually, such as in communications, entertainment, and education. Therefore, the need for professional labor in the fields of informatics engineering is very high, either in the national or international level. In addition to be absorbed by the labor market, a graduate of Informatics Engineering can also easily become an entrepreneur with his expertise and creativity in science and informatics.

Establishment of the study program of Informatics Engineering at ITB began with the use of computers under the management of Computer Center, ITB. Backed by the spirit and willingness to grow, formal education on computers began with the opening of Education Program of Computer Utilization Engineer (PAT-JPK) in 1978.

In 1994, the course of Masters of Informatics in Software Engineering was opened. In 1997, a Masters of Informatics for the study program of Real Time Software Engineering was opened at a relatively young age; this became the first department of Information Science and Technology in state university environment in Indonesia. Until 1995, the department had passed a number of 307 bachelor graduates. While the historical development of the Department of Informatics Engineering, ITB in chronological order, is as follows:

- 1968 Electrical Data Management
- 1972 Establishment of COMPUTER CENTER
- 1976 Delegation of prospective faculty members to France, and the preparation of curriculum
- 1978 Establishment of Education Program of Computer Utilization Engineer (PAT-JPK)
- 1982 Opening of Department of Informatics Engineering (Bachelor Degree Program)
- 1986 Graduation of the first nine graduates of Department of Informatics Engineering
- 1994 Opening of the Master Program in Software Engineering
- 1997 Opening of the Master Program in Real-Time Software Engineering

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## Curriculum of Information Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science 1
KU1071	Introduction to Information Technology A
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4	MA1201	Calculus II	4
4	FI1201	Elementary Physics IIA	4
3	KI1201	Basic Chemistry II A	3
2	KU1201	Natural and Universe Systems	2
2	KU1001	Sport	2
2	KU1011	Scientific Writing	2
	EL1092	Fundamental of Electric Circuits	2

Total = 19 CREDITS

### Semester 3

MA2072	Engineering Mathematics I
II2091	Discrete Structure
II2092	Probability & Statistics
EL2095	Digital Systems
EL2195	Digital Systems Laboratory
IF2031	Algorithm & Data Structure
TI2106	Management (II)

Total = 19 CREDITS  
Total Credits at Year 2 = 37 CREDITS

### Semester 4

3	IF2033	Object Oriented Programming	3
3	IF2034	Data Bases	3
3	IF2036	Software Engineering	3
3	EL2010	Organization & Computer Architecture	3
1	II2040	Analysis & System Design	3
3	II2094	Signal & Systems	3
3			

Total = 18 CREDITS

### Semester 5

IF3055	Operating System
II3061	System Engineering
II3063	Multimedia Systems
II3090	Analysis of Information Requirement
II3097	Computer Networks
TI3106	Organization Behaviour (II)

Total = 19 CREDITS  
Total Credits at Year 3 = 38 CREDITS

### Semester 6

4	II3042	Management of Information Resources	3
3	II3044	Project Management	3
3	II3062	Security of Information	3
3	II3094	Inter Personal Communication	2
3	II3099	Human Computer Interaction	3
3	II3292	Free Elective non /Minor	3
	KU206X		2

Total = 19 CREDITS

### Semester 7

II4095	Final Work I & Seminar
II3098	Ethics & Cyber Law
II4149	Elective II
II4191	Free Elective / Humaniora
	Elective
	Elective
	Elective

Total = 17 CREDITS  
Total Credits at Year 4 = 33 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

1	II4099	Final Work II	4
2	II4090	Industrial Practice	1
3	KU2071	Pancasila and Civic Education	2
2	YYYYYY		3
4		Elective	3
3		Elective	3
2			

Total = 16 CREDITS

## Elective Courses

II3065	Discrete Time Signal Processing
II4040	Business Intelligence
II4041	Design of Information System
II4042	Decision Support System
II4043	Enterprise Information Systems
II4044	Intelligence Information Systems
II4045	Audit of Information System
II4060	Theory and Queueing Systems
II4061	Multimedia System Engineering
II4062	Cryptography and Coding
II4063	Computer Forensic and Networking
II4064	Analysis and Design of System Performance
II4065	Development of Mobile Application
II4097	Advanced Computer Networks
II4140	Programming Paradigm
II4142	Quality of Data
II4144	Engineering of Information
II4160	Information Networks
II4162	Probabilistic Systems and Stochastic
II4164	Internet / Web Programming
II4166	Advanced Information Security

## Minor Program

134	Industrial Engineering
135	Informatics Engineering
181	

## Minor Courses

Minor Program : Informatics Engineering	
II2040	Analysis & System Design
II3042	Management of Information Resources
II3044	Project Management
II3061	System Engineering
II3062	Security of Information
II3063	Multimedia Systems
II3090	Analysis of Information Requirement
Total = 21 CREDITS	

## Elective Courses offered by other Program

3	EL2040	Electronics	3
3	EL2090	Electromagnetics	3
3	EL2140	Electronics Laboratory	1
3	EL3092	Digital Signal Processing	3
3	EL3096	Microprocessor Systems & Laboratory	3
3	EL3192	Digital Signal Processing Laboratory	1
3	EP3071	Electrical Machines	3
3	EP3072	Power Electronics	3
3	ET2080	Telecommunications Networks	3
3	ET3081	Communication Systems	3
3	FK3206	Sport Physiology	2
3	IF3035	Data Base Systems	3
3	IF3037	Advanced Software Engineering	3
3	IF3038	Internet Programming	3
3	IF3053	Computer Graphic & Visualization	3
3	IF3054	Artificial Intelligence	3
3	IF3056	Distributed Systems	3
3	IF3058	Cryptography	3
3	TI2105	Introduction to Economics	2
3	TI3005	Engineering Economics	2
3	TI4002	Industrial Engineering Management	3
3	TI4005	Project Management	3
3	TI4102	Enterprise Development & Entrepreneurship	3
3	TI4205	Innovation Management	3
3	TL2105	Environmental Health	3
3	TL4001	Environmental Impact Assessment Method	3
3	TL4002	Environmental Engineering	3
3	Total CREDITS = 74 SKS		

Minor Program : General			
3	II2040	Analysis & System Design	3
3	II2094	Signal & Systems	3
3	II3042	Management of Information Resources	3
3	II3044	Project Management	3
3	II3061	System Engineering	3
3	II3062	Security of Information	3
3	II3063	Multimedia Systems	3
3	II3090	Analysis of Information Requirement	3
Total = 24 CREDITS			



# FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

Faculty of Civil and Environmental Engineering (FTSL) offers three undergraduate study program, namely:

1. Civil Engineering
2. Environmental Engineering and
3. Ocean 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.

## CIVIL ENGINEERING

Civil engineering is a professional engineering discipline that deals with the design, construction of the physical and natural built-environment, including works such as bridges, roads, canals, dams and buildings. In addition to new construction, the duty of a civil engineer also involves maintenance and repair of existing 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 structures 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.



## Curriculum of Civil Engineering

### Semester 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1072	Introduction to Information Technology B
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4 MA1201	Calculus II	4
4 FI1201	Elementary Physics IIA	4
3 KI1201	Basic Chemistry II A	3
2 KU1201	Natural and Universe Systems	2
2 KU1001	Sport	2
2 KU1011	Scientific Writing	2
KU1286	Introduction to Infrastructure Engineering	2

Total = 19 CREDITS

### Semester 3

SI2101	Construction Material Engineering
GD2002	Introduction to Surveying
SI2111	Statics
SI2102	Statistics and Probability
SI2131	Fluid Mechanics and Hydraulics
SI2103	Engineering Mathematics I
SI2141	Introduction to Transportation Engineering

Total = 20 CREDITS  
Total Credits at Year 2 = 40 CREDITS

### Semester 4

3 SI2201	Engineering Mathematics II	3
2 SI2221	Soil Mechanics I	3
3 SI2231	Drainage and Hydrology Engineering	3
3 SI2211	Mechanics of Material	3
3 KU2071	Pancasila and Civic Education	2
3 SI2251	Construction Drawing	3
3 SI2241	Highway Engineering	3

Total = 20 CREDITS

### Semester 5

SI3111	Structural Analysis I
SI3112	Concrete Structure
SI3121	Soil Mechanics II
SI3131	Irrigation and Hydraulic Structures
SI3141	Intermode Infrastructure Engineering
	Elective

Total = 18 CREDITS  
Total Credits at Year 3 = 40 CREDITS

### Semester 6

3 SI3211	Structural Analysis II	3
3 SI3212	Steel Structures	3
3 SI3221	Foundation Engineering	3
3 SI3201	Numerical Methods	2
3 SI3051	Construction Management	3
3	Elective	6

Total = 20 CREDITS

### Semester 7

SI4098	Job Training
KU206X	Religion/Ethics
SI4111	Structural Engineering
SI4151	Equipment Construction and Methods
	Elective

Total = 18 CREDITS  
Total Credits at Year 4 = 40 CREDITS

### Semester 8

2 SI4099	Final Project	4
2 SI4251	Engineering Economics	3
3 SI4231	Water Resources Development	3
3 YYYYYY	Elective (Environmental)	3
3	Elective	2

Total = 20 CREDITS

## Elective Courses

SI4097	Topics in Infrastructure	2
SI4101	Engineering System	3
SI4112	Structural Dynamic	3
SI4113	Advanced Concrete Structure	3
SI4114	Timber Structures and Materials	3
SI4121	Introduction to Soil Dynamic & Earthquake Engineering	3
SI4122	Retaining Structures	3
SI4131	Coastal and Swamp Engineering	3
SI4132	Dams and Hydro Power	3
SI4141	Maintenance & Evaluation of Transportation Infrastructures	3
SI4152	Computer Application in Construction	3
SI4213	Numerical Methods II	3
SI4214	Advanced Steel Structures	3
SI4215	Prestressed Concrete Structure Behaviour	3
SI4221	Advanced Foundation Engineering	3
SI4222	Stability in Geotechnics	3
SI4232	River Engineering	3
SI4241	Traffic Control and Management	3
SI4242	Pavement Materials & Structure Engineering	3

## Minor Program

101	Mathematics
120	Geology
121	Mining
122	Petroleum Engineering
131	Mechanical Engineering
134	Industrial Engineering
135	Informatics Engineering
137	Material Engineering
151	Geomatics
152	Architecture
153	Environmental Engineering
154	City Planning
155	Ocean Engineering
190	Management

## Minor Courses

2	Minor Program : 1	
3	SI2111 Statics	3
3	SI2131 Fluid Mechanics and Hydraulics	3
3	SI2221 Soil Mechanics I	3
3	SI2231 Drainage and Hydrology Engineering	3
3	SI3121 Soil Mechanics II	3
3	SI3131 Irrigation and Hydraulic Structures	3
	Total CREDITS = 18 CREDITS	
	Minor Program : 2	
	SI2111 Statics	3
	SI2211 Material Mechanics	3
	SI2221 Soil Mechanics I	3
	SI2241 Highway Engineering	3
	SI3112 Concrete Structure	3
	SI3121 Soil Mechanics II	3
	Total CREDITS = 18 CREDITS	
	Minor Program : General	
	SI2111 Statics	3
	SI2131 Fluid Mechanics and Hydraulics	3
	SI2221 Soil Mechanics I	3
	SI2231 Drainage and Hydrology Engineering	3
	SI3121 Soil Mechanics II	3
	SI3131 Irrigation and Hydraulic Structures	3
	Total CREDITS = 18 CREDITS	

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## 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 branch of engineering study which studies various curative and preventive efforts in order to save the environment in the form of water, soil, air, and environmental health through engineering approaches. Efforts are made by engineering tools and methods approaches which are used to minimize the negative impacts of industrial and domestic wastes on the environment and public health.

This study program delivers the course of potable water engineering, such as potable water supply system, planning of potable water facilities, and various others. In this study program is also studied the engineering of wastewater i.e. the sewerage of wastewater, planning, construction, and operation and maintenance of wastewater processing facilities, management of hazardous and toxic waste including urban waste management and industrial waste. Furthermore, students will also learn the management of environmental health which studies epidemiology, health, safety and environment, including environmental quality management.

Students are also allowed to perform social experiment, by conducting community attachment activity 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 behaviour. 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 1

MA1101	Calculus I
FI1101	Elementary Physics IA
KI1101	Basic Chemistry I A
KU1101	Integrated Science I
KU1072	Introduction to Information Technology B
KU102X	English

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

4 MA1201	Calculus II	4
4 FI1201	Elementary Physics IIA	4
3 KI1201	Basic Chemistry II A	3
2 KU1201	Natural and Universe Systems	2
2 KU1001	Sport	2
2 KU1011	Scientific Writing	2
KU1286	Introduction to Engineering in Infrastructure	2

Total = 19 CREDITS

### Semester 3

TL2101	Fluid Mechanics I
TL2102	Environmental Statistics
TL2103	Engineering Drawing
TL2104	Engineering Mathematics
GD2001	Surveying and Mapping
SI2104	Basic Knowledge of Structure
TL2105	Environmental Health

Total = 19 CREDITS  
Total Credits at Year 2 = 39 CREDITS

### Semester 4

2 TL2201	Fluid Mechanics II	3
2 TL2202	Environmental Chemistry	3
3 TL2203	Environmental Microbiology	3
3 TL2204	Hydrology	3
3 TL2205	Environmental Epidemiology	2
3 SI2222	Introduction to Soil Mechanics	2
3 KU206X	Elective	2
	Elective	2

Total = 20 CREDITS

### Semester 5

TL3101	Unit Operation
TL3102	Unit Process
TL3103	Environmental Laboratory
TL3104	Solidwaste Management
TL3105	Water Supply Engineering
	Elective
	Elective

Total = 20 CREDITS  
Total Credits at Year 3 = 38 CREDITS

### Semester 6

3 TL3201	Air Pollution	3
3 TL3202	Drainage and Sewerage	3
3 TL3203	Water Management	3
3 TL3204	Hazardous Waste Management	2
3 TL3205	Solidwaste Treatment	2
2	Elective	2
3	Elective	3

Total = 18 CREDITS

### Semester 7

TL4098	Field Work
TL4101	Water Treatment Plant Design
TL4102	Wastewater Treatment Plant Design
TL4104	Air Pollution Control
TL4103	Management for Environmental Engineering
	Elective

Total = 15 CREDITS  
Total Credits at Year 4 = 31 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

2 TL4099	Seminar and Final Task	5
3 TL4201	Environmental Impact Assessment	3
3 TL4202	Project Planning	2
2 TL4203	Occupational Health	2
3 KU2071	Pancasila and Civic Education	2

Total = 16 CREDITS

## Elective Courses

TL4001	Environmental Impact Assessment Methodology	3
TL4002	Environmental Engineering	3
TL4097	Topics in Infrastructure	2
TL4105	Plumbing and Pump	3
TL4106	Infrastructure and Sanitation	2
TL4108	Technical Aspect of Waste Recycling	2
TL4109	Air Pollution Monitoring	2
TL4110	Atmospheric Behaviour	2
TL4111	Food Sanitation	2
TL4112	Control of Disease Vector	2
TL4113	Water Resources Management	2
TL4116	Environmental Management System Analysis	2
TL4117	Environmental Conservation Technology	2
TL4118	Groundwater Modeling	2
TL4204	Industrial Waste Management	3
TL4205	Waterworks	2
TL4206	Pre-design of Landfill	2
TL4207	Sludge Treatment	2
TL4209	Environmental Physics	2
TL4210	Groundwater Hydrolics	2
TL4211	Environmental Ecotechnology	2
TL4212	Clean Technology	2
TL4213	Policy and Numerical Transformation	2

## Minor Courses

Minor Program : General		
TL2105	Environmental Health	3
TL2202	Environmental Chemistry	3
TL2203	Environmental Microbiology	3
TL2204	Hydrology	3
TL3101	Unit Operation	3
TL3102	Unit Process	3
Total CREDITS = 18 CREDITS		

## Minor Program

104	Microbiology
121	Mining
122	Petroleum Engineering
129	Oceanography
130	Chemical Engineering
134	Industrial Engineering
135	Informatics Engineering
150	Civil Engineering
151	Geomatics
154	City Planning
155	Ocean Technology
175	Product Design
190	Management

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# OCEAN ENGINEERING

The sciences studied in the Ocean Engineering are related with those being studied in Civil Engineering as the parenting science field, especially in the course of Water Resources Engineering. In Civil Engineering, the subjects are related to water infrastructure located from upstream to downstream of the river and the coastal area. While in the Ocean Engineering, the ocean infrastructure to be studied is located from the seashore to the deep sea.



Doc. Faculty of Civil and Environmental Engineering

In Ocean Engineering study program, students will be equipped with knowledge about the coastal structure, offshore structure construction, coastal process shore protection, coastal engineering, underwater acoustics, hydrodynamics, and ocean pollutant dispersion. Ocean Engineering students will also learn about data related to ocean and coastal conditions and how to process these data. From the results, student can design correct structure for coastal and offshore environment.

In designing a pier, a variety of data needs to be calculated starting from the condition of the beach where the pier would be built, as in its bathymetry (underwater contour), its soil type.

Also including the data of the pier capacity, and the size of ships to utilize pier. Ocean Engineering students are also equipped with the knowledge to use softwares which will help students observe and understand the actual conditions and problems.

In addition to designing new constructions, the duty of an Ocean Engineering graduate also includes maintenance/repair of existing structures, and control of ocean environmental problems using advanced computer simulations. In principle, the subject matters to be studied are heavily related to the science of applied physics, especially mechanics.

## Curriculum of Ocean Engineering

### Semester 1

MA1101	Calculus I	4
FI1101	Elementary Physics IA	4
KI1101	Basic Chemistry I A	3
KU1101	Science Development Concept	2
KU1072	Introduction to Information Technology B	2
KU102X	English	2

Total = 17 CREDITS  
Total Credits at Year 1 = 36 CREDITS

### Semester 2

MA1201	Calculus II	4
FI1201	Elementary Physics IIA	4
KI1201	Basic Chemistry II A	3
KU1201	Natural and Universe Systems	2
KU1001	Sport	2
KU1011	Scientific Writing	2
KU1286	Introduction to Engineering in Infrastructure	2

Total = 19 CREDITS

### Semester 3

KL2101	Basic Engineering Analysis I	3
KL2102	Fluid Mechanics	3
KL2103	Engineering Mechanics	2
KL2104	Statistics and Probability Analysis	2
KL2105	Engineering Drawing	2
KL2106	Physical Oceanography	2
KU206X	Elective	2
	Elective	3

Total = 19 CREDITS  
Total Credits at Year 2 = 38 CREDITS

### Semester 4

KL2201	Basic Engineering Analysis II	3
KL2202	Water Wave Mechanics	3
KL2203	Mechanics of Materials	3
KL2204	Numerical Analysis	3
KL2205	Engineering Economics	2
KL2206	Field Data Acquisition and Analysis	3
KU2071	Pancasila and Civic Education	2

Total = 19 CREDITS

### Semester 5

KL3101	Hydrodynamics	2
KL3102	Matrix Analysis of Structures	3
KL3103	Random Wave	3
KL3104	Reinforced Concrete	2
KL3105	Ocean Geotechnics	3
	Elective	3
	Elective	3

Total = 19 CREDITS  
Total Credits at Year 3 = 36 CREDITS

### Semester 6

KL3201	Structural Dynamics	3
KL3202	Introduction to Underwater Acoustics	2
KL3203	Laboratory Experimental Methods	3
KL3211	Coastal Processes	3
	Elective	3
	Elective	3

Total = 17 CREDITS

### Semester 7

KL4098	Field Project	2
KL4111	Port and Harbor Design	2
KL4112	Coastal Structure	2
KL4121	Offshore Structure I	3
KL4101	Ocean Structures Construction Management	3
	Elective	3

Total = 15 CREDITS  
Total Credits at Year 3 = 32 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

KL4099	Final Project	4
KL4211	Pier Structure Design	2
KL4221	Offshore Structure II	2
KL4201	Ocean Environmental Control	3
	Elective	3
	Elective	3

Total = 17 CREDITS

## Elective Courses

KL3106	Materials for Ocean Constructions	2
KL3107	Long Waves	2
KL3204	Introduction to Finite Element Methods	3
KL4097	Topics in Infrastructure	2
KL4102	Boundary Element Method	2
KL4122	Basic Ship Engineering	3
KL4202	Computational Hydrodynamics	2
KL4212	Reclamation and Dredging	2
KL4213		2

## Minor Program

122	Petroleum Engineering
128	Meteorology
129	Oceanography
132	Electrical Engineering
133	Engineering Physics
134	Industrial Engineering
135	Informatics Engineering
150	Civil Engineering
151	Geomatics
152	Architecture
153	Environmental Engineering
154	City Planning
174	Graphics Design
190	Management

## Minor Courses

Minor Program: General

KL2104	Statistics and Probability Analysis	2
KL2202	Water Wave Mechanics	3
KL2206	Field Data Acquisition and Analysis	3
KL3101	Hydrodynamics	2
KL3103	Random Wave	3
KL3202	Introduction to Underwater Acoustics	2
KL3211	Coastal Processes	3

Total CREDITS = 18 CREDITS

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# SCHOOL OF ARCHITECTURE, PLANNING AND POLICY DEVELOPMENT

School of Architecture, Planning and Policy Development (SAPPK) was established on August 29, 2005, under Rector Decree No. 222/2005. SAPPK is a combination of the 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 two study programs which were originally parts of the Faculty of Industrial Engineering (i.e. Study Program of Development Study and Study Program of Transportation).

SAPPK has been active as an academic implementation unit since January 1, 2006. Study program 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 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.



# ARCHITECTURE

Study program of Architecture of 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:

- Tread design
- Design of buildings based on the typology (hospitals, museum, schools, shopping centers)
- Structure design 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.



Doc. Dhian Damajani

## Curriculum of Architecture

### Semester 1

MA1101	Calculus I	4
FI1102	Elementary Physics IB	3
KI1102	Basic Chemistry I B	2
KU1101	Integrated Science 1	2
KU1073	Introduction to Information Technology C	2
KU102X	English	2
AR1101	The Fundamentals of Planning and Design	3
Total = 18 CREDITS		
Total Credits at Year 1 = 36 CREDITS		

### Semester 2

MA1201	Calculus II	4
FI1202	Elementary Physics IIB	3
KI1202	Basic Chemistry II B	2
KU1201	Natural and Universe Systems	2
KU1001	Sport	2
KU1011	Scientific Writing	2
PL1201	Presentation and Communication Technique	3
Total = 18 CREDITS		

### Semester 3

AR2100	Architectural Design Studio I	8
AR2111	Architectural Form and Space	2
AR2112	Visual Design	2
AR2121	Structure, Construction and Material I	3
AR2131	Indonesian and Asian Architecture	2
	Elective	2
Total = 19 CREDITS		
Total Credits at Year 2 = 38 CREDITS		

### Semester 4

AR2200	Architectural Design Studio II	8
AR2211	Design Method and Design Approach	2
AR2221	Structure, Construction and Material II	3
AR2222	Building Science	2
AR2231	Modern Architecture	2
	Elective	2
Total = 19 CREDITS		

### Semester 5

AR3100	Architectural Design Studio III	8
AR3111	Site Design	3
AR3121	Building System and Utility	2
AR3141	Sustainable Environmental Development	3
	Elective	2
Total = 18 CREDITS		
Total Credits at Year 3 = 36 CREDITS		

### Semester 6

AR3200	Architectural Design Studio IV	8
AR3211	Architecture of the City	2
AR3221	Structure, Construction and Material III	3
AR3222	Project Management	3
	Elective	2
Total = 18 CREDITS		

### Semester 7

AR4000	Architectural Design Studio V	8
AR4098	Apprenticeship and Professional Ethics	2
AR4091	Final Design Project Preparation	2
AR4195	Architecture Seminar	3
AR4131	Architectural Theory and Criticism	2
Total = 17 CREDITS		
Total Credits at Year 4 = 34 CREDITS		
Total CREDITS = 144 SKS		

### Semester 8

AR3200	Architectural Design Studio IV	8
AR3211	Architecture of the City	2
AR3221	Structure, Construction and Material III	3
AR3222	Project Management	3
	Elective	2
Total = 17 CREDITS		

### Elective Courses

AR4121	Building Production	2
AR4141	Housing and Settlement Design	2
AR4142	Real Estate	2
AR4211	Environment and Behavior	2
AR4212	Basic Principles of Landscape Architecture	2
AR4231	Architecture of Islam	2
AR4241	Socio-Technology of Design	2

### Minor Program

133	Engineering Physics
135	Informatics Engineering
150	Civil Engineering
151	Geomatics
153	Environmental Engineering
154	City Planning
173	Interior Design
174	Graphics Design
190	Management

### Elective Courses offered by other Pro-

DI2101	Principles of Interior Design Planning	2
DI2120	Design History	2
DI2203	Interior Acoustic & Lighting	2
DI2205	Computer Simulation of Interior Design	2
DI3005	Psychology of Interior Design	2
DK3107	Visual Analysis	2
DK4117	Perception Psychology	2
PL3002	Disaster Aspect in Planning	2
PL3003	Land Development	2
PL3103	Urban Planning	3
PL4008	Introduction of Tourism Planning	2
SI4114	Timber Structures and Materials	3
TF4101	Building Physics	3
TL3202	Drainage and Sewerage	3
TL4105	Plumbing and Pump	3
Total CREDITS = 35 SKS		

### Minor Courses

Minor Program : General		
AR2100	Architectural Design Studio I	8
AR2111	Architectural Form and Space	2
AR2112	Visual Design	2
AR2121	Structure, Construction and Material I	3
AR2131	Indonesian and Asian Architecture	2
AR2231	Modern Architecture	2
AR3121	Building System and Utility	2
Total CREDITS = 21 CREDITS		

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## URBAN AND REGIONAL PLANNING

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

In the process of education, when one becomes a PWK student, 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, Financing Development, Transport 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 PWK graduate). In the area there are physical components e.g. rice fields, shopping malls, housing, and others. Meanwhile on the other hand there are also non-physical components e.g. congestion, density, population, and so forth. If a planner cannot understand these as a whole, he will not be able to make decent planning. Subsequently, area that was not planned well will have non-decent conditions. Thus, PWK also provides courses in the aspects of computation, economy, social, institutional, political, environmental 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 PWK graduate works, he will still be distinguishable by his coherent and systematic way of thinking. Because when one studies in PWK, not only he learns about urban and regional planning but he also learns of 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



## Curriculum of Urban and Regional Planning

### Semester 1

MA1101	Calculus I	4
FI1102	Elementary Physics IB	3
KI1102	Basic Chemistry I B	2
KU1101	Integrated Science 1	2
KU1073	Introduction to Information Technology C	2
KU102X	English	2
AR1101	The Fundamentals of Planning and Design	3

Total = 18 CREDITS

Total Credits at Year 1 = 36 CREDITS

### Semester 2

MA1201	Calculus II	4
FI1202	Elementary Physics IIB	3
KI1202	Basic Chemistry II B	2
KU1201	Natural and Universe Systems	2
KU1001	Sport	2
KU1011	Scientific Writing	2
PL1201	Prezentation and Communication Technic	3

Total = 18 CREDITS

### Semester 3

PL2101	Introduction of Spatial Data	3
YYYYYY	Elective	3
PL2103	Land Use Planning	2
PL2104	Regional and Urban Infrastructure	3
PL2105	Introduction to Economics	2
PL2106	Social and Population Analysis	3
PL2107	Analytical Methods for Planning I	3

Total = 19 CREDITS

Total Credits at Year 2 = 36 CREDITS

### Semester 4

PL2201	Introduction of Regional and Urban Economics	2
PL2202	Spatial Pattern and Loc Analysis	2
PL2203	Housing System	2
PL2204	Transportation and Infrastructure Planning	3
PL2205	Analytical Methods for Planning II	4
PL2290	Planning Process Studio	4

Total = 17 CREDITS

### Semester 5

PL3101	Planning Law & Control	3
PL3102	Development Finance	2
PL3103	Urban Planning	3
PL3104	Transportation and Infrastructure Management	2
PL3105	Planning Evaluation Technique	2
PL3190	Site Planning Studio	4
	Elective	2

Total = 18 CREDITS

Total Credits at Year 3 = 37 CREDITS

### Semester 6

PL3201	Development Administration and Management	3
PL3202	Regional Planning	3
PL3203	Rural Planning	2
PL3204	Community Development	2
ZZZZZZ	Elective	3
PL3290	Urban Planning Studio	4
	Elective	2

Total = 19 CREDITS

### Semester 7

PL4101	Planning Theory	3
PL4102	Research Methods	2
PL4103	Internship	2
PL4190	Regional Planning Studio	4
	Elective	3
	Elective	3

Total = 17 CREDITS

Total Credits at Year 2 = 35 CREDITS

Total CREDITS = 144 SKS

### Semester 8

KU206X		2
KU2071	Pancasila and Civic Education	2
PL4201	Planning Information System	2
PL4291	Final Project	6
	Elective	3
	Elective	3

Total = 18 CREDITS

## Elective Courses

PL3001	Economic of Transportation and Infrastructure	2
PL3002	Disaster Aspect in Planning	2
PL3003	Land Development	2
PL3004	Urban & Regional Modelling	2
PL4001	Urban Renewal and New-Town Planning	2
PL4002	Introduction Urban Design	2
PL4003	Coastal Area Development	2
PL4004	Participatory Planning	2
PL4005	Seminar in Futuristic Studies	2
PL4006	Planning and Politics	2
PL4007	Special Topics in Planning	2
PL4008	Introduction of Tourism Planning	2
PL4009	Introduction to Urban Finance	2
PL4010	Current Issues in Planning	2

## Elective Courses offered by other Program

AR4141	Housing and Settlement Design	2
AR4142	Real Estate	2
AR4241	Socio-Technology of Design	2
BI3204	Wetland Ecology and Management	3
BI4104	Entomology	3
BI4202	Landscape Ecology & Management	3
DK3234	Sociology Communications	2
GD3106	Geografi Lingkungan	3
GL3121	Introduction to Engineering Geology	2
ME3236	Climate Change	3
OS3003	Coastal Management	2
SI4241	Traffic Control and Management	3
TG5124	Disaster Mitigation	2
TL4113	Water Resources Management	2
TL4116	Environmental Management System Analysis	2
TL4212	Clean Technology	2
Total CREDITS = 38 SKS		

## Minor Courses

Minor Program : Urban and Regional Planning

PL2102	Environmental and Natural Resources Analysis	4
PL2103	Land Use Planning	2
PL2106	Social and Population Analysis	3
PL2201	Introduction of Regional and Urban Economics	2
PL3103	Urban Planning	3
PL3202	Regional Planning	3

Total = 18 CREDITS

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## FACULTY OF ART AND DESIGN

Faculty of Art and Design (FSRD) was established in 1984 after experiencing a long history of institution development, since August 1, 1947, as a University Education Center for Draw Teacher below the Faculty of Sciences of University of Indonesia, in Bandung.

In 1956, together with the Division of Architecture, the Center for Draw Teacher was merged into Section of Architecture and Art, until 1984 when it became Faculty of Art and Design. But after these developments, in the same year major of Art became a separate faculty namely Faculty of Art and Design, which until now has five study programs: Art, Craft, Interior Design, Industrial Design, and Visual Communications Design.

Faculty of Art and Design facilitates students to express themselves in the form of two-dimensional, three dimensional, or inter-media visual artworks. Students are invited to explore media, shapes and ideas and then pour it into an artwork. Human need for aesthetic, expression, function, could be met through the creation of works of design, either in interior, industrial, or visual communication design. For those who wish to know, explore, and appreciate the visual artefacts as heritage and cultural assets of Indonesia, the study program of Craft is the right place.

Creative and innovative abilities in solving problems hold important role. This is of course very interesting because in addition to be able to realize all ideas, one can also creatively be able to fulfil the wishes and needs of others either in the form of artwork, craft, or design. The works may also provide inspiration to all who need it.



## FINE ART

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

Study program of Art, FSRD ITB has a distinguish character as an art institution 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 artwork will have high relevance with the developments in science and technology and the growing issues in society.

Study program of Art has five main courses in Painting, Sculpture, Graphic, Ceramics, and Intermedia Arts. In the Painting course, various styles of painting are studied, so are the media exploration and the search for formal expressions. In Sculpture course, basics of sculpting and understanding of materials and three-dimensional shapes are taught. Graphic course taught conventional printing techniques, photography, and digital printing. In Ceramics, art manufacturing cover several processes ranging from formation, and colouring

until the burning process, is studied. While 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.

What not less interesting from the Study Program of Art is the extensive range of research and use of materials in the artworks manufacturing process, so that the creativity with can be developed by immense visual possibilities. Also 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.

As additional competence, study program of Art provides a package of minor and elective courses; thus one with the major in Painting can also learn the basics of Sculpture or Graphic Art, vice versa.



Doc. Indra Yudha

## Curriculum of Fine Art

### Semester 1

KU1188		
SR1101		
SR1002	Drawing 1	
SR1003	Basic Visual 1	
KU1101	Integrated Science I	
KU1001	Sport	
KU1011	Scientific Writing Elective	
Total = 20 CREDITS		
Total Credits at Year 1 = 40 CREDITS		

### Semester 2

2	SR1201		2
2	SR1004	Drawing 2	5
4	SR1005	Basic Visual 2	5
4	KU1201	Natural and Universe Systems	2
2	KU1073	Introduction to Information Technology C	2
2	KU102X	English	2
2		Elective	2
2			2
Total = 20 CREDITS			

### Semester 3

SR2101	Cultural History	
SR2102	Drawing III	
SR2103	Asian Art	
SR2104	Aesthetic I Elective Elective	
Total = 17 CREDITS		
Total Credits at Year 2 = 32 CREDITS		

### Semester 4

2	SR2201	Methodology of Art Creation I	2
3	SR2202	Drawing IV	3
2	SR2203	Western Art History	2
2		Elective	4
4		Elective	4
4			4
Total = 15 CREDITS			

### Semester 5

SR3101	Global Art Appreciation	
SR3102	Methodology of Art Research I	
SR3104	Art and Spirituality	
SR3105	Modern of Visual Art Elective Elective	
Total = 16 CREDITS		
Total Credits at Year 3 = 34 CREDITS		

### Semester 6

2	SR3090	Seminar I	3
2	SR3201	Art Appreciation	2
2	SR3204	History of Ancient Indonesian Art	2
2	SR3206	Experimental Art	3
4		Elective	4
4		Elective	4
Total = 18 CREDITS			

### Semester 7

SR4101	Art Criticism I	
SR4103	History of Modern Indonesian Art	
SR4104	Aesthetics II	
SR4102	Art Management I	
SR4105	Art Sociology I Elective Elective	
Total = 18 CREDITS		
Total Credits at Year 4 = 38 CREDITS		
Total CREDITS = 144 SKS		

### Semester 8

2	SR4201	Art Criticism II	2
2	KU206X		2
2	SR4092	Exhibition Project	3
3	KU2071	Pancasila and Civic Education	2
2	SR4208	Art, Design & Environment	3
4	SR4099	Final Project of Visual Art	6
3		Elective	2
Total = 20 CREDITS			

## Selective Courses

SR2011	Painting Option
SR2012	Sculpture Option
SR2013	Printmaking Option
SR2014	Ceramic Option
SR2015	Art Paper Technique
SR2110	Art and Materials
SR3106	Islamic Art History
SR3107	Art and Market
SR3108	Art Print Digital
SR3205	New Media Art
SR3207	Art Photography
SR4106	Introduction to Semiotics
SR4107	Visual Art, Science and Technology
SR4202	Art Psychology
SR4203	Art Anthropology I
SR4204	belum

## Minor Program offered to

3	152	Architecture
3	172	Craft
3	173	Interior Design
3	174	Graphics Design
3	175	Product Design

## Minor Courses Offered

3	Minor Program : General		
3	SR2102	Drawing III	3
2	SR2104	Aesthetic I	2
2	SR2201	Methodology of Art Creation I	2
2	SR2202	Drawing IV	3
2	SR3105	Modern of Visual Art	2
2	SR4101	Art Criticism I	2
2	SR4103	History of Modern Indonesian Art	2
Total CREDITS = 16 CREDITS			

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## CRAFT

Craft is one of the study programs in the Faculty of Art. Craft may be said to be 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. 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 honoured 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 context of the present.

People often confuse craft with handicraft, but they are very different. 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. Handicraft is designed more exclusively and has added values in many aspects, because the process relies on the skills of hand (handmade).

In the final stages of the main 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 be-

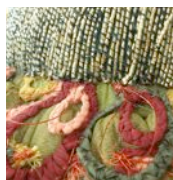


The study program of Craft in ITB is currently divided into two course majors, namely Textiles Craft and Ceramics Craft.

### 1. Textile Crafts major

This major covers several subjects, including:

- Learning textile definition
- Learning various things associated with the textile craft design world, such as textile material, colour, texture, pattern, ornamentation, and cultural background.
- In addition, learning craft design with an understanding of lifestyle, fashion, trends, and technology that accompanies it.
- Various craft production techniques that are studied include: weaving, dyeing, batik, knitting, printing, embroidery, and so on, as well as exploration of the basic techniques into innovative craft products.
- In addition, also not putting aside leading issues of the world, such as eco-friendly products (back to nature, eco fashion, green design, eco-design, and so forth), products with local cultural value (local content, indigenous raw materials, indigenous culture), into the manufacturing process of craft products which of course is aesthetics.



Doc. Faculty of Art and Design

### 2. Ceramics Craft major

Just as Textile Crafts, principally Ceramics Crafts also covers subjects mentioned above only with a different medium—that is ceramic material with its own techniques. The taught subjects are about:

- Various mediums of ceramic, such as: earthenware, stoneware, porcelain.
- Traditional decorative meaning associated with the meaning of the selected shape, so as 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 but without losing its exclusiveness.
- Various production techniques of ceramics craft: from basic materials processing stage, the formation of materials, burning process, models and moulds creation and, as well as basic knowledge about the application of glazes on ceramic raw materials.

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## Curriculum of Craft

### Semester 1

KU1188	
SR1101	
SR1002	Drawing 1
SR1003	Basic Visual 1
KU1101	Integrated Science I
KU1001	Sport
KU1011	Scientific Writing
	Elective

Total = 20 CREDITS  
Total Credits at Year 1 = 40 CREDITS

### Semester 2

2	SR1201		2
2	SR1004	Drawing 2	5
4	SR1005	Basic Visual 2	5
4	KU1201	Natural and Universe Systems	2
2	KU1073	Introduction to Information Technology C	2
2	KU102X	English	2
2		Elective	2
2			2

Total = 20 CREDITS

### Semester 3

KR2010	Image Analysis
KR2110	Ornament Drawing
KR2120	History of Design
KR2130	History of Craft
	Elective
	Elective

Total = 19 CREDITS  
Total Credits at Year 2 = 38 CREDITS

### Semester 4

4	KR2020	Exploring Idea	5
3	KR2210	Forms and Style	2
2	KR2220	Craft Tradition Review	2
2	KR2221	Design Critics	2
4		Elective	4
4		Elective	4

Total = 19 CREDITS

### Semester 5

KR3010	Fashion Reaserch
KR3140	Presentation Technique
KR3122	Design Methodology
	Elective
	Elective

Total = 18 CREDITS  
Total Credits at Year 3 = 35 CREDITS

### Semester 6

5	KR3020	Craft for Interior	5
3	KR3090	Seminar	2
2	KR3220	Sociology of Craft	2
4		Elective	4
4		Elective	4

Total = 17 CREDITS

### Semester 7

KR4010	Entrepreneurship
	Elective
	Elective
	Elective
	Elective

Total = 16 CREDITS  
Total Credits at Year 4 = 31 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

3	KR4208	Art Design & Environment	3
4	KR4099	Preliminary Final Project	6
4	KU2071	Pancasila and Civic Education	2
3	KU206X	Elective	4
2			2

Total = 15 CREDITS

## Selective Courses

KR201A	Tie Dye	3
KR2116	Basic Knowledge of Ceramic Kiln	2
KR3120	Fashion Accesories	3
KR3205	Fashion Management	2
KR3212	Decorative ceramic II	3
KR3240	Reaserch Methodology	2

## Minor Program offered to

170	Fine Art
173	Interior Design
174	Graphics Design
175	Product Design

## Selective Courses by other Program

DI3005	Psychology of Interior Design	2
DI3006	Cultural Aspect of Interior Design	2
DI4005	Review of Interior Design Traditional	2
DK3236	Marketing Communication	2
DK4113	Branding	2
DP3105	Human Factor and Design I	2
DP3206	Artifact Design	2
DP4202	Creative Product Experimentation	2
SR3107	Art and Market	2
SR4203	Art Anthropology I	2
Total CREDITS = 20 SKS		

## Minor Courses Offered

Minor Program : Basic Craft		
KR2110	Ornament Drawing	3
KR2120	History of Design	2
KR2210	Forms and Style	2
KR2220	Craft Tradition Review	2
KR3140	Presentation Technique	3
KR3220	Sociology of Craft	2
Total CREDITS = 14 CREDITS		
Minor Program : General		
KR2110	Ornament Drawing	3
KR2120	History of Design	2
KR2210	Forms and Style	2
KR2220	Craft Tradition Review	2
KR3140	Presentation Technique	3
KR3220	Sociology of Craft	2

## INTERIOR DESIGN

Study program of interior design studies the relationship between man and his various activities with the space in the building both physically, psychologically, and aesthetically (in this case that is related with 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 colours, theory of shapes, history of design and architecture, psychology, structure, construction, physics of building, and others. In addition to those, students will also be trained in forming their discipline, ethics, and dedication to the work.

For example, space designed for children will of course be different with the space designed for adults. Physical shapes and sizes of children and adults are very unlike which will result in differences in spatial dimension, besides, the needs and interests as well as the tendency for shapes and colour between children and adults are also very different. During the study at the study program of Interior Design, students will learn about the spaces in apartment buildings, houses, shops, offices and public spaces i.e. hotels, airports, shopping malls, hospitals, and others. It is of course very exciting.

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## Curriculum of Interior Design

### Semester 1

KU1188		
SR1101		
SR1002	Drawing 1	
SR1003	Basic Visual 1	
KU1101	Integrated Science I	
KU1001	Sport	
KU1011	Scientific Writing	
	Elective	

Total = 20 CREDITS  
Total Credits at Year 1 = 40 CREDITS

### Semester 2

2	SR1201		2
2	SR1004	Drawing 2	5
4	SR1005	Basic Visual 2	5
4	KU1201	Natural and Universe Systems	2
2	KU1073	Introduction to Information Technology C	2
2	KU102X	English	2
2		Elective	2
2			

Total = 20 CREDITS

### Semester 3

DI2001	Interior Design I	
DI2101	Principles of Interior Design Planning	
DI2102	Interior Spatial Exploration	
DI2103	Knowledge of Interior Material	
DI2104	Ergonomics for Interior Design	
DI2105	Interior Design Presentation	
DI2120	Design History	
	Elective	

Total = 20 CREDITS  
Total Credits at Year 2 = 39 CREDITS

### Semester 4

4	DI2002	Interior Design II	5
2	DI2201	Introduction of Furniture Workshop	2
2	DI2202	Design & Furniture Workshop I	3
2	DI2203	Interior Acoustic & Lighting	2
2	DI2204	Interior Construction & Detail	3
3	DI2205	Computer Simulation of Interior Design	2
2	DI2221	Review if Design	2
3			

Total = 19 CREDITS

### Semester 5

DI3001	Interior Design III	
DI3122	Design Method	
DI3101	Design & Furniture Workshop II	
DI3102	Introduction of Interior Statics	
DI3103	Review of Architecture & Interior Building	
DI3104	Interior Building Utility	
	Elective	

Total = 20 CREDITS  
Total Credits at Year 3 = 38 CREDITS

### Semester 6

5	DI3002	Interior Design IV	5
2	DI3201	Design & Furniture Workshop III	4
3	DI3202	Interior Design Critics & Seminars	3
2	DI3203	Interior Design Ethics	2
2		Elective	4
4			

Total = 18 CREDITS

### Semester 7

DI4001	Interior Design V	
DI4098	Internship	
DI4101	Preliminary of Final Project	
DI4102	Interior Design Project Management	

Total = 14 CREDITS  
Total Credits at Year 4 = 27 CREDITS  
Total CREDITS = 144 SKS

### Semester 8

5	DI4099	Interior Design Final Project	6
3	DI4208	Art, Design & Environment	3
3	KU2071	Pancasila and Civic Education	2
3	KU206X	Elective	2

Total = 13 CREDITS

### Selective Courses

DI3005	Psychology of Interior Design	2
DI3006	Cultural Aspect of Interior Design	2
DI3007	Review of Tradisional Furniture	2
DI4005	Review of Interior Design Traditional	2
DI4006	Interior Design Conservation	3
DI4007	Exhibition Design	2

### Minor Program offered to

133	Engineering Physics
152	Architecture
153	Enviromental Engineering
170	Fine Art
172	Craft
174	Graphics Design
175	Product Design

### Minor Courses Offered

Minor Program : General

DI2101	Principles of Interior Design Planning	2
DI2104	Ergonomy for Interior Design	2
DI2201	Introduction of Furniture Workshop	2
DI2205	Computer Simulation of Interior Design	2
DI3101	Design & Furniture Workshop II	3
DI3201	Design & Furniture Workshop III	4

Total CREDITS = 15 CREDITS

## 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 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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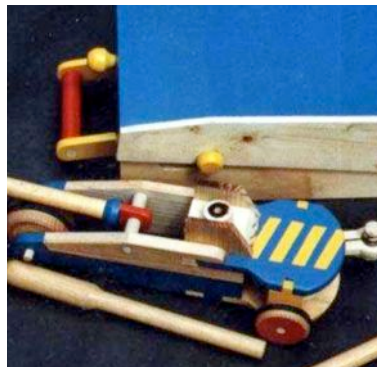
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## Curriculum of Industrial Design

### Semester 1

KU1188		2
SR1101		2
SR1002	Drawing 1	4
SR1003	Basic Visual 1	4
KU1101	Integrated Science I	2
KU1001	Sport	2
KU1011	Scientific Writing	2
	Elective	2
Total = 20 CREDITS		
Total Credits at Year 1 = 40 CREDITS		

### Semester 3

DP2001	Industrial Design I	5
DP2101	Material and Production Process	2
DP2102	Product Semantics I	2
DP2103	Presentation Technique I	2
DP2104	Technical Drawing	2
DP2105	Industrial Design Method	2
DP2120	Design History	2
	Elective	3
Total = 20 CREDITS		
Total Credits at Year 2 = 39 CREDITS		

### Semester 5

DP3003	Industrial Design III	5
DP3102	Product Design and Lifestyle I	2
DP3103	Ergonomics Product I	2
DP3104	Digital Modelling II	3
DP3101	Marketing Management	2
DP3122	Design Methodology	2
	Elective	4
Total = 20 CREDITS		
Total Credits at Year 3 = 40 CREDITS		

### Semester 7

DP4005	Industrial Design V	5
DP4098	Final Project I of Industrial Design	3
DP4102	Design Entrepreneurship	3
DP4101	Sustainable Design	2
Total = 13 CREDITS		
Total Credits at Year 4 = 25 CREDITS		
Total CREDITS = 144 SKS		

### Semester 2

2	SR1201		2
2	SR1004	Drawing 2	5
4	SR1005	Basic Visual 2	5
4	KU1201	Natural and Universe Systems	2
2	KU1073	Introduction to Information Technology C	2
2	KU102X	English	2
2		Elective	2
2			2
Total = 20 CREDITS			

### Semester 4

5	DP2002	Industrial Design II	5
2	DP2201	Basic Engineering in Design	2
2	DP2202	Product Semantics II	2
2	DP2203	Presentation Technique II	2
2	DP2204	Digital Modelling I	3
2	DP2205	Workshop Practice	3
2	DP2221	Design Critics	2
3			3
Total = 19 CREDITS			

### Semester 6

5	DP3004	Industrial Design IV	5
2	DP3096	Industrial Design Professional Practice	3
2	DP3201	Sociology of Design	2
3	DP3202	Built Environmental Design	2
2	DP3203	Ergonomics Product II	2
2	DP3204	Design Management I	2
4		Elective	4
Total = 20 CREDITS			

### Semester 8

5	KU206X		2
3	DP4099	Final Project II of Industrial Design	6
3	KU2071	Pancasila and Civic Education	2
2	DP4201	Intellectual Property on Design	2
Total = 12 CREDITS			

### Selective Courses

DP3105	Human Factor and Design I	2
DP3106	Seating Design	2
DP3205	Packaging Product Design	2
DP3206	Artifact Design	2
DP4097	Seminar of Design	3
DP4103	Interactive Product Design	2
DP4202	Creative Product Experimentation	2

### Minor Program offered to

134	Industrial Engineering
137	Material Engineering
152	Architecture
153	Environmental Engineering
154	City Planning
170	Fine Art
172	Craft
173	Interior Design
174	Graphics Design
190	Management

### Minor Courses Offered

DP2105	Industrial Design Method	2
DP3101	Marketing Management	2
DP3102	Product Design and Lifestyle I	2
DP3204	Design Management I	2
DP4101	Sustainable Design	2
DP4102	Design Entrepreneurship	3
DP4201	Intellectual Property on Design	2
Total CREDITS = 15 CREDITS		

## 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. What interesting here is that the visual communication designer should be able to process the message in an effective, informative, and communicative way.

There are a lot of the basic subjects taught in the study program of Visual Communication Design, including 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, logo which reflects an institution or company (branding), promotional package and campaigns of a program, to the design of 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 majors in the study program of Visual Communication Design that can be selected ahead of Semester VI, namely:

1. Graphic Design Communication
2. Advertising Visual Communications
3. Intermedia Communications

Basically Graphic Design Communications and Advertising Visual Communication process visual language in static media. The skills of communication, typography, illustration and photography become factors that must be mastered. With his expertise, graphic designers can create logos, magazine/newspaper 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 behaviour of the targeted audience.

Meanwhile, Multimedia Communications leads to the dynamic time and audio based media.



## Curriculum of Visual Communication Design

### Semester 1

KU1188		2	SR1201		2
SR1101		2	SR1004	Drawing 2	5
SR1002	Drawing 1	4	SR1005	Basic Visual 2	5
SR1003	Basic Visual 1	4	KU1201	Natural and Universe Systems	2
KU1101	Integrated Science I	2	KU1073	Introduction to Information Technology C	2
KU1001	Sport	2	KU102X	English	2
KU1011	Scientific Writing	2		Elective	2
	Elective	2			
Total = 20 CREDITS			Total = 20 CREDITS		
Total Credits at Year 1 = 40 CREDITS					

### Semester 2

### Semester 3

DK2001	Basic Visual Communication Design	4	DK2002	Visual Communication Design : Application I	5
DK2103	Basic Typography	2	DK2204	Applied Typography I	2
DK2105	Basic Illustration	2	DK2206	Applied Illustration	2
DK2107	Basic Photography	2	DK2208	Applied Photography	2
DK2109	Introduction : Production for Visual Communication Design	2	DK2210	Theory Media	2
DK2111	Communication Process	2	DK2212	Visual Language	2
DK2113	Psychology Communication	2	DK2214	Visual Communication Design History	2
DK2120	History of Design	2	DK2221		2
	Elective	2			
Total = 20 CREDITS			Total = 19 CREDITS		
Total Credits at Year 2 = 39 CREDITS					

### Semester 4

### Semester 5

DK3001	Applied Visual Communication II	5	DK3218	Sosial Psychology	2
DK3103	Basic Animation	2		Elective	4
DK3105	Visual Storytelling	3		Elective	4
DK3107	Visual Analys	2		Elective	4
DK3111	Visual Communication : Research Methodologi	2			
DK3113	Nusantara Visual Culture	2	Total = 14 CREDITS		
DK3122	Design Methodologi	2			
	Elective	2			
Total = 20 CREDITS					
Total Credits at Year 3 = 34 CREDITS					

### Semester 6

### Semester 7

	Elective	4	KU206X		2
	Elective	4	KU2071	Pancasila and Civic Education	2
	Elective	4	DK4208	Art, Design & Environment	3
	Elective	3	DK4202	Communication Visual Design Management	3
	Elective	2		Elective	4
Total = 17 CREDITS			Total = 14 CREDITS		
Total Credits at Year 4 = 31 CREDITS					
Total CREDITS = 144 SKS					

### Semester 8

### Selective Courses

DK3222	
DK3224	Children book ilustration
DK3226	Comic
DK3228	Interactive Media
DK3232	Introduction : Advertising
DK3234	Sociology Communications
DK3236	Marketing Communication
DK3238	
DK4103	Packaging
DK4105	Printing Technology
DK4107	Portfolio
DK4109	Videography
DK4111	Motion Graphic
DK4113	Branding
DK4115	Copywriting
DK4117	Perception Psychology
DK4119	Photography

### Minor Program offered to

152	Architecture
170	Fine Art
172	Craft
173	Interior Design
175	Product Design

### Minor Courses Offered

3	Minor Program : Basic Illiustration		
2	DK2103	Basic Typography	2
3	DK2105	Basic Illustration	2
3	DK2111	Communication Process	2
2	DK2206	Applied Illustration	2
2	DK2208	Applied Photography	2
2	DK3103	Basic Animation	2
2	DK3105	Visual Storytelling	3
3	Total CREDITS = 15 CREDITS		
2			
3	Minor Program : General		
3	DK2105	Basic Illustration	2
3	DK2111	Communication Process	2
2	DK2204	Applied Typography I	2
2	DK2206	Applied Illustration	2
2	DK2208	Applied Photography	2
2	DK3103	Basic Animation	2
	DK3105	Visual Storytelling	3
	Total CREDITS = 15 CREDITS		

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# SCHOOL OF BUSINESS AND MANAGEMENT

In late December 2003, ITB has succeeded in putting an idea that has emerged since the 1970s into a realization, that is to develop a School of Business and Management to teach the skills needed in managing a business. To achieve success, other than business capabilities, ability to develop interpersonal relationships is also crucial.

Today, people who succeed as leaders and entrepreneurs realize that to build networks with others is one important factor in their success. Collaborating with many people with different backgrounds, cultures and countries is one of the capabilities that must be developed. Recent studies say that communication and network capabilities are very important for further development. Integrity, ethics and social responsibility, are important factors in achieving success.

School of Business and Management (SBM) has a vision to become the institution that successfully produces new leaders both in the field of business or entrepreneur. The missions are:

- To develop a world class institution that inspires the development of knowledge in business and management.
- To prepare graduates to be able to face rapid changes due to increasing global competition. Globalization requires us to be able to provide better products and services in order to compete in the challenges of future rapid changes. Global competition is increasing and becoming more complex, as marked by unexpected changes. Therefore, the abilities to promptly take decisions and be creative are needed to cope with these rapid changes.

## 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

Study program of Management 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 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, theoretical science masteries in business and management are further developed through direct involvement in business practices. The 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. In accordance with the business characteristics that must be carried out by students, they will also be trained to be able to face all the risk of failure as part of the learning and self-maturation process. Their profits 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, third year 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 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 Management

### Semester 1

MA1103	Mathematics for Business and Management	4
KU1101	Conceptual Science	2
KU1001	Sport	2
KU102X	English	2
KU1011	Scientific Writing in Indonesian	2
MB1101	Introduction to Management Science and Business	4
MB1102	Performance Art	2
Total = 18 CREDITS		
Total Credits at Year 1 = 36 CREDITS		

### Semester 2

MB1204	Artistic Recollection	2
KU1201	Natural and Universe Systems	2
KU1073	Introduction to Information Technology C	2
MB1201	Statistics for Business and Management	4
MB1202	Business Communication	4
MB1203	Study of Human Societies	4
Total = 18 CREDITS		

### Semester 3

MB2002	Psychology and Organizational Behavior	4
MB2003	Financial Accounting	4
MB2101	Leadership	2
MB2103	Integrative Business Experience I	5
MB2001	Management Practices	2
MB2102	Principles of Management	2
Total = 19 CREDITS		
Total Credits at Year 2 = 37 CREDITS		

### Semester 4

MB2004	Marketing	4
MB2005	Financial Analysis	4
MB2201	Economics	4
MB2202	Integrative Business Experience II	6
Total = 18 CREDITS		

### Semester 5

MB3102	Decision Making and Negotiation	4
MB3002	Business Information Systems	4
MB3003	Community Services	2
MB3101	Business Ethics and Law	3
MB3001	Entrepreneurship	3
MB3103	Corporate Finance	3
Total = 19 CREDITS		
Total Credits at Year 3 = 34 CREDITS		

### Semester 6

MB3004	Human Capital Management	4
KU206X		2
KU2071	Pancasila and Civic Education	2
MB3201	Technology and Operations Management	4
MB3202	International Business and Trade	3
Total = 15 CREDITS		

### Semester 7

MB4001	Strategic & Change Management	4
MB4102	Business Research Methods	2
MB4101	Environmental Management System	3
Total = 9 CREDITS		
Total Credits at Year 4 = 13 CREDITS		
Total CREDITS = 120 SKS		

### Semester 8

MB4099	Final Project	4
Total = 4 CREDITS		

## Selective Courses

MB4011	Performance Appraisal	3
MB4012	Cross Culture and Conflict Management	3
MB4013	Organizational Development and Learning Organization	3
MB4014	Contemporary People Management	3
MB4015	Compensation Management	3
MB4016	Labor Union and Industrial Relations	3
MB4017	Market Research	3
MB4018	Sales Management	3
MB4019	Brand Management	3
MB4020	Shopper Behavior	3
MB4021	Brand Communication	3
MB4022	Service Marketing	3
MB4023	Quality Management	3
MB4024	Performance Management	3
MB4025	Supply Chain Management	3
MB4026	Service Operations Management	3
MB4027	Project Management	3
MB4028	Operations Excellence Strategy	3
MB4029	Investment Management	3
MB4030	Business Risk and Venture Capital	3
MB4031	Managerial Accounting	3
MB4032	Financial Audit and Control	3
MB4033	Financial Planning	3
MB4034	Islamic Banking	3
MB4035	Capital Market	3
MB4036	Decision Analysis	3
MB4037	Simulation and Modeling	3
MB4038	Negotiation	3
MB4039	Game Theory	3
MB4040	Management Science	3
MB4041	Systems Theory and Application	3
MB4042	Innovation Practices	3
MB4043	Business Planning	3
MB4044	Business Initiation	3
MB4045	Managing Start-up Business	3
MB4046	Business Development	3
MB4047	Technology Management	3
MB4048	Creativity and Innovation	3
MB4049	Intrapreneurship	3
MB4050	Techno-preneurship	3
MB4051	Venture Capital Business	3
MB4052	Colloquium	1
MB4053	Servicescape Management	3
MB4054	Emotional Branding	3
MB4060	Entrepreneurship and Bio_industry Management	3
MB4061	Innovation Management	3
MB4062	Marketing Management	3
MB4063	Financial Management	3
MB4064	Creative Economy	3

## Minor Program

104	Microbiology
107	Pharmacy
116	-
121	Mining
122	Petroleum Engineering
130	Chemical Engineering
131	Mechanical Engineering
132	Electrical Engineering
133	Engineering Physics
134	Industrial Engineering
135	Informatics Engineering
136	Aerospace Engineering
137	Material Engineering
150	Civil Engineering
152	Architecture
153	Environmental Engineering
154	City Planning
172	Craft
173	Interior Design
174	Graphics Design
175	Product Design

## Minor Courses

Minor Program : Technology Management		
3	MB2004 Marketing	4
3	MB2005 Financial Analysis	4
3	MB2101 Leadership	2
3	MB3102 Decision Making and Negotiation	4
3	MB3201 Technology and Operations Management	4
Total CREDITS = 18 CREDITS		

Minor Program : General		
3	MB2004 Marketing	4
3	MB2101 Leadership	2
3	MB2201 Economics	4
3	MB3102 Decision Making and Negotiation	4
3	MB3201 Technology and Operations Management	4
Total CREDITS = 18 CREDITS		

## Address

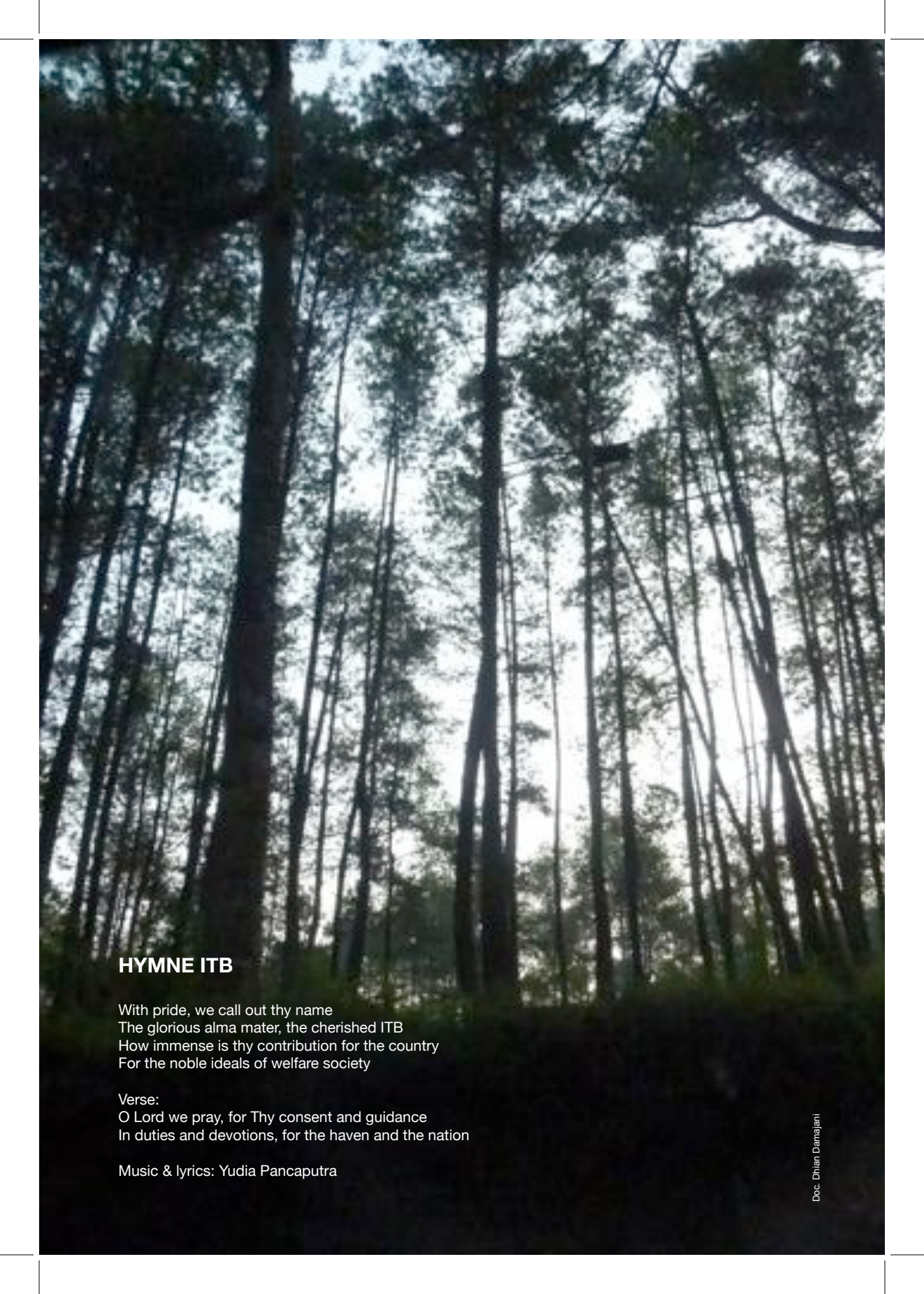
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## **HYMNE ITB**

With pride, we call out thy name  
The glorious alma mater, 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



