

## PUBLICATION AND RESEARCH ACTIVITIES

List of publication and research activities conducted by Mining Engineering Undergraduate Program (2014 – 2015):

1. Coal quality related to microfractures identified by CT-image analysis
2. Forward modeling of time domain Induced Polarization (TDIP) response for simple earth geometries
3. Mineralogical characteristics of tin alluvial deposit at Kundur Estuary deal with interpretation of sedimentation process
4. Limnic condition in ombrotrophic peat type as the origin of Muara Wahau coal, Kutai basin, Indonesia
5. Depositional environment of the Sangkarewang Oil Shale, Ombilin Basin
6. Depositional cycles of Muara Wahau coals, Kutai Basin, East Kalimantan
7. The resistivity structure of alluvial in geothermal prospect using time domain electromagnetic survey
8. "Horse-Shoe" Cu-Au porphyry orebody modeling based on blasthole data using unfolding technique
9. A 3D model of hydraulic conductivity distribution of fractured rocks using packer test result and geotechnical log
10. Geochemical characterization for prediction of acid rock drainage potential in hydrothermal deposit
11. Influence of test material properties characteristic to the breakdown pressure and crack length resulted by hydraulic fracturing testing in laboratory scale
12. Influence of weak plane on slope stability at limestone quarry
13. Rock excavation by continuous surface miner in limestone quarry
14. An evaluation of fly ash-overburden rock mixtures for a cover layer to prevent acid mine drainage generation in overburden dump
15. Blasting vibration control and effect on the fragmentation in a limestone quarry

## COLLABORATION

1. Summer School Program with Kyushu University (Japan)
2. Internship Program with University of New South Wales (Australia)
3. Joint Research Program with Kyoto University (Japan)
4. Governments Institution
5. Mining Industries in Indonesia  
(e.g. PT Atlas Copco Nusantara, PT Geoservices, PT Dassault Systemes Geovia Indonesia, PT Indika Energy, PT Freeport Indonesia, PT Newmont Nusa Tenggara, PT Newmont Minahasa Raya, PT Komatsu Indonesia, etc.)

## CAREER OPPORTUNITIES

1. Mining Industries, Mining Contractors
  - Coal (e.g. PT Bukit Asam, PT KPC, PT Kideco Jaya Agung, etc.)
  - Gold/Copper (e.g. PT Aneka Tambang, PT Freeport Indonesia, etc.)
  - Nickel (e.g. PT Aneka Tambang, PT Vale Indonesia, etc.)
  - Tin (e.g. PT Timah, etc.)
  - Cement Industries (e.g. PT Semen Indonesia, PT Indocement, etc.)
  - Mining Contractors (e.g. PT Pama Persada, PT Thiess, PT SIS, etc.)
2. Geological and Mining Consultants
3. Governments Institution
  - Ministry of Energy and Mineral Resources, Republic of Indonesia
  - Lecturer (ITB, University of Trisakti, University of Hasanuddin, etc.)
  - Researcher (Indonesian Institute of Sciences, Center for Geological Resources, etc.)

## FACULTY MEMBERS

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ST. (ITB, 2009), MT. (ITB, 2013)

### Academic Assistants:

1. Arie Naftali Hawu Hede, ST., MT.
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## MINING ENGINEERING UNDERGRADUATE PROGRAM



FACULTY OF MINING AND PETROLEUM ENGINEERING  
INSTITUT TEKNOLOGI BANDUNG



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# MINING ENGINEERING UNDERGRADUATE PROGRAM HISTORY

The history of Mining Engineering Undergraduate Program of ITB could be divided into two periods as follows:

## 1. Establishment Period: 1949 - 1959

Bandung Technical Institute (Bandung Technische Hoogeschool) was established in 1920 during the Dutch colonial time. It was the first technical higher education institute in Indonesia focusing in technical and natural science disciplines. After declaration of independence of the Republic of Indonesia, in 1948 Bandung Technical Institute became the Faculty of Technical Sciences (Faculteit van Technische Wetenschappen) and the Faculty of Natural Sciences (Faculteit van Wis en Natuurkunde) of the University of Indonesia.

In February 1948, a Mining Division focusing in Geologisch Exploratie Ingenieur (Geological Exploration Engineering) and Geoloog (Geology) study program was established under the Faculty of Technical Sciences. The teaching program started in July 1949 but only for the first and second year, then the study should be completed in TH Delft (the Netherlands). In the first batch there were six registered students. In 1950 Geology Division was established and moved to the Faculty of Natural Sciences.

Although having limited laboratory facilities, the teaching program in Mining Division went quite well with Dutch lecturers. More students were registered since 1950. The curriculum offered majors in mining exploration, mining engineering, mineral processing, and petroleum engineering after the third year. The political situation in mid 1950s enforced the Dutch lecturers to back home, but fortunately they were replaced by professors and lecturers from USA under the higher education collaboration agreement with the University of Kentucky. Some of the graduates recruited to be lecturer and they were sent to USA for 1-2 years or even more to improve their skill and knowledge through training or tertiary education scheme. The collaboration was terminated in 1965. Since then, the lecturers were all Indonesian.

## 2. Development Period: 1959 - now

After almost 10 years under the University of Indonesia, ITB as an independent government owned academic institution was declared in 1959 followed by the reorganization of departments. Mining and Geology Sections were under the Department of Mineral Technology (DTM). In 1962 the Rector of ITB declared the establishment of Petroleum Engineering Section under the DTM. The Mining Section consisted of mining exploration, mining engineering and metallurgical engineering, representing the flow chain of mining activity from finding of mineral deposit, development and extraction, to mineral processing. This scheme was reflected in the curriculum as an option. The students could choose the option in the third year.

In 1973, new academic system was introduced in ITB. The old system developed by the Dutch based on level was replaced by the credit hour system. After some years of implementation in ITB such system became the national standard.

Some internal organizational changes in ITB gave insignificant impacts to the study program but more impact in the administrative work. Such changes are summarized as follows:

- 1963-1973 : Mining Section under the Department of Mineral Technology
- 1973-1984 : Mining Engineering Department under the Faculty of Industrial Technology
- 1984-2000 : Mining Engineering Department under the Faculty of Mineral Technology
- 2000-2007 : Mining Engineering Department under the Faculty of Earth Sciences & Mineral Technology
- 2007-now : Mining Engineering Study Program under the Faculty of Mining and Petroleum Engineering

# MINING ENGINEERING UNDERGRADUATE PROGRAM

The Mining Engineering Undergraduate Program of ITB (ME-ITB) produces high competitive and excellent mine engineers to utilize and establish the conservation on coal and mineral resources with considering environmental insight in order to challenge the global competition.

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

Considering to the broad area of coverage of mining industry, the goals and objectives of education in ME-ITB were deployed into two options or majors since fifth semester, namely Mining Exploration supported by Earth Resources Exploration Research Group and Mining Engineering supported by Mining Engineering Research Group.

## 1. Mining Exploration

Mining Exploration Option aims to educate the students to be reliable mining exploration engineer with the skills and knowledge on earth resources exploration, be able to develop or implement earth resources exploration technology and to perform tasks efficiently and effectively, both in terms of time, cost and risk. With these criteria, students are expected to address challenges in discovery of mineral deposits and able to provide precise estimation on mineral reserves quantitatively, as well as to find new deposits required for the future and provide an overview of the possibilities of development of these earth resources.

## 2. Mining Engineering

Mining Engineering Option aims to educate the students to be reliable mining engineer with the skills and knowledge on minerals and coal extraction both on surface and underground, and be able to develop or implement mining technology and to perform tasks efficiently and effectively, in terms of time, cost and risk. With these criteria, students are expected to address challenges in extraction of mineral & coal resources and able to manage the development of mineral and coal resources based on the best mining practice concepts.



# CURRICULUM

## 1st SEMESTER

MA1101 Mathematics IA  
FI1101 Elementary Physics IA  
KI1101 Basic Chemistry IA  
KU1101 Intro. to Engineering & Design I  
KU1011 Indo. Language: Sci. Writing  
KU1164 Intro. to Mineral & Energy Res.

## 2nd SEMESTER

MA1201 Mathematics IIA  
FI1201 Elementary Physics IIA  
KI1201 Basic Chemistry IIA  
KU1201 Intro. to Engineering & Design II  
KU1072 Intro. to Information Tech. B  
KU102X English  
KU1001 Sports

## 3rd SEMESTER

MA2021 Matrices and Vector Spaces  
GL2111 Physical Geology  
GD2003 Introduction to Mapping  
TA2101 Crystallography & Mineralogy  
TA2102 Mining System  
TA2103 Engineering Mechanics  
TA2104 Fluid Mechanics

## 4th SEMESTER

MA2081 Elementary Statistics  
GL2213 Tectonophysics  
GL2242 Petrology  
SI2121 Intro. to Soil Mechanics  
TA2202 Mine Equip. & Mat. Handling  
TA2201 Numerical Method  
TA2203 Thermo. for Mining Eng.

## MINING EXPLORATION OPTION

### 5th SEMESTER

GL2212 Structural Geology  
TA3101 Genesis of Mineral Deposit  
TA3102 Rock Mechanics  
TA3103 Princ. of Reserves Est. Methods  
TA3104 Mine Investment Analysis  
TA3111 Mining Exploration Tech.  
KU2071 Pancasila & Civic Education

### 6th SEMESTER

MG3017 Mineral Processing  
TA3201 Geostatistics for Res. Modeling  
TA3202 Mining Geotechnics  
TA3203 Mine Valuation  
TA3211 Exploration Mapping  
TA3212 Geophysics of Mineral Deposit-1  
TA3213 Explor. Geochem. & Ore Analysis  
KU206x Religion and Ethics

## MINING ENGINEERING OPTION

### 5th SEMESTER

GL2212 Structural Geology  
TA3101 Genesis of Mineral Deposits  
TA3102 Rock Mechanics  
TA3103 Princ. of Reserve Est. Methods  
TA3104 Mine Investment Analysis  
TA3121 Mine Ventilation  
KU2071 Pancasila & Civic Education

### 6th SEMESTER

MG3017 Mineral Processing  
TA3201 Geostatistics for Res. Modeling  
TA3202 Mining Geotechnics  
TA3203 Mine Valuation  
TA3221 Explosives & Blasting Techniques  
TA3222 Drilling and Excavation  
TA3223 Mine Drainage System  
KU206x Religion and Ethics

## MINING EXPLORATION OPTION

### 7th SEMESTER

TA4101 Mine Planning  
TA4102 Mineral Economics  
TA4103 Mining Environment  
TA4111 Geophysics of Mineral Deposit-2  
TA4112 Management of Exploration  
XXxxxx Elective 1  
XXxxxx Elective 2  
XXxxxx Elective 3

### 8th SEMESTER

TA4201 OHS & Human Resources  
TA4202 Mining Policy  
TA4099 Final Assignment  
XXxxxx Elective 4  
XXxxxx Elective 5  
XXxxxx Elective 6  
XXxxxx Elective 7

## MINING ENGINEERING OPTION

### 7th SEMESTER

TA4101 Mine Planning  
TA4102 Mineral Economics  
TA4103 Mining Environment  
TA4121 Underground Stability  
TA4122 Mine Management  
XXxxxx Elective 1  
XXxxxx Elective 2  
XXxxxx Elective 3

### 8th SEMESTER

TA4201 OHS & Human Resources  
TA4202 Mining Policy  
TA4099 Final Assignment  
XXxxxx Elective 4  
XXxxxx Elective 5  
XXxxxx Elective 6  
XXxxxx Elective 7

There are at least 15 credit hours for elective courses should be taken by the students provided by Mining Engineering Undergraduate Program and ITB.