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 field 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 Systems Geovia Indonesia, PT Indika Energy, PT Freeporn Indonesia, PT Newmont Nusa Tenggara, PT Newmont Minahasa Raya, PT KMotomas Indonesia, etc.)

CAREER OPPORTUNITIES

1. Mining Industries, Mining Contractors
   • Coal (e.g. PT Bukit Asam, PT KPC, PT Kidexo Jaya Agung, etc.)
   • Gold/Copper (e.g. PT Aneka Tambang, PT Freeporn 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.)

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MINING ENGINEERING UNDERGRADUATE PROGRAM

FACULTY OF MINING AND PETROLEUM ENGINEERING
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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 merged under the Department of Mineral Technology (DMT). In 1962 the Rector of ITB declared the establishment of Petroleum Engineering Section under the DMT. 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:

   • 1983-1973: 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
FI101 Elementary Physics IA
KI1101 Basic Chemistry IA
KU1101 Intro. to Engineering & Design IA
KU1101 Indo. Language. Sci. Writing
KU1164 Intro. to Mineral & Energy Res.
KU1101 Sports

2nd SEMESTER
MA1201 Mathematics IB
FI102 Elementary Physics IB
KI1201 Basic Chemistry IB
KU1201 Intro. to Engineering & Design II
KU1202 Intro. to Information Tech. B
KU1201 Indo. Language. Sci. Writing
KU1201 Sports

3rd SEMESTER
MA2102 Matrices and Vector Spaces
GL2111 Physical Geology
GD2002 Intro. to Mapping
TA2101 Crystallography & Mineralogy
TA2101 Mining Systems
TA2103 Engineering Mechanics
TA2104 Fluid Mechanics

MINING EXPLORATION OPTION

5th SEMESTER
GL2112 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

MINING ENGINEERING OPTION

5th SEMESTER
GL2112 Structural Geology
TA3101 Genesis of Mineral Deposit
TA3102 Rock Mechanics
TA3103 Princ. of Reserves Est. Methods
TA3104 Mine Investment Analysis
TA3112 Mine Ventilation
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. Geochm. & Ore Analysis
KU206x Religion and Ethics

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 Geomodeling of Mineral Deposit-2
TA4112 Management of Exploration
XXXXx Elective 1
XXXXx Elective 2
XXXXx Elective 3

8th SEMESTER
TA4201 OHS & Human Resources
TA4202 Mining Policy

MINING ENGINEERING OPTION

7th SEMESTER
TA4101 Mine Planning
TA4102 Mineral Economics
TA4103 Mining Environment
TA4121 Underground Stability
TA4122 Mine Management
XXXXx Elective 1
XXXXx Elective 2
XXXXx Elective 3

8th SEMESTER
TA4201 OHS & Human Resources
TA4202 Mining Policy

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