

Module III: Introduction to Science and Technology

1.1. Module Objectives

On completion of this module, the students will have the ability to apply basic concept of science and technology in order to develop industries based on current problems

1.2. Module Data

Person in charge	Common First Year Unit (TPB)
Total Credits	8
Course	KU110- Introduction to engineering and design
	KU1073 Introduction to computation
	BI1201 Introduction to life sciences and technology
Modul Examination	Written Test

1.2.1. Sub-module I : Introduction to engineering and design

Course Name:	Introduction to engineering and design
Course Level:	Undergraduate
Abbreviation, if applicable:	KU1202
Sub-heading, if applicable:	
Course included in the module, if applicable:	
Semester/term:	2
Course coordinator(s):	Dr. Taufiq Mulyanto, ST. (Coordinator)
Lecturer(s):	to be determined in each semester
Language:	Bahasa Indonesia
Classification within the curriculum:	General Studies / Major Subject / Elective Studies
Teaching format / class hours per week during the semester:	3 hours lectures, 2 hours tutorial
Workload:	3 hours lectures, 2 hours tutorial and structured activities, 2 hours individual study, 2 hours laboratory work per week, 16 weeks per semester, and total 144 hours a semester
Workload details	Textbook reading assignment, group discussion and presentation
Classification within the curriculum:	General Studies / Compulsory Course/ Elective Course
Credit Points:	3
Requirements:	-
Learning goals/competencies:	After the course students hopefully have the following: Knowledge: – Describe what is engineering and design

	<ul style="list-style-type: none"> – Define the role of professional engineer and their responsibilities – Discuss the interrelation among engineering disciplines – Recognize the contemporary issues related to engineering discipline <p>Skills:</p> <ul style="list-style-type: none"> – Apply mathematics and basic sciences to solve simple engineering problem <p>Competences:</p> <ul style="list-style-type: none"> – Identify a simple engineering problem – Propose alternative solutions to solve the identified engineering problem
Teaching methods	Interactive Teaching
Contents	<p>This course activities consist of lectures and practice with scope:</p> <ul style="list-style-type: none"> • Engineering and design in society • Engineer as a profession • Aspects in engineering • Key elements of engineering analysis • Steps in solving problems • Concept of energy • Conversion and conservation • Examples of engineering discipline as well as ethics in engineering.
Literature / Sources	<ul style="list-style-type: none"> • Philip Kosky et al.. 2010. Exploring Engineering: An Introduction to Engineering and Design. Academic Press. • Saeed Moaveni. 2011. Engineering Fundamentals: An Introduction to Engineering. Cengage Learning. • Holtzapple & Reece. 2003. Foundations of Engineering. McGraw-Hill.
Other specialties	

1.2.2. Sub-module II : Introduction to computation

Course Name:	Introduction to computation
Course Level:	Undergraduate
Abbreviation, if applicable:	KU1102
Sub-heading, if applicable:	
Course included in the module, if applicable:	
Semester/term:	1
Course coordinator(s):	

Lecturer(s):	to be determined in each semester
Language:	Bahasa Indonesia
Classification within the curriculum:	General Studies / Major Subject / Elective Studies
Teaching format / class hours per week during the semester:	3 hours lectures, 2 hours tutorial
Workload:	3 hours lectures, 2 hours structured activities, 2 hours individual study, 16 weeks per semester, and total 144 hours a semester
Credit Points:	3
Requirements:	-
Learning goals/competencies:	<p>After the course students hopefully have the following:</p> <p>Knowledge:</p> <ul style="list-style-type: none"> – Describe the basic concepts of computer systems and organizations; different types of hardware and software and its utilization; as well as the basic concepts of communication networks, including the Internet. – Describe how to use the computers and communication networks ethically in various aspects of human life, especially that are related to student life in general and specifically at faculty / school. – Describe an understanding of positive and negative impacts and implications of the use of computers and communication networks. <p>Skills:</p> <ul style="list-style-type: none"> – Operate computers and communication networks ethically in relation to student life in general and specifically at faculty / school. <p>Competences:</p> <ul style="list-style-type: none"> – Demonstrate skill in operating the computer, internet, and productivity applications that suits the needs of the faculty / schools that are ready to develop independently in the later stages.
Content:	<p><i>This course introduces:</i></p> <ul style="list-style-type: none"> – <i>Information technology as a part of ethical development of creativity</i> – <i>The skill to work with various productivity applications that support students' academic and professional lives</i> – <i>The introduction to computer system and organization (hardware and software)</i>

	<ul style="list-style-type: none"> – <i>Communication network (including the internet)</i> – <i>The implications of the use of information technology in the aspects of human's life (especially the ones related to the life in the faculty/school)</i> – <i>The skill to work with the computer, internet, and various productivity applications required by the faculty/school.</i>
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of maximum mark of the exams, homework, laboratory work, and case based learning.
Forms of Media:	Interactive Teaching
Literature:	<ol style="list-style-type: none"> 1. G. Beekman and B. Beekman. 2012. Digital Planet: Tomorrow's Technology and You, Complete Tenth Edition. Prentice Hall. 2. B. K. Williams and S. C. Sawyer. 2011. Using Information Technology: A Practical Introduction to Computers and Communications, Ninth Edition Complete Version. Mc Graw Hill. 3. D. Morley and C. S. Parker. 2013. Understanding Computers: Today and Tomorrow, 14th Edition Comprehensive. Course Technology.
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1.2.3. Sub-module III: Introduction to Life Sciences and Technology

Course Name:	Introduction to Life Sciences and Technology
Course Level:	Undergraduate
Abbreviation, if applicable:	BI1201
Sub-heading, if applicable:	
Course included in the module, if applicable:	
Semester/term:	2
Course coordinator(s):	Prof. Dr. Tati Suriati Syamsudin MS.,DEADr.
Lecturer(s):	to be determined in each semester
Language:	Bahasa Indonesia
Classification within the curriculum:	General Studies / Major Subject / Elective Studies
Teaching format / class hours per week during the semester:	2 hours lectures
Workload:	2 hours lectures, 2 hours structured activities, 2 hours individual study, 16 weeks per semester, and total 144 hours a semester
Credit Points:	2
Requirements:	-

Learning goals/competencies:	The students will have the ability to apply basic concept of science and technology in order to develop industries based on current problems
Content:	<p>This course introduces:</p> <ul style="list-style-type: none"> – Introduction of life sciences and technology – Biosystem – Natural Resources – Technology System I – Technology System II – Biomangement – Bio-economy – Mid-Term Test – Sociocultural aspect in bioindustry – Energy-based bioindustry model – Food-based bioindustry model – Medical-based bioindustry model – Environmental-based bioindustry model – Material-based bioindustry model
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of maximum mark of the exams, homework, and case based learning.
Forms of Media:	Interactive Teaching
Literature:	<ol style="list-style-type: none"> 1. Ann Saterbak, Larry V. Mc Intire, Ka-Yiu San. Bioengineering Fundamentals. Pearson Prentice Hall Bioengineering. 2007 2. Joseph Fiksel. Design for Environment: Creating Eco-Efficient Products and Processes. McGraw-Hill. 1996 3. Bernard W., Taylor III. Introduction to Management Science (Sains Manajemen Edisi 8) Buku I dan II. Penerbit Salemba Empat. 2005 4. William W. Keller dan Richard J. Samuels. Crissis and Innovation in Asian Technology. Cambridge University Press. 2003
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