

Introduction to Engineering and Design

Module name		Introduction to Engineering and Design				
Module level		1 st year of Bachelor program				
Abbreviation, if applicable						
Sub-heading, if applicable						
Courses included in the module, if applicable		KU 1101 Introduction to Engineering and Design I KU 1201 Introduction to Engineering and Design II				
Semester/term		First year				
Module coordinator(s)		Dr. Taufiq Mulyanto, ST.				
Lecturer(s)		Dr. Taufiq Mulyanto, ST.				
Language		Indonesian				
Classification within the Curriculum		Compulsory courses for Bachelor Program in Biology				
Teaching format/ class hours per week during the semester		Lecture : 2 hours x 16 weeks per semester				
Workload	Total Workload	200 hours; 2 courses x 2 CU				
		Face to face teaching	Structured Activities	Independent Study	Exam	Total
	Lecture	64	64	64	8	200
Credit points		<i>Introduction to Engineering and Design I (2 CU) & Introduction to Engineering and Design II (2 CU)</i>				
Requirements						
Content	<p>1. Introduction to Engineering and Design I 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. <p>2. Introduction to Engineering and Design II This course activities consist of lectures and practice with scope:</p> <ul style="list-style-type: none"> • Class orientation and team preparation • Student team activities: problem definition and formulation, propose alternative solution and conceptual design, experiment/implementation of design solution, evaluation of design solution 					

Learning goals/ competencies	<p><i>After completion of this module students are expected to be able to:</i></p> <p>1. Introduction to Engineering and Design I</p> <p>Knowledge:</p> <ul style="list-style-type: none"> • Describe what is engineering and design • 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 <p>2. Introduction to Engineering and Design II</p> <p>Knowledge:</p> <ul style="list-style-type: none"> • Describe engineering design process • Describe the significance of design requirements • Recognize the importance of teamwork in engineering project <p>Skills:</p> <ul style="list-style-type: none"> • Relate and apply mathematics and basic sciences to simple engineering problems • Employ tools and determined materials to fulfill a specific design requirements <p>Competences:</p> <ul style="list-style-type: none"> • Apply engineering design process to solve simple engineering problems 	
Study/exam achievements	<ul style="list-style-type: none"> • <i>Midterm exam</i> • <i>Final exam</i> • <i>Assignment</i> • <i>Quizzes</i> 	
Forms of media	<i>Classical teaching tools:</i>	<i>white board/ chalk and talk, animation, power point</i>
	<i>Integrated teaching tools:</i>	-
	<i>Digital teaching tools:</i>	<i>Internet</i>
	<i>Problem based teaching tools:</i>	
Literature	<ol style="list-style-type: none"> 1. Philip Kosky et al.. 2010. Exploring Engineering: An Introduction to Engineering and Design. Academic Press. 2. Saeed Moaveni. 2011. Engineering Fundamentals: An Introduction to Engineering. Cengage Learning. 3. Holtzapple & Reece. 2003. Foundations of Engineering. McGraw-Hill. 	