

## STUDY PROGRAM

# MECHANICAL ENGINEERING

## COURSE OUTLINE

Mechanical engineering is one of the largest, broadest, and oldest engineering disciplines. It is concerned with the responsible development of products, processes, and power, whether at small scale or at the large scale, complex systems. Mechanical engineering principles and skills are needed at some stage during the conception, design, development, and manufacture of every human-made object with moving parts. Many innovations crucial to our future will have their roots in the world of mass, motion, forces, and energy—the world of mechanical engineers.

All of the educational programs in the department prepare students for professional practice in an era of rapidly advancing technology. They combine a strong base in the engineering sciences (mechanics, materials, fluid and thermal sciences, systems and control) with project-based laboratory and design experiences. All strive to develop independence, creative talent, and leadership, as well as the capability for continuing professional growth.

Mechanical engineers use the principles of energy, materials, and mechanics to design and manufacture machines and devices of all types. They create the processes and systems that drive technology and industry.

Mechanical engineers create products, machines, and technological systems for the benefit of society. Building on a foundation of physical science, mathematics, and an understanding of societal needs and responsibilities, they develop solutions across a wide range of fields from energy to medical devices, manufacturing to transportation, consumer products to environmental compatibility. The bachelor degree in Mechanical Engineering at IULI exposes each student to intellectual and practical experiences that form a basis from which to develop solutions, and provides an environment that allows for the accumulation of knowledge to extend the domain within which solutions can be formulated.

## FIELDS OF ACTIVITIES

The career paths of mechanical engineers are largely determined by individual choices, a decided advantage in a changing world. Mechanics, energy and heat, mathematics, engineering sciences, design and manufacturing form the foundation of mechanical engineering. Mechanics includes fluids, ranging from still water to hypersonic gases flowing around a space vehicle; it involves the motion of anything from a particle to a machine or complex structure.

Graduates of the program have many professional options and opportunities, from entry-level work as mechanical engineers to graduate studies in either an engineering discipline or in another field where a broad engineering background is useful.

Mechanical engineers typically do the following:

- Analyze problems to see how mechanical and thermal devices might help solve the problem
- Design or redesign mechanical and thermal devices using analysis and computer-aided design
- Develop and test prototypes of devices they design
- Analyze the test results and change the design as needed
- Oversee the manufacturing process for the device



Photo: International University Liaison Indonesia

# CURRICULUM 2017-2018

Date/ Rev : 08 AUGUST 2017/ Rev. 08  
 Program : Bachelor  
 Valid : Batch 2017-2018

## STUDY PROGRAM : MECHANICAL ENGINEERING

SUBJECTS									
University Compulsory Subjects	1	2	3	4	5	6	7	8	Total
English	2	2	2	2	1	1			10
Computer Network & IT Security	2								2
Applied Statistics		2							2
Research Methodology		2							2
Environment Sciences			2						2
Civics				2					2
Ethics and Religious Philosophy					2				2
Innovation & Product Development					2				2
E-Commerce						2			2
Indonesian Language & Culture						2			2
Pancasila						2			2
Oral Final Study Examination (OFSE)						0			0
Research Semester							6		6
Internship / Project								3	3
Thesis / Thesis Defense								6	6
<b>Total</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>6</b>	<b>9</b>	<b>45</b>
Engineering Faculty Compulsory Subjects	1	2	3	4	5	6	7	8	Total
Introduction to Engineering	1								1
Chemistry	2								2
Material Science	2								2
Mathematics 1, 2	3	3							6
Physics & Laboratory 1, 2	3	3							6
Algorithm, Programming 1, 2	3	3							6
Electrical Engineering & Laboratory 1, 2	3	3							6
Engineering Drawing / CAD 1*	3								3
Statics and Mechanics of Materials *		4							4
Manufacturing Process *			2						2
Applied Mathematics			3						3
Metrology and Quality Control			2						2
Computer Aided Design - CAD 2 **			3						3
Engineering Economy ***					2				2
System Design 1, 2 ***					3	3			6
Engineering Management ***						2			2
<b>Total (Exclude: ** COS, ** ELE, *** INE)</b>	<b>20</b>	<b>16</b>	<b>10</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>56</b>
Mechanical Engineering Compulsory Subjects	1	2	3	4	5	6	7	8	Total
Machine Elements			3						3
Thermo-Fluid Science 1, 2			2	2					4
Material & Metal Forming				3					3
Computer Aided Manufacturing (CAM)				3					3
Kinematics & Dynamic of Machines				3					3
Control Technique				3					3
Advanced Machine Element				4					4
Assembly & Manufacturing Support Technique					2				2
Quality Assurance					3				3
Mechanical Vibration					3				3
Introduction to Mechatronics				2					2
Computer Aided Engineering (CAE)						3			3
Pneumatics & Hydraulics						3			3
Elective Subjects (*)					4	4			8
<b>Total</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>20</b>	<b>12</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>47</b>
<b>Total 1, 2, 3</b>	<b>24</b>	<b>22</b>	<b>19</b>	<b>24</b>	<b>22</b>	<b>22</b>	<b>6</b>	<b>9</b>	<b>148</b>
Extra Curricular	1	2	3	4	5	6	7	8	Total
German Language	2	2	2	2	2	2			12
<b>Total</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>12</b>

Subject to change

The actual implementation follows the internal arrangements & policy of the Department & Faculty

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