

SYLLABUS

Date / Revision : 04 September 2017/ 03
Faculty : Engineering
Study Program : AUE

SUBJECT: Introduction to Mechatronics

1 Basic Information

1.01	Subject Name	Introduction to Mechatronics
1.02	Semester	3
1.03	Level	3
1.04	SKS	2
1.05	Mandatory / Curriculum	Mandatory / D-07
1.06	Subject Code	IMTE
1.07	Subject Code	MEE-D-IMTE-4107
1.08	Year	2017 (7)
1.09	Quality Control	Final Test, see evaluation
1.10	Limitations	Min 12, Max 32 students in a class
1.11	Combined with	--
1.12	Perquisite	Manufacturing Process, CAD 2
1.13	Responsible	Dipl.-Ing. Erry G Wiriaatmadja NDS CAD/CAM
1.14	Revision	04 September 2017

2 Description of Subject

Introduction to Mechatronic Engineering course prepare the students the mechatronics study. This course will explain how the integration of the mechanical is and electrical engineering disciplines within a unified framework combined. The students will be guided in using laboratory-based design experiences form subject's core, which methods are important to graduate successfully in the study, including the final project: Topics choice: low-level interfacing of software with hardware; use of high-level graphical programming tools to implement real-time computation tasks; digital logic; analog interfacing and power amplifiers; measurement and sensing; electromagnetic and optical transducers; Control of mechatronic systems.

3 Objectives

- Introduces the application of mechatronics in Engineering area
- Introduce the how to integrate mechanical – electrical.
- Introduce the principle of automation and control technology
- Introduce the principles of mechatronics by integrating some disciplines in one system.

4 Competency

After finished the course, students are expected to:

- Explain the field of study in Mechatronics Engineering study.
- The interconnection of subjects in the study program;
- Name example of mechatronic products

5 Learning Approach / Methodology

- Approach : Combination of Expository - inquiry and colaborative
- Method : Discussion, question answer, sample problem, group work
- Student Task : Presentation, homework
- Media : LCD projector, film.

6 Evaluation

5.1	Absence maximum	25%
5.2	Participation in Discussion	05 Points
5.3	Homework / Classwork	05 Points
5.4	Presentation /Simulation	10 Points
5.5	Daily Quiz	20 Points
5.6	Final Examination	60 Points
	Total	100 Points

7 Text Book and Reference

1	<p>Main Text Book:</p> <ul style="list-style-type: none"> “Introduction to Mechatronics and Measurement Systems-4Ed”, Authors: David G. Alciatore, Publisher: McGraw Hill Higher Education, ISBN-13: 978-0-07-338023-0.
2	<p>Supplementary Text books:</p> <ul style="list-style-type: none"> “Mechatronics: Electronic Control Systems in Mechanical Engineering-5Ed”, Author: W. Bolton, Publisher: Pearson Higher Educations, ISBN: 13: 9780273742890; “Mechatronics 2013: Recent Technological and Scientific Advances”, Editors: Březina, Tomáš, Jabłoński, Ryszard, Publisher: Springer International Publishing Switzerland 2014, ISBN: 978-3-319-02294-9; “Mechatronics System Design”, Authors: Devdas Shetty, Richard A. Kolk, Publisher: Cengage Learning, ISBN: 13: 978-1-4390-6199-2.

8 Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book Chapter	Remark
1	<p>Course Organization Introduction to Mechatronics Study Program:</p> <ul style="list-style-type: none"> Course structure, policy and regulation 		
2-3	<p>History Mechatronics Background:</p> <ul style="list-style-type: none"> Classical Mechanical Engineering, Electrical Engineering, and Computer Science study 		
4	<p>Example of Mechatronics Product:</p> <ul style="list-style-type: none"> Air condition, Refrigerator: Components and Functions 		Quiz
5	<p>Example of Mechatronics Product: Industrial Robot: Components and Functions</p>		
6	<p>Example of Mechatronics Product: Transport System: Components and Functions</p>		Quiz
7	<p>Example of Mechatronics Product: Manufacturing System: Components and Functions</p>		
8	MIDTERM SEMESTER BREAK		

9	Example of Mechatronics Product: Oil & Gas Company: Components and Functions		Quiz
10	Example of Mechatronics Product: Medical Engineering System: Components and Functions		
11	Trend in Electronic-components growth: Consumer products, Industrial applications, Transportation Systems, Military and Aerospace		
12,13	Trend in Software Development Development in Operating system, Data communication, Application SW, Interface and Computer Vision.		Quiz
14	Social Effect of Mechatronics Engineering Development Effect of automation systems in the Social life, Manufacturing system, environmental, and others.		
15	Wrap up the whole semester course / Review the Semester		Discussion
16	Final Examination		