

SYLLABUS

Date/ Revision	23 May 2015
Faculty	Engineering
Approval	Dean of Engineering Faculty

SUBJECT : INTRODUCTION TO MECHATRONICS ENGINEERING

1. Identification of Subject:

Name of Subject	: Introduction to Mechatronics Engineering
Code of Subject	: IMTE-1000
SKS / ECTS	: 1/1
Semester	: 1
Study Program	: B-MTE
Lecturer	: Dipl.-Ing. Maralo Sinaga / Dr. Tutuko Pajogo, MSMfgE

2. Competency

After having 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.

3. Description of Subject:

Introduction to Mechatronics Engineering course prepare the students the mechatronics study. This course will explain how the integration of the mechanical 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.

4. Learning Approach

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

5. Evaluation

- a) Absence maximum : 25%
- b) Participation in discussion : 5 points
- c) Homework, Classwork : 5 points
- d) Presentation, Simulation : 10 points
- e) Daily Quiz : 20 points
- f) Final Examination : 60 points

Total : 100 points

6. Contents/ Topics of Lecturing:

Week	Content/ Topics of Lecturing	Text Book Chapter	Remark
1	Introduction to Mechatronics Study Program: <ul style="list-style-type: none"> Course structure, policy and regulation 		
2-3	History Mechatronics Background: <ul style="list-style-type: none"> Classical Mechanical Engineering, Electrical Engineering, and Computer Science study 		
4	Example of Mechatronics Product: Air condition, Refrigerator: Components and Functions		Quiz
5	Example of Mechatronics Product: Industrial Robot: Components and Functions		
6	Example of Mechatronics Product: Transport System: Components and Functions		Quiz
7	Example of Mechatronics Product: Manufacturing System: Components and Functions		
8	Example of Mechatronics Product: Oil & Gas Company: Components and Functions		Quiz
9	Example of Mechatronics Product: Medical Engineering System: Components and Functions		
10-12	Trend in Electronic-components growth: Consumer products, Industrial applications, Transportation Systems, Military and Aerospace		
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	Final Examination		

7. Book Reference:

file: IMTE-1000 Introduction to Mechatronics Engineering

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QT 06.02/Rev.03

a) **Main Text Book:** *“Introduction to Mechatronics and Measurement Systems-4Ed”*, **Authors:** David G. Alciatore, Publisher: McGraw Hill Higher Education, **ISBN-13:** 978-0-07-338023-0.

b) **Supplement Textbooks:**

- *“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.