

SYLLABUS CURRICULUM

COURSE	Course Name : Polymer and Composite
	Course Code : TM184885
	Credit : 3 sks
	Semester : Optional

COURSE DESCRIPTION

This course provides material on the relationship between the structure and the mechanical properties of the composite polymer material, the method of analyzing the mechanical properties of the composite polymer material as well as the production technique. By following this course, students are expected to have the ability to choose and fabricate composite materials for specific purposes in an industry.

LEARNING OUTCOMES

LO8	Able to implement mathematics, science and engineering principles to solve engineering problems in mechanical systems.
LO9	Able to find the source of engineering problems in mechanical system through research that includes identification, formulation, analysis, data interpretation based on engineering principles.
LO10	Able to formulate the solution of engineering problem in mechanical system by considering economy, safety, environment and energy conservation.
LO11	Able to design mechanical system and the necessary components through analytical approach based on science and technology by considering technical standard and reliability.

COURSE LEARNING OUTCOMES

Student be able to analyze relation between structure and mechanics characteristics of polymer and composite material, analyze the production technique of polymer and composite material, understanding and using method of analyzing mechanics characteristics of composite material, and be able to choose and engineer laminate shaped of composite material.

MAIN SUBJECT

The focus of this course are as follows:

- mechanics characteristic of fiber material and compiler matrix of composite material,
- production technique of composite material,
- analyze the micromechanics and macromechanics of composite material.
- anisotropic material concept,
- laminate shaped of composite material,

- micromechanics and macromechanics constant elastic analysis,
- failure analysis of composite material.

PREREQUISITES

Metallurgy

REFERENCE

1. D.Hull, An Introduction to Composite Materials, 1st Ed., Cambridge University Press, 1981
2. N.G. McCrum, C.P. Buckley and C.B. Bucknall, Principles of Polymer Engineering, 1st Ed., Oxford University Press, 1988
3. R.F. Gibson, Principles of Composite Material Mechanics, McGraw-Hill, Inc., 1994
4. G.Z. Voyadjis, P.I. Kattan, Mechanics of Composite Materials with MATLAB, Springer, 2005
5. S.K. Mazumdar, Composite Manufacturing, CRC Press, 2002
6. P.K. Mallick, Fibre Reinforced Composites: Materials, Manufacturing and Design , CRC Press, 2007