

Class Syllabus – Fall Semester, 115 Academic Year

Department of Mechanical Engineering, National Chung Cheng University

Course Name: : Applied Mechanics (I)				Dept. ME	
				Course Code 4221001 4211001	
Instructors	De-Shin, Liu	Credits	3	Compulsory	Grade 一年級
EMI	☒ Yes ☐ No				
Course type	☐ Humanistic Care Course ☒ Problem-oriented Course ☐ Integrate the curriculum ☐ Internship ☐ Competition Special Course ☐ Topic-based courses ☐ Practical courses ☐ Other				
Prerequisites : Have a basic understanding of Newtonian mechanics, vectors, and fundamental calculus concepts. Class Description : Establish mathematical models of mechanics and apply them to engineering problems and practical mechanical operations. Class Objective : 1. Develop the ability to analyze the forces acting on an object and draw its free-body diagrams. 2. Learn to describe forces and moments acting on an object using coordinate systems. 3. Establish force and moment equilibrium diagrams and determine the force and moment states of an object. 4. Understand the concepts of center of gravity and center of mass and determine the moment of inertia of an object. 5. Learn to analyze the forces in a system using the concept of energy. 6. Cultivate students' logical thinking skills, enabling them to analyze system conditions. 7. Develop students' ability to think independently and solve problems in engineering mechanics.					
Textbooks	R. C. Hibbeler, <i>Engineering Mechanics STATICS</i> , 14th Edition, Pearson, 2017.				
An overview of the main points of teaching					
Teaching Materials	☐ PPT ☐ Self-edited textbooks ☐ Self-made instructional videos ☒ Course handouts ☒ Teaching Procedures ☐ Other				
Teaching Methods	☒ Lectures ☐ Oral presentation ☐ Case studies ☐ Group discussion ☐ Problem-oriented learning ☐ Other				

Evaluation Tools	☒ Mid-term Exam		☒ Final Exam		
	☐ In-class Quiz ☐ Homework ☐ Final Report ☐ Other	☐ In-class homework ☐ Mid-term Report ☐ Special Report ☐ Scales			
Teaching Resources	☒ Course website ☐ Electronic files of textbooks are available for download ☐ Internship website				
Instructor's Information					
Course Outlines		Teaching Hours			Core Competence
Unit Title	Contents	Lectures	Demo	Practice	
Vectors	1. Cartesian Coordinate 2. Dot product and Cross production	2			B1, B6
Force	1. Force System Resultants 2. Internal Force 3. Friction	10			B1, B5
Equilibrium	1. Equilibrium of a Particle 2. Equilibrium of a Rigid Body	8			B1, B5, B6
Structural	Structural Analysis	4			B1, B5, B6
Moment	Moment of Inertia	4			B1, B5, B6
Geometry	Center of Gravity and Centroid	4			B1, B5, B6
Energy	Virtual Work	4			B1, B5, B6
Achievable Core Competence		Achievable Objective			
B1	Possess the ability of basic engineering mathematics, solid mechanics, heat flow mechanics, automatic control, materials science and opto-mechanical integration engineering practical analysis	Possess the ability to perform basic engineering mechanics analysis.			
B5	Mechanical and opto-electromechanical systems, component design and process planning capabilities	The ability to analyze and plan mechanical mechanics systems.			
B6	Ability to identify, analyze and solve professional problems	The ability to identify, analyze, and solve professional mechanics problems.			

Weekly teaching plan				
Course Time	Course Location	Grading	Office hour	Teaching quality evaluation method
Wednesday 4:10-7:00 pm	116	class attendance 10% Two midterm exams and one final exam: 30% each		Questionnaire
Weeks	Teaching & Homework Progress			Note
1	General Principles			
2	Force Vectors			
3	Force Vectors			
4	Equilibrium of a Particle			
5	Equilibrium of a Particle			
6	Force System Resultants			
7	Equilibrium of a Rigid Body			1 st Midterm
8	Equilibrium of a Rigid Body			
9	Structural Analysis			
10	Structural Analysis			
11	Internal Forces			
12	Friction			2 nd Midterm
13	Center of Gravity and Centroid			
14	Moments of Inertia			
15	Moments of Inertia			
16	Virtual Work			Final