Tamkang University Academic Year 113, 1st Semester Course Syllabus

Course Title	APPLIED MECHANICS (II)	Instructor	JUANG, CHIA-WEI
Course Class	TEBXB2A DEPARTMENT OF MECHANICAL AND ELECTRO-MECHANICAL ENGINEERING, 2A	Details	◆ General Course ◆ Required ◆ One Semester ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education SDG9 Industry, Innovation, and Infrastructure		

Departmental Aim of Education

Ⅰ. To prepare students with a solid background in applied sciences and engineering to enter the field of mechanical and electromechanical engineering.

Ⅱ. To train emerging engineers who possess the professional expertise and superior engineering ethics to meet the needs and expectations of the local community and global society.

Ⅲ. To instill in students a lifelong love of learning that extends beyond basic skills to acquire attributes of flexibility and adaptability in a diverse and competitive global marketplace.

Subject Departmental core competences

A. Head: Knowledge of mechanical and electromechanical engineering.(ratio:30.00)

B. Hand: Hands-on skills and practical realization.(ratio:30.00)

C. Heart: Love of learning and innovation.(ratio:30.00)

D. Eye: Vision of progress and improvements.(ratio:10.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)
2. Information literacy. (ratio:30.00)
3. A vision for the future. (ratio:10.00)
4. Moral integrity. (ratio:5.00)
5. Independent thinking. (ratio:30.00)
6. A cheerful attitude and healthy lifestyle. (ratio:5.00)
7. A spirit of teamwork and dedication. (ratio:5.00)
8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction	The course introduces methods to analyze and solve dynamics problems. It includes the kinematics and kinetics of particles and rigid bodies. The concepts of Newton's 2nd law, the work and energy method, the impulse and momentum method, and impact are covered.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.

II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.

III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	To understand position, velocity and acceleration analysis of particles and rigid bodies.	Cognitive
2	To understand the concept of work and energy method.	Cognitive
3	To understand the concept of impulse and momentum metohd	Cognitive
4	Students will learn the ability to analyze and solve dynamics problems.	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCD	12345678	Lecture, Discussion	Testing, Study Assignments
2	ABCD	12345678	Lecture, Discussion	Testing, Study Assignments
3	ABCD	12345678	Lecture, Discussion	Testing, Study Assignments
4	ABCD	12345678	Lecture, Discussion	Testing, Study Assignments

Course Schedule			
Week	Date	Course Contents	Note
1	113/09/09 ~ 113/09/15	Introduction/ Kinematics of particles	
2	113/09/16 ~ 113/09/22	Kinematics of particles (Position, Velocity and Acceleration)	
3	113/09/23 ~ 113/09/29	Kinematics of particles (Curvilinear Motion of Particles)	
4	113/09/30 ~ 113/10/06	Kinematics of particles (Non-rectangular components)	
5	113/10/07 ~ 113/10/13	Kinetics of particles (Newton's 2nd law)	
6	113/10/14 ~ 113/10/20	Kinetics of particles (Momentum)	
7	113/10/21 ~ 113/10/27	Kinetics of particles (Work and Energy)	
8	113/10/28 ~ 113/11/03	Kinetics of particles (Impulse and Momentum)	
9	113/11/04 ~ 113/11/10	Midterm Exam	
10	113/11/11 ~ 113/11/17	Kinematics of rigid bodies (Plane motion of rigid bodies)	
11	113/11/18 ~ 113/11/24	Kinematics of rigid bodies (Plane motion of rigid bodies)	
12	113/11/25 ~ 113/12/01	Kinematics of rigid bodies (Instantaneous Center of Rotation)	
13	113/12/02 ~ 113/12/08	Kinetics of rigid bodies	
14	113/12/09 ~ 113/12/15	Kinetics of rigid bodies	
15	113/12/16 ~ 113/12/22	Kinetics of rigid bodies (Energy and work)	
16	113/12/23 ~ 113/12/29	Kinetics of rigid bodies (Impulse and momentum)	
17	113/12/30 ~ 114/01/05	Final Exam/Final Assessment Week	
18	114/01/06 ~ 114/01/12	Flexible Teaching Week: Generally, no in-person classes; teachers may arrange teaching activities or final assessments, among other options.	
Key capabilities		self-directed learning Problem solving	

Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)
Distinctive teaching	
Course Content	Logical Thinking
Requirement	The teaching materials are written in English. All exams are conducted in English.
Textbooks and Teaching Materials	Self-made teaching materials:Presentations Using teaching materials from other writers:Textbooks Name of teaching materials: Beer, F. P., Johnston, E. R., Eisenberg, E., and Cornwell, P, Vector Mechanics for Engineers, Dynamics, 12th edition in SI units, McGraw-Hill, Boston, USA. 2020
References	
Grading Policy	◆ Attendance： % ◆ Mark of Usual：20.0 % ◆ Midterm Exam： 30.0 % ◆ Final Exam： 30.0 % ◆ Other〈assignments〉：20.0 %
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**