Tamkang University Academic Year 110, 1st Semester Course Syllabus

Course Title	DYNAMICS		Instructor	TYAN FENG
Course Class	TENXB2B DEPARTMENT OF AEROSPACE ENGINEERING, 2B		Details	◆ General Course ◆ Required ◆ One Semester
Relevance to SDGs	SDG4 Quality education SDG15 Life on land			

Departmental Aim of Education

Ⅰ. Apply scientific knowledge and engineering techniques to analyze and solve fundamental aerospace engineering problem.

Ⅱ. Through fundamental theory to design and implement experiments, and be able to analyze experimental data.

Ⅲ. Maintain the spirit of independent thinking, self-elevate, and continuous learning.

Ⅳ. Uphold the responsible attitude of work ethics and team work.

Ⅴ. Will have access to information, using basic knowledge, diversification, and better ability to adapt to circumstances.

Subject Departmental core competences

A. With basic aerospace engineering expertise.(ratio:30.00)

B. Able to solve basic engineering problems via fundamental theory.(ratio:30.00)

C. Capable of lifelong learning and research capacity for further studies.(ratio:12.50)

D. To work with a sense of mission and responsibility.(ratio:5.00)

E. Have team spirit and the ability to communicate with each other.(ratio:12.50)

F. With an international perspective, have the ability to connect with the world.(ratio:5.00)

G. Taking full advantage of information and utilization of computer-assisted problem solving skills.(ratio:5.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)

2. Information literacy. (ratio:50.00)

3. A vision for the future. (ratio:10.00)

5. Independent thinking. (ratio:30.00)

	Course Introduction	Develop an understanding of particle and planar rigid body kinematics and kinetics. Obtain an understanding of Newton's Laws of Motion, and the ability to apply energy and momentum methods to particles and rigid bodies in planar motion. Exposure to simple vibrations.

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	A knowledge of kinematic and kinetic analysis for particles and systems of particles.	Cognitive
2	A knowledge of momentum and energy methods for particles and systems of particles.	Cognitive
3	A knowledge of kinematic and kinetic analysis for rigid bodies.	Cognitive
4	A knowledge of momentum and energy methods for rigid bodies.	Cognitive
5	5.A basic understanding of vibrations in one degree of freedom systems.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEFG	1235	Lecture, Discussion, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum

2	ABCDEFG	1235	Lecture, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum
3	ABCDEFG	1235	Lecture, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum
4	ABCDEFG	1235	Lecture, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum
5	ABCDEFG	1235	Lecture, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum

Course Schedule

Week	Date	Course Contents	Note
1	110/09/22 ~ 110/09/28	Kinematics of a Particle	R.C.H.12, Y.H.W.01-06
2	110/09/29 ~ 110/10/05	Kinematics of a Particle	R.C.H.12, Y.H.W.01-06
3	110/10/06 ~ 110/10/12	Kinetics of a Particle: Force and Acceleration	R.C.H.13, Y.H.W.07-14
4	110/10/13 ~ 110/10/19	Kinetics of a Particle: Force and Acceleration	R.C.H.13, Y.H.W.07-14
5	110/10/20 ~ 110/10/26	Kinetics of a Particle: Work and Energy	R.C.H.14, Y.H.W.15,16,18
6	110/10/27 ~ 110/11/02	Kinetics of a Particle: Impulse and Momentum	R.C.H.15, Y.H.W.19-22
7	110/11/03 ~ 110/11/09	Kinetics of a Particle: Impulse and Momentum	R.C.H.15, Y.H.W.19-22
8	110/11/10 ~ 110/11/16	Planar Kinematics of a Rigid Body	R.C.H.16, Y.H.W.23-28
9	110/11/17 ~ 110/11/23	Midterm Exam Week	
10	110/11/24 ~ 110/11/30	Planar Kinematics of a Rigid Body	R.C.H.16, Y.H.W.23-28
11	110/12/01 ~ 110/12/07	Planar Kinetics of a Rigid Body: Force and Acceleration	R.C.H.17, Y.H.W.29-32
12	110/12/08 ~ 110/12/14	Planar Kinetics of a Rigid Body: Force and Acceleration	R.C.H.17, Y.H.W.29-32
13	110/12/15 ~ 110/12/21	Planar Kinetics of a Rigid Body: Work and Energy	R.C.H.18, Y.H.W.33
14	110/12/22 ~ 110/12/28	Planar Kinetics of a Rigid Body: Work and Energy	R.C.H.18, Y.H.W.33
15	110/12/29 ~ 111/01/04	Planar Kinetics of a Rigid Body: Impulse and Momentum	R.C.H.19, Y.H.W.34

16	111/01/05~111/01/11	Planar Kinetics of a Rigid Body: Impulse and Momentum	R.C.H.19, Y.H.W.34
17	111/01/12~111/01/18	Three-Dimensional Kinetics of a Rigid Body (if time allows)	R.C.H.20
18	111/01/19~111/01/25		

Requirement	1. You are required to watch the following videos before coming to class. https://www.youtube.com/playlist?list=PLLbvVfERDon1xk3wGaYfXSmGa1u83mGn- 2. Work hard
Teaching Facility	Computer, Projector
Textbooks and Teaching Materials	R. C. Hibbler, "Engineering Mechanics, Dynamics", 14th ed, Pearson
References	J. L. Meriam, L.G. Kraige and J.N. Bolton, "Engineering Mechanics, Dynamics", 8th ed, Wiley R.W. Soutal-Little, D.J. Inman and D.S. Balint, " Engineering Mechanics, Dynamics, Computational Edition", Thomson A. Bedford and W. Fowler, "Engineering Mechanics, Dynamics", 5th ed, Pearson, Prentice Hall
Number of Assignment(s)	8 (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： % ◆ Mark of Usual：15.0 % ◆ Midterm Exam： 35.0 % ◆ Final Exam： 50.0 % ◆ Other〈 〉： %
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.**