Tamkang University Academic Year 112, 1st Semester Course Syllabus

Course Title	AIRCRAFT PERFORMANCE ANALYSIS	Instructor	KUAN OU YANG
Course Class	TENXB3P DEPARTMENT OF AEROSPACE ENGINEERING, 3P	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG4 Quality education SDG8 Decent work and economic growth SDG9 Industry, Innovation, and Infrastructure		

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:20.00)

C. Capable of lifelong learning and research capacity for further studies.(ratio:10.00)

D. To work with a sense of mission and responsibility.(ratio:10.00)

E. Have team spirit and the ability to communicate with each other.(ratio:10.00)

F. With an international perspective, have the ability to connect with the world.(ratio:10.00)

G. Taking full advantage of information and utilization of computer-assisted problem solving skills.(ratio:10.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:20.00)

2. Information literacy. (ratio:20.00)

3. A vision for the future. (ratio:20.00)

4. Moral integrity. (ratio:5.00)

	5. Independent thinking. (ratio:20.00) 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 objective of this course is to present the fundamental of airplane design. The airplane will be treated as a point mass and the equations of motion are derived. The only parameters which determine the performance of an airplane are wing loading, lift-to-drag ratio, thrust-to-weight ratio, and the (thrust) specific fuel consumption of the powerplant. The performances to discuss are descent and glide, cruise which includes range and endurance, climb, turn, take-off, and landing.

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	1. Students should understand the performance specifications of aerial vehicles.	Cognitive
2	Develop students' ability to analyze engineering problems with mathematics and physics theorems.	Psychomotor

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ACEF	13458	Lecture, Discussion	Testing, Discussion(including classroom and online)
2	BDG	267	Lecture, Discussion, Practicum	Testing

Course Schedule

Week	Date	Course Contents	Note

1	112/09/11 ~ 112/09/17	Introduction	
2	112/09/18 ~ 112/09/24	Aerodynamics of the Airplane (I)	
3	112/09/25 ~ 112/10/01	Aerodynamics of the Airplane (II)	
4	112/10/02 ~ 112/10/08	Aerodynamics of the Airplane (III)	
5	112/10/09 ~ 112/10/15	Airplane Propulsion Systems	
6	112/10/16 ~ 112/10/22	Test 1	
7	112/10/23 ~ 112/10/29	Equation of Motion (I)	
8	112/10/30 ~ 112/11/05	Equation of Motion (II)	
9	112/11/06 ~ 112/11/12	Midterm Exam Week	
10	112/11/13 ~ 112/11/19	Equation of Motion (III)	
11	112/11/20 ~ 112/11/26	Steady Flight - Thrust Required, Power Required (I)	
12	112/11/27 ~ 112/12/03	Steady Flight - Thrust Required, Power Required (II)	
13	112/12/04 ~ 112/12/10	Test 2	
14	112/12/11 ~ 112/12/17	Steady Flight - Climb Performance	
15	112/12/18 ~ 112/12/24	Steady Flight - Range, Endurance	
16	112/12/25 ~ 112/12/31	Accelerated Flight - Maneuvering and Flight Envelope	
17	113/01/01 ~ 113/01/07	Final Exam Week	
18	113/01/08 ~ 113/01/14	Flex week, learning activities should be arranged.	
Key capabilities		self-directed learning Problem solving	
Interdisciplinary			
Distinctive teaching			

Course Content	Logical Thinking
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations Using teaching materials from other writers:Textbooks Name of teaching materials: Aircraft Performance, Maido Saarlas, John Wiley & Sons, Inc., 2007.
References	Aircraft performance-An Engineering Approach, Mohammad H. Sadraey, Taylor & Francis Group, 2017. Aircraft Performance & Design, John D. Anderson, McGraw-Hill, 1999.
Grading Policy	◆ Attendance： 10.0 %　◆ Mark of Usual：30.0 %　◆ Midterm Exam： 30.0 % ◆ Final Exam： 30.0 % ◆ 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.**