

Tamkang University Academic Year 107, 2nd Semester Course Syllabus

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| Course Title | AVIATION WEATHER | Instructor | WAN TUNG |
| Course Class | TENXB3P DEPARTMENT OF AEROSPACE ENGINEERING, 3P | Details | <ul style="list-style-type: none"> ◆ Selective ◆ One Semester ◆ 2 Credits |
| D e p a r t m e n t a l A i m o f E d u c a t i o n | | | |
| <ul style="list-style-type: none"> 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. | | | |
| D e p a r t m e n t a l c o r e c o m p e t e n c e s | | | |
| <ul style="list-style-type: none"> A. With basic aerospace engineering expertise. B. Able to solve basic engineering problems via fundamental theory. C. Capable of lifelong learning and research capacity for further studies. D. To work with a sense of mission and responsibility. E. Have team spirit and the ability to communicate with each other. F. With an international perspective, have the ability to connect with the world. G. Taking full advantage of information and utilization of computer-assisted problem solving skills. | | | |
| Course Introduction | <p>Introduction to the aviation weather and its application to the flight, understand the tropical and mid-latitude weather phenomena.</p> <p>Understand future civil aviation flight operation and familiar English environment</p> | | |
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The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I.Objective Levels (select applicable ones) :

- (i) Cognitive Domain : C1-Remembering, C2-Understanding, C3-Applying,
C4-Analyzing, C5-Evaluating, C6-Creating
- (ii) Psychomotor Domain : P1-Imitation, P2-Mechanism, P3-Independent Operation,
P4-Linked Operation, P5-Automation, P6-Origination
- (iii) Affective Domain : A1-Receiving, A2-Responding, A3-Valuing,
A4-Organizing, A5-Charaterizing, A6-Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :

- (i) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objective. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.
- (ii) If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3,C5,and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)
- (iii) Determine the Departmental core competences that correspond to each teaching objective. Each objective may correspond to one or more Departmental core competences at a time. (For example, if one objective corresponds to three Departmental core competences: A,AD, and BEF, list all of the three in the box.)

| No. | Teaching Objectives | Relevance | |
|-----|---|------------------|-------------------------------|
| | | Objective Levels | Departmental core competences |
| 1 | Introduction to the aviation weather and its application to the flight, understand the tropical and mid-latitude weather phenomena. | C5 | ABCDEFGG |

Teaching Objectives, Teaching Methods and Assessment

| No. | Teaching Objectives | Teaching Methods | Assessment |
|-----|---|--------------------------------------|----------------------|
| 1 | Introduction to the aviation weather and its application to the flight, understand the tropical and mid-latitude weather phenomena. | Lecture, Discussion, Problem solving | Written test, Report |
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This course has been designed to cultivate the following essential qualities in TKU students

| Essential Qualities of TKU Students | Description |
|---|---|
| ◆ A global perspective | Helping students develop a broader perspective from which to understand international affairs and global development. |
| ◆ Information literacy | Becoming adept at using information technology and learning the proper way to process information. |
| ◆ A vision for the future | Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision. |
| ◇ Moral integrity | Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems. |
| ◆ Independent thinking | Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically. |
| ◇ A cheerful attitude and healthy lifestyle | Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life. |
| ◇ A spirit of teamwork and dedication | Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems. |
| ◆ A sense of aesthetic appreciation | Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process. |

Course Schedule

| Week | Date | Subject/Topics | Note |
|------|--------------------------|--|------|
| 1 | 108/02/18 ~ 108/02/24 | Introduction to Aviation Weather Application | |
| 2 | 108/02/25 ~ 108/03/03 | Introduction to the atmosphere | |
| 3 | 108/03/04 ~ 108/03/10 | Air temperature, pressure, and humidity | |
| 4 | 108/03/11 ~ 108/03/17 | Instrument flight weather factors | |
| 5 | 108/03/18 ~ 108/03/24 | Air motion and vertical stability | |
| 6 | 108/03/25 ~ 108/03/31 | Water, vapor, and precipitations | |
| 7 | 108/04/01 ~ 108/04/07 | Cloudy flight conditions | |
| 8 | 108/04/08 ~ 108/04/14 | Air mass generation and impact | |
| 9 | 108/04/15 ~ 108/04/21 | Front generation and impact | |
| 10 | 108/04/22 ~ 108/04/28 | Midterm Exam Week | |
| 11 | 108/04/29 ~ 108/05/05 | Atmospheric turbulence | |
| 12 | 108/05/06 ~ 108/05/12 | Thunderstorm weathers | |

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|-------------------------|--|-------------------------------------|--|
| 13 | 108/05/13 ~ 108/05/19 | Low-level wind shear and microburst | |
| 14 | 108/05/20 ~ 108/05/26 | Clear air turbulence | |
| 15 | 108/05/27 ~ 108/06/02 | Aircraft ice accretion | |
| 16 | 108/06/03 ~ 108/06/09 | Tropical weather and typhoon | |
| 17 | 108/06/10 ~ 108/06/16 | Weather predictions | |
| 18 | 108/06/17 ~ 108/06/23 | Final Exam Week | |
| Requirement | Basic sciences | | |
| Teaching Facility | Computer | | |
| Textbook(s) | Peter F. Lester, Aviation Weather, Jeppesen, latest edition | | |
| Reference(s) | 1. Ahrens, C.D., Essentials of Meteorology, An Invitation to the Atmosphere, 6th edition, Brooks/Cole, 2012. 2. Ahrens, C.D., Meteorology Today, 9th edition, Brooks/Cole, 2009. 3. Aguado, E. and Burt, J.E. Understanding Weather and Climate, 5th edition, Prentice Hall, 2010. | | |
| Number of Assignment(s) | 2 (Filled in by assignment instructor only) | | |
| Grading Policy | ◆ Attendance : % ◆ Mark of Usual : 40.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : % ◆ Other 〈Final report〉 : 30.0 % | | |
| 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. | | |