

Tamkang University Academic Year 103, 1st Semester Course Syllabus

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| Course Title | LINEAR ALGEBRA | Instructor | CHU, LIU |
| Course Class | TQIBB1A DIVISION OF APPLIED INFORMATICS, DEPARTMENT OF INNOVATIVE INFORMATION AND TECHNOLOGY, 1A | Details | <ul style="list-style-type: none"> ◆ Required ◆ One Semester ◆ 3 Credits |
| Departmental Aim of Education | | | |
| Cultivate professional talents in developing and applying information system in various fields. | | | |
| Departmental core competences | | | |
| <ul style="list-style-type: none"> A. Capability of computer program coding, process planning, and problem solving B. Capability of applying basic mathematics and information technology related mathematics C. Capability of applying knowledge of internet structure and protocol in communication system D. Capability of developing information system E. Capability of integrating information system | | | |
| Course Introduction | The course gives an introductory concept of Linear Algebra with examples and application contents in order to establish foundations for advanced courses. | | |
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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 | 1. Linear System 2.Matrices 3.Determinant 4.Vector Space 5.Inner Product Space 6.Linear Tranformation | C5 | B |

Teaching Objectives, Teaching Methods and Assessment

| No. | Teaching Objectives | Teaching Methods | Assessment |
|-----|---|------------------|--------------------------------------|
| 1 | 1. Linear System 2.Matrices 3.Determinant 4.Vector Space 5.Inner Product Space 6.Linear Tranformation | Lecture | Written test, Participation, 出席狀況 |
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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 | 103/09/15~ 103/09/21 | Ch 1. System of Linear Equations and Matrices | |
| 2 | 103/09/22~ 103/09/28 | Ch 2. Determinants | |
| 3 | 103/09/29~ 103/10/05 | Ch 3. Vectors in 2-Space and 3-Space | |
| 4 | 103/10/06~ 103/10/12 | Ch 3. Vectors in 2-Space and 3-Space | |
| 5 | 103/10/13~ 103/10/19 | Ch 3. Vectors in 2-Space and 3-Space | |
| 6 | 103/10/20~ 103/10/26 | Ch 4. Euclidean Vector Spaces | |
| 7 | 103/10/27~ 103/11/02 | Ch 4. Euclidean Vector Spaces | |
| 8 | 103/11/03~ 103/11/09 | Ch 4. Euclidean Vector Spaces | |
| 9 | 103/11/10~ 103/11/16 | Ch 4. Euclidean Vector Spaces | |
| 10 | 103/11/17~ 103/11/23 | Midterm Exam Week | |
| 11 | 103/11/24~ 103/11/30 | Ch 5. General Vector Spaces | |
| 12 | 103/12/01~ 103/12/07 | Ch 5. General Vector Spaces | |

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| 13 | 103/12/08 ~ 103/12/14 | Ch 5. General Vector Spaces | |
| 14 | 103/12/15 ~ 103/12/21 | Ch 6. Inner Product Spaces | |
| 15 | 103/12/22 ~ 103/12/28 | Ch 6. Inner Product Spaces | |
| 16 | 103/12/29 ~ 104/01/04 | Ch 6. Inner Product Spaces | |
| 17 | 104/01/05 ~ 104/01/11 | Ch 7. Eigenvalues, Eigenvectors | |
| 18 | 104/01/12 ~ 104/01/18 | Final Exam Week | |
| Requirement | <p>1. Attendance of all classes is required. 2. Any absence will result in at least 1 final point deducted. Please call me or text me before class. 3. Absence without leave will result in 5 final points deducted. 4. Cheating or plagiarism will result in failure in the course. 5. More than 3 absences without leave will result in failure in the course. 6. Talking, eating, using mobile phone/media player and wearing slippers during class are not allowed, and will be expelled from the class. 7. Late arrival, early departure, and the stated inappropriate behavior will be treated as absence without leave.</p> <p>課堂及測驗以英語進行。 為避免影響整體教學與學習成效，課堂中不得聊天、飲食、使用行動電話，進入課堂服裝依規定穿著，不得穿拖鞋。以上違反著視同不假缺席。 因故缺席須事先請假，缺席每次扣總分1分，不假缺席每次扣總分5分。</p> | | |
| Teaching Facility | Computer, Projector | | |
| Textbook(s) | Elementary Linear Algebra, Anton and Rorres, John Wiley and Sons, 10th edition. | | |
| Reference(s) | | | |
| Number of Assignment(s) | (Filled in by assignment instructor only) | | |
| Grading Policy | ◆ Attendance : % ◆ Mark of Usual : 40.0 % ◆ Midterm Exam : 20.0 % ◆ Final Exam : 20.0 % ◆ Other <Performance> : 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. | | |