

Tamkang University Academic Year 105, 1st Semester Course Syllabus

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| Course Title | BIG DATA CAPSTONE PROJECT | Instructor | LIN JYH-JIUAN |
| Course Class | TGLXM0A ELECTIVES COURSES BY COLLEGE OF BUSINESS AND MANAGEMENT-MASTER, OA | Details | <ul style="list-style-type: none"> ◆ Selective ◆ One Semester ◆ 3 Credits |
| Departmental Aim of Education | | | |
| <ul style="list-style-type: none"> I. Acquisition of professional knowledge. II. Learning effective self-planning. III. Theoretical application of practical matters. IV. Interpersonal communication and teamwork. V. Analysis of problems and recommendations. VI. Awareness of Ethics as a global citizen. | | | |
| Departmental core competences | | | |
| <ul style="list-style-type: none"> A. Students are equipped with professional knowledge of core courses. B. Students can follow the course schedule and complete the assignment. C. Students can apply their profession to practice matters. D. Students can communicate in business environment. E. Students can perform the ability of professional analysis and thinking. F. Students can recognize ethical issues in local and international business environment. | | | |
| Course Introduction | <p>This course enables students to finish a capstone project by integrating the skills of inputting, sorting, analysing the real life data and lead to conclusions through several commonly used data mining methods and softwares.</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 | This course enables students to finish a capestone project by integarting the skills of inputing, sorting, analysing the real data and make the conclusions through data mining methods and softwares. | C4 | E |

Teaching Objectives, Teaching Methods and Assessment

| No. | Teaching Objectives | Teaching Methods | Assessment |
|-----|--|--------------------------------------|-----------------------|
| 1 | This course enables students to finish a capestone project by integarting the skills of inputing, sorting, analysing the real data and make the conclusions through data mining methods and softwares. | Lecture, Discussion, Problem solving | Report, Participation |
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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 | 105/09/12 ~ 105/09/18 | Moon Festival | |
| 2 | 105/09/19 ~ 105/09/25 | Introduction to the classical Statistics and Exploratory Data Analysis | |
| 3 | 105/09/26 ~ 105/10/02 | Two Basic Data Mining Methods for Variable Assessment | |
| 4 | 105/10/03 ~ 105/10/09 | Introduction to Binary Classification | |
| 5 | 105/10/10 ~ 105/10/16 | Binary Classification Case Study-Radar System | |
| 6 | 105/10/17 ~ 105/10/23 | Binary Classification Case Study-Cancer Diagnostics | |
| 7 | 105/10/24 ~ 105/10/30 | Principal Component Analysis : A Statistical Data Mining Method for Many-Variable Assessment | |
| 8 | 105/10/31 ~ 105/11/06 | Logistic Regression: The Workforce of Response Modeling | |
| 9 | 105/11/07 ~ 105/11/13 | Ordinary Regression: The Workforce of Profit Modeling | |
| 10 | 105/11/14 ~ 105/11/20 | Midterm-Credit Scoring Project Proposal and Discussions | |

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|-------------------------|--|--|--|
| 11 | 105/11/21 ~ 105/11/27 | CHAID for interpreting a Logistic Regression Model | |
| 12 | 105/11/28 ~ 105/12/04 | The Average Correlation: A Statistical Data Mining Measure for Assessment of Competing Predictive Models and the Importance of the Predictor Variables | |
| 13 | 105/12/05 ~ 105/12/11 | Market Segmentation Modeling with Logistic Regression | |
| 14 | 105/12/12 ~ 105/12/18 | Identify your best Customers: Descriptive, Predictive, and Look-Alike Profiling | |
| 15 | 105/12/19 ~ 105/12/25 | Assessment of Marketing Models | |
| 16 | 105/12/26 ~ 106/01/01 | Visualization of Marketing Models Data Mining to Uncover Innards of a Model | |
| 17 | 106/01/02 ~ 106/01/08 | Example Demonstration and Case Study | |
| 18 | 106/01/09 ~ 106/01/15 | Capstone Project Report Presentation | |
| Requirement | There may be 1 to 3 invited talks related to the latest FINTECH development subject to the possible fundings. Attending to the talks and interacting with the speakers reflects the learning attitude. | | |
| Teaching Facility | Computer, Projector | | |
| Textbook(s) | Lectures Notes Statistical and Machine-Learning Data Mining: Techniques for Better Predictive Modeling and Analysis of Big Data Ratner, B. CRC Press/Taylor & Francis, January 9, 2012 | | |
| Reference(s) | Refer to class handout | | |
| Number of Assignment(s) | (Filled in by assignment instructor only) | | |
| Grading Policy | ◆ Attendance : 10.0 % ◆ Mark of Usual : 20.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 30.0 % ◆ Other (learning attitude) : 10.0 % | | |
| 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. | | |