

Tamkang University Academic Year 109, 2nd Semester Course Syllabus

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| Course Title | SPECIAL TOPICS ON BIG DATA APPLICATIONS | Instructor | WEI SHIH-CHIEH |
| Course Class | TLVXM1A MASTER'S PROGRAM IN DIGITAL BUSINESS AND ECONOMICS, 1A | Details | <ul style="list-style-type: none"> ◆ 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 | | | |
| <p>Our goal is to train students not only to acquire knowledge from economics, finance, and industrial developments but also to apply information technology and analytical and quantitative skills to various situations. By doing so, students can enhance their competitiveness in facing rapid changes in world economy.</p> | | | |
| Subject Departmental core competences | | | |
| A. Cultivating students the ability of computer programming.(ratio:60.00) C. Training students the ability of analyzing various situations in the financial market. (ratio:40.00) | | | |
| Subject Schoolwide essential virtues | | | |
| 2. Information literacy. (ratio:40.00) 5. Independent thinking. (ratio:40.00) 7. A spirit of teamwork and dedication. (ratio:20.00) | | | |
| Course Introduction | <p>This course aims to cover concepts and techniques of data analytics. The topics will include feature engineering, supervised and unsupervised learning, ensemble learning, sequential data analysis, and other natural language processing applications. This course will emphasize the skills needed for implementation of the concepts.</p> | | |
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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 | Understanding the various techniques in big data analysis. | Cognitive |
| 2 | Applying big data analysis to practical problems. | Psychomotor |

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

| No. | Core Competences | Essential Virtues | Teaching Methods | Assessment |
|-----|------------------|-------------------|---------------------|---|
| 1 | AC | 257 | Lecture, Discussion | Report(including oral and written), Activity Participation |
| 2 | AC | 257 | Lecture, Practicum | Practicum, Report(including oral and written), Activity Participation |

Course Schedule

| Week | Date | Course Contents | Note |
|------|-----------------------|--|------|
| 1 | 110/02/22 ~ 110/02/28 | 1: Introduction to Artificial Intelligence | |
| 2 | 110/03/01 ~ 110/03/07 | 2: Fundamental Use Cases for Artificial Intelligence | |
| 3 | 110/03/08 ~ 110/03/14 | 3: Machine Learning Pipelines | |
| 4 | 110/03/15 ~ 110/03/21 | 4: Feature Selection and Feature Engineering | |
| 5 | 110/03/22 ~ 110/03/28 | 5: Classification and Regression Using Supervised Learning | |
| 6 | 110/03/29 ~ 110/04/04 | 6: Predictive Analytics with Ensemble Learning | |
| 7 | 110/04/05 ~ 110/04/11 | 7: Detecting Patterns with Unsupervised Learning | |
| 8 | 110/04/12 ~ 110/04/18 | 8: Building Recommender Systems | |
| 9 | 110/04/19 ~ 110/04/25 | 12: Artificial Intelligence on the Cloud | |

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| 10 | 110/04/26 ~ 110/05/02 | 13: Building Games with Artificial Intelligence | |
| 11 | 110/05/03 ~ 110/05/09 | 14: Building a Speech Recognizer | |
| 12 | 110/05/10 ~ 110/05/16 | 15: Natural Language Processing | |
| 13 | 110/05/17 ~ 110/05/23 | 16: Chatbots | |
| 14 | 110/05/24 ~ 110/05/30 | 17: Sequential Data and Time Series Analysis | |
| 15 | 110/05/31 ~ 110/06/06 | 18: Image Recognition | |
| 16 | 110/06/07 ~ 110/06/13 | 20: Deep Learning with Convolutional Neural Networks | |
| 17 | 110/06/14 ~ 110/06/20 | 23: Artificial Intelligence and Big Data | |
| 18 | 110/06/21 ~ 110/06/27 | Project Demonstration | |
| Requirement | | | |
| Teaching Facility | (None) | | |
| Textbooks and Teaching Materials | A. Artasanchez and P. Joshi, Artificial Intelligence with Python - Second Edition, Packt, 2019. | | |
| References | | | |
| Number of Assignment(s) | (Filled in by assignment instructor only) | | |
| Grading Policy | ◆ Attendance : % ◆ Mark of Usual : 50.0 % ◆ Midterm Exam : % ◆ Final Exam : 30.0 % ◆ Other (Lab) : 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. | | |