

Tamkang University Academic Year 108, 1st Semester Course Syllabus

Course Title	AI IN FINANCE BIG DATA ANALYTICS	Instructor	DAY, MIN-YUH
Course Class	TLVXM2A MASTER'S PROGRAM IN DIGITAL BUSINESS AND ECONOMICS, 2A	Details	<ul style="list-style-type: none"> ◆ Distance Learning Course ◆ Selective ◆ One Semester ◆ 3 Credits
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			
<p>A. Cultivating students the ability of computer programming.(ratio:30.00)</p> <p>C. Training students the ability of analyzing various situations in the financial market. (ratio:30.00)</p> <p>D. Helping students to acquire the knowledge of financial technology.(ratio:40.00)</p>			
Subject Schoolwide essential virtues			
<p>1. A global perspective. (ratio:10.00)</p> <p>2. Information literacy. (ratio:50.00)</p> <p>3. A vision for the future. (ratio:10.00)</p> <p>4. Moral integrity. (ratio:10.00)</p> <p>5. Independent thinking. (ratio:10.00)</p> <p>7. A spirit of teamwork and dedication. (ratio:10.00)</p>			
Course Introduction	<p>This course introduces the fundamental concepts, research issues, and hands-on practices of AI in Finance Big Data Analytics. Topics include AI in FinTech: Financial Services Innovation and Application, ABC: AI, Big Data, Cloud Computing, Business Models of Fintech, Event Studies in Finance, Foundations of AI in Finance Big Data Analytics with Python, Quantitative Investing with Pandas in Python, Machine Learning in Finance Application with Scikit-Learn In Python, Deep Learning for Financial Time Series Forecasting with TensorFlow, Case Study on AI FDBA and Financial Industry Practices.</p>		

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	Understand and apply the fundamental concepts and research issues of AI in finance big data analytics.	Psychomotor
2	Conduct information systems research in the context of AI in finance big data analytics.	Psychomotor

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ACD	123457	Lecture, Discussion, Practicum, Experience, Imitation	Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written), Activity Participation
2	ACD	123457	Lecture, Discussion, Publication, Practicum, Experience, Imitation	Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written), Activity Participation

Course Schedule

Note for Distance Learning Course : Please clearly indicate synchronous and asynchronous courses.

Week	Date	Course Contents	Note
1	108/09/09~ 108/09/15	Course Orientation on AI in Finance Big Data Analytics	
2	108/09/16~ 108/09/22	AI in FinTech: Financial Services Innovation and Application	
3	108/09/23~ 108/09/29	ABC: AI, Big Data, Cloud Computing	
4	108/09/30~ 108/10/06	Business Models of Fintech	
5	108/10/07~ 108/10/13	Event Studies in Finance	

6	108/10/14 ~ 108/10/20	Case Study on AI in Finance Big Data Analytics I	
7	108/10/21 ~ 108/10/27	Foundations of AI in Finance Big Data Analytics with Python	
8	108/10/28 ~ 108/11/03	Case Study on Financial Industry Practice I	
9	108/11/04 ~ 108/11/10	Quantitative Investing with Pandas in Python	
10	108/11/11 ~ 108/11/17	Midterm Project Report	
11	108/11/18 ~ 108/11/24	Machine Learning in Finance Application with Scikit-Learn In Python	
12	108/11/25 ~ 108/12/01	Deep Learning for Financial Time Series Forecasting with TensorFlow I	
13	108/12/02 ~ 108/12/08	Case Study on AI in Finance Big Data Analytics II	
14	108/12/09 ~ 108/12/15	Deep Learning for Financial Time Series Forecasting with TensorFlow II	
15	108/12/16 ~ 108/12/22	Case Study on Financial Industry Practice II	
16	108/12/23 ~ 108/12/29	Deep Learning for Financial Time Series Forecasting with TensorFlow III	
17	108/12/30 ~ 109/01/05	Final Project Presentation I	
18	109/01/06 ~ 109/01/12	Final Project Presentation II	
Requirement			
Teaching Facility	Computer, Projector		
Textbooks and Teaching Materials	Slides Cases and Papers related to AI in Finance Big Data Analytics.		
References	<p>Paolo Sironi (2016), FinTech Innovation: From Robo-Advisors to Goal Based Investing and Gamification, Wiley.</p> <p>Yves Hilpisch (2018), Python for Finance: Mastering Data-Driven Finance, 2nd Edition, OReilly Media.</p> <p>Francois Chollet (2017), Deep Learning with Python, Manning Publications</p> <p>Yuxing Yan (2017), Python for Finance: Apply powerful finance models and quantitative analysis with Python, Second Edition, Packt Publishing.</p> <p>Aurelien Geron (2017), Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, O' Reilly Media.</p>		

Number of Assignment(s)	3 (Filled in by assignment instructor only)
Grading Policy	◆ Attendance : % ◆ Mark of Usual : 40.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 30.0 % ◆ Other () : %
Note	<ol style="list-style-type: none"> 1. This syllabus may be uploaded at the website of the Course Syllabus Management System at https://info.ais.tku.edu.tw/csp or through the link of the Course Syllabus Upload posted on the home page of the TKU Office of Academic Affairs http://www.acad.tku.edu.tw/CS/main.php 2. According to the Implementation regulations of distance education for junior college and above are prescribed pursuant to Article 2, "The distance learning course referred to in these Measures refers to more than one-half of the teaching hours in each subject." 3. According to the regulations of Tamkang University Enforcement Rules for digital teaching, Paragraph 2 and Article 3, the distance learning course of our school must be "The course of digital teaching with distance learning platform or synchronous video system in our school. Teaching Hours include course lectures, teacher-student interaction discussions, quizzes and other learning activities." 4. If there are any temporary course changes (including time changes and classroom changes of distance learning courses, blended courses), please make out an application according to regulations to the Office of Academic Affairs. <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>