

Tamkang University Academic Year 107, 1st Semester Course Syllabus

Course Title	TIME SERIES	Instructor	YA-MEI, CHANG
Course Class	TLXDM1A MASTER'S PROGRAM IN BIG DATA ANALYTICS AND BUSINESS INTELLIGENCE, 1A	Details	<ul style="list-style-type: none"> ◆ Selective ◆ One Semester ◆ 3 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			
<p>I . Cultivate students with ability to conduct research on statistical theory.</p> <p>II . Cultivate students with ability for statistical programming.</p> <p>III . Cultivate students to become statistical professionals with management capabilities.</p> <p>IV . Cultivate students with international perspectives.</p>			
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			
<p>A. Ability to conduct research of statistical theory.</p> <p>B. Data analysis skills.</p> <p>C. Ability to acquire interdisciplinary knowledge.</p> <p>D. Logical thinking ability.</p> <p>E. Statistical consulting ability.</p>			
Course Introduction	An introduction to time series and its application		

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	Time series data	C2	B
2	Time series methods	C4	B
3	Time series data analysis	C4	B
4	Time series software application	C3	B

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	Time series data	Lecture, Discussion	Written test, Report
2	Time series methods	Lecture, Discussion	Written test, Report
3	Time series data analysis	Lecture, Discussion	Written test, Report
4	Time series software application	Lecture, Discussion	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	107/09/10 ~ 107/09/16	Chapter 1 Characteristics of time series	
2	107/09/17 ~ 107/09/23	Chapter 2 Time series regression	
3	107/09/24 ~ 107/09/30	Chapter 2 Time series regression	
4	107/10/01 ~ 107/10/07	Chapter 2 Time series regression	
5	107/10/08 ~ 107/10/14	Chapter 3 ARIMA models	
6	107/10/15 ~ 107/10/21	Chapter 3 ARIMA models	
7	107/10/22 ~ 107/10/28	Chapter 3 ARIMA models	
8	107/10/29 ~ 107/11/04	Chapter 4 Spectral analysis and filtering	
9	107/11/05 ~ 107/11/11	Midterm	
10	107/11/12 ~ 107/11/18	Chapter 4 Spectral analysis and filtering	
11	107/11/19 ~ 107/11/25	Chapter 4 Spectral analysis and filtering	
12	107/11/26 ~ 107/12/02	Chapter 5 Additional time domain topics	

13	107/12/03 ~ 107/12/09	Chapter 5 Additional time domain topics	
14	107/12/10 ~ 107/12/16	Chapter 6 State-space models	
15	107/12/17 ~ 107/12/23	Chapter 6 State-space models	
16	107/12/24 ~ 107/12/30	Chapter 6 State-space models	
17	107/12/31 ~ 108/01/06	Final Report	
18	108/01/07 ~ 108/01/13	Final Report	
Requirement			
Teaching Facility	Computer, Projector		
Textbook(s)	Shumway and Stoffer (2011), Time series analysis and its application: with R examples (third edition)		
Reference(s)			
Number of Assignment(s)	(Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : 10.0 % ◆ Mark of Usual : 30.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 30.0 % ◆ Other < > : %		
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.		