

## Tamkang University Academic Year 110, 1st Semester Course Syllabus

Course Title	STATISTICAL COMPUTING	Instructor	HSIEH, AI-RU
Course Class	TLSXM1A MASTER'S PROGRAM, DEPARTMENT OF STATISTICS, 1A	Details	<ul style="list-style-type: none"> <li>◆ Blended Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> <li>◆ 3 Credits</li> </ul>
Relevance to SDGs	SDG4 Quality education		
<b>Departmental Aim of Education</b>			
<ul style="list-style-type: none"> <li>I. Cultivate students with ability to conduct research on statistical theory.</li> <li>II. Cultivate students with ability for statistical programming.</li> <li>III. Cultivate students to become statistical professionals with management capabilities.</li> <li>IV. Cultivate students with international perspectives.</li> </ul>			
<b>Subject Departmental core competences</b>			
<ul style="list-style-type: none"> <li>B. Data analysis skills.(ratio:80.00)</li> <li>D. Logical thinking ability.(ratio:20.00)</li> </ul>			
<b>Subject Schoolwide essential virtues</b>			
<ul style="list-style-type: none"> <li>1. A global perspective. (ratio:20.00)</li> <li>2. Information literacy. (ratio:80.00)</li> </ul>			
Course Introduction	(專業知能服務學習課程)To learn about: SAS/R function,statistical analysis in SAS/R program.		

**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	To enable students to use the statistical principles learned in class and cooperate with statistical analysis software to improve their self-application analysis ability, in order to facilitate students' future skills or employment needs.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	BD	12	Lecture, Discussion, Publication, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written)

**Course Schedule**

Note for Blended Course : When utilizing weekly digital instruction, please fill in "Online Asynchronous Instruction".

Week	Date	Course Contents	Note
1	110/09/22 ~ 110/09/28	Introduction /課程說明 ( 學習單位介紹 )	
2	110/09/29 ~ 110/10/05	Probability and Statistics Review /專業理論講述 ( 探究學習機構 )	
3	110/10/06 ~ 110/10/12	Probability and Statistics Review /專業理論講述 ( 方案討論 )	
4	110/10/13 ~ 110/10/19	Methods for Generating Random Variables /服務方案資料蒐整 ( 方案資料搜集I )	
5	110/10/20 ~ 110/10/26	Methods for Generating Random Variables / 演講	
6	110/10/27 ~ 110/11/02	Visualization of Multivariate Data /學生至合作單位校外教學	
7	110/11/03 ~ 110/11/09	Bootstrap and Jackknife/服務方案設計	

8	110/11/10~ 110/11/16	Bootstrap and Jackknife /學生至合作單位服務實習	
9	110/11/17~ 110/11/23	Midterm exam /服務方案設計修正I	
10	110/11/24~ 110/11/30	Permutation Tests /學生至合作單位服務實習	
11	110/12/01~ 110/12/07	Permutation Tests /服務方案執行與討論I	
12	110/12/08~ 110/12/14	Preparing to model the data /學生至合作單位服務實習	
13	110/12/15~ 110/12/21	Decision trees /服務方案執行與討論II	Online Asynchronous Instruction
14	110/12/22~ 110/12/28	Model evaluation /學生至合作單位服務實習	
15	110/12/29~ 111/01/04	Neural networks /服務方案評估與歷程反思	Online Asynchronous Instruction
16	111/01/05~ 111/01/11	Clustering /課程回顧	
17	111/01/12~ 111/01/18	Final exam /服務經驗交流與分享	
18	111/01/19~ 111/01/25	Dimension reduction	Online
Requirement			
Teaching Facility	Computer, Projector		
Textbooks and Teaching Materials	Statistical computing with R, Maria L. Rizzo Data Science Using Python and R,Chantal D. Larose,Wiley & Sons, Inc.		
References			
Number of Assignment(s)	5 (Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : 10.0 %   ◆ Mark of Usual : 10.0 %   ◆ Midterm Exam : 40.0 % ◆ Final Exam : 40.0 % ◆ Other ( ) : %		

Note	<ol style="list-style-type: none"><li>1. This syllabus may be uploaded at the website of the Course Syllabus Management System at <a href="https://info.ais.tku.edu.tw/csp">https://info.ais.tku.edu.tw/csp</a> or through the link of the Course Syllabus Upload posted on the home page of the TKU Office of Academic Affairs <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a></li><li>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."</li><li>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."</li><li>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.</li></ol> <p><b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b></p>
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