

## Tamkang University Academic Year 111, 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>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</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>A. Ability to conduct research of statistical theory.(ratio:20.00)</li> <li>B. Data analysis skills.(ratio:30.00)</li> <li>C. Ability to acquire interdisciplinary knowledge.(ratio:10.00)</li> <li>D. Logical thinking ability.(ratio:20.00)</li> <li>E. Statistical consulting ability.(ratio:20.00)</li> </ul>			
<b>Subject Schoolwide essential virtues</b>			
<ul style="list-style-type: none"> <li>1. A global perspective. (ratio:15.00)</li> <li>2. Information literacy. (ratio:30.00)</li> <li>3. A vision for the future. (ratio:15.00)</li> <li>4. Moral integrity. (ratio:5.00)</li> <li>5. Independent thinking. (ratio:10.00)</li> <li>6. A cheerful attitude and healthy lifestyle. (ratio:5.00)</li> <li>7. A spirit of teamwork and dedication. (ratio:10.00)</li> <li>8. A sense of aesthetic appreciation. (ratio:10.00)</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.
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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	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	ABCDE	12345678	Lecture, Discussion, Publication, Practicum	Testing, Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written)

**Course Schedule**

Week	Date	Course Contents	Note
1	111/09/05 ~ 111/09/11	Introduction /課程說明 ( 學習單位介紹 )	
2	111/09/12 ~ 111/09/18	Probability and Statistics Review /專業理論講述 ( 探究學習機構 )	

3	111/09/19~ 111/09/25	Probability and Statistics Review /專業理論講述 ( 方案討論 )	
4	111/09/26~ 111/10/02	Methods for Generating Random Variables /服務方案資料蒐整 ( 方案資料搜集I )	
5	111/10/03~ 111/10/09	Methods for Generating Random Variables / 演講	
6	111/10/10~ 111/10/16	Visualization of Multivariate Data /學生至合作單位校外教學	
7	111/10/17~ 111/10/23	Bootstrap and Jackknife/服務方案設計	
8	111/10/24~ 111/10/30	Bootstrap and Jackknife /學生至合作單位服務實習	
9	111/10/31~ 111/11/06	Midterm exam /服務方案設計修正I	
10	111/11/07~ 111/11/13	Permutation Tests /學生至合作單位服務實習	
11	111/11/14~ 111/11/20	Permutation Tests /服務方案執行與討論I	
12	111/11/21~ 111/11/27	Preparing to model the data /學生至合作單位服務實習	
13	111/11/28~ 111/12/04	Decision trees /服務方案執行與討論II	Online Asynchronous Instruction
14	111/12/05~ 111/12/11	Model evaluation /學生至合作單位服務實習	
15	111/12/12~ 111/12/18	Neural networks /服務方案評估與歷程反思	Online Asynchronous Instruction
16	111/12/19~ 111/12/25	Clustering /課程回顧	
17	111/12/26~ 112/01/01	Final exam /服務經驗交流與分享	
18	112/01/02~ 112/01/08	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	This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> . <b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b>