

Tamkang University Academic Year 2012, 2nd Semester  
Course Syllabus

Course Title	SURVIVAL ANALYSIS		Instructor	CHEN, SHUN-YI	
Department/Year/Class	Course Details				
Mathematics/Graduate course/1 <sup>st</sup> year	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Selective	<input type="checkbox"/> 0 ( One Semester ) <input type="checkbox"/> 1 ( 1st Semester ) <input checked="" type="checkbox"/> 2 ( 2nd Semester ) <input type="checkbox"/> 3 ( 3rd Semester )	Credits	3	
Aim of Education		Core Competences			
<p>To educate students about the core concepts and principles of mathematics and statistics, and nurture and equip them with the ability to use mathematical/statistical applications as a foundation for a variety of careers as well as further study in a variety of subject areas.</p>		<p>Students will demonstrate -</p> <ul style="list-style-type: none"> <li>A. Mathematical and statistical expertise.</li> <li>B. The ability to understand, assess and solve complicated problems.</li> <li>C. The ability to think independently.</li> <li>D. The ability to develop a base of relevant knowledge to prepare for more extensive learning and research in mathematics and statistics.</li> <li>E. The ability to collect and analyze data, as well as to translate real-world scenarios into mathematical and statistical models.</li> <li>F. The ability to properly determine and effectively use computing tools and mathematical/statistical knowledge to solve problems.</li> <li><b>G.</b> The ability to absorb new knowledge and continue to process and apply such knowledge in a professional context.</li> </ul>			
<p><b>Course Introduction</b> (50 to 100 words)</p>	<p>This course will cover the statistical concepts and techniques that are most commonly used in the practice of survival analysis. We are going to introduce survival functions, hazard rates, types of censoring and truncation. Methods of our focus will include life tables, Kaplan-Meier plots, Cox regression models, parametric regression models, nonparametric and parametric methods for comparing survival distributions. Students taking this course are expected to develop computer skills for implementing statistical methods and ability to appropriately interpret the results.</p>				

## The Relevance among Teaching Objectives, Objective Levels and 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 Core Competences :

- (I) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objectives. 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 core competences that correspond to each teaching objective. Each objective may correspond to one or more core competences at a time. (For example, if one objective corresponds to three core competences: A, AD, and BEF, list all of the three in the box.)

Teaching objectives	Relevance	
	Objective Levels	Core Competences
Students will be able to acquire the ability of statistical analysis for survival data in related problems.	C4	ABCDEFG

### Teaching Objectives, Teaching Methods and Assessment

Teaching Objectives	Teaching Methods	Assessment
Students will be able to acquire the ability of statistical analysis for survival data in related problems.	Lecture, Discussion, Problem solving	Reports, Class presentations

This course has been designed to cultivate the following essential qualities in TKU students.

Essential Qualities of TKU Students	Description
<input checked="" type="checkbox"/> global perspectives	翻譯建構中
<input type="checkbox"/> a vision for the future	
<input checked="" type="checkbox"/> information literacy	
<input checked="" type="checkbox"/> ethical and moral principles	

<input checked="" type="checkbox"/> independent thinking			
<input checked="" type="checkbox"/> an awareness of healthy living			
<input checked="" type="checkbox"/> effective teamwork			
<input type="checkbox"/> an appreciation of the arts			
Course Schedule			
Week	Date	Subject/Topics	Note
1		Tests of goodness of fit and distribution selection	
2		Probability plotting, Hazard plotting	
3		Estimation procedures for parametric survival distributions	
4		Analytical estimation procedures for survival distributions (I)	
5		Analytical estimation procedures for survival distributions (II)	
6		Parametric methods for comparing two survival distributions (I)	
7		Parametric methods for comparing two survival distributions (II)	
8		Identification of prognostic factors – Nonparametric methods (I)	
9		Identification of prognostic factors – Nonparametric methods (II)	
10		Midterm Exam Week	
11		Identification of prognostic factors - Parametric regression methods (I)	
12		Identification of prognostic factors - Parametric regression methods (II)	
13		Identification of risk factors related to dichotomous data (I)	
14		Identification of risk factors related to dichotomous data (II)	
15		Identification of risk factors related to polychotomous outcomes (I)	
16		Identification of risk factors related to polychotomous outcomes (II)	
17		Case study	
18		Final Exam Week	
Requirement	Students will be required to present in class on what they are assigned to study in advance.		
Teaching Facility	<input checked="" type="checkbox"/> Computer <input type="checkbox"/> Overhead Projector <input type="checkbox"/> Other ( _____ )		
Textbook(s)	Statistical Methods for Survival Data Analysis, 3rd Edition by E. T. LEE and J. W. WANG. John-Wiley & Sons, Inc. 2003		
Suggested Readings	The Statistical Analysis of Failure Time Data, 2nd Edition, Kalbfleisch and Prentice, Wiley-Interscience 2002		
Number of Assignment(s)	(Filled in only for those courses that apply)		

<b>Grading Policy</b>	Attendance:40%, Midterm evaluation:30%, Final evaluation:30%.
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/index.asp">http://www.acad.tku.edu.tw/index.asp</a> . <b>※Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b>

Form No. : ATRX-Q03-001-FM201-05