Tamkang University Academic Year 105, 1st Semester Course Syllabus

Course Title	SURVIVAL ANALYSIS	Instructor	MAN-HUA CHEN
Course Class	TLSXM1A MASTER'S PROGRAM, DEPARTMENT OF STATISTICS, 1A	Details	◆ Selective ◆ One Semester ◆ 3 Credits

Departmental Aim of Education

Ⅰ. Cultivate students with ability to conduct research on statistical theory.

Ⅱ. Cultivate students with ability for statistical programming.

Ⅲ. Cultivate students to become statistical professionals with management capabilities.

Ⅳ. Cultivate students with international perspectives.

Departmental core competences

A. Ability to conduct research of statistical theory.

B. Data analysis skills.

C. Ability to acquire interdisciplinary knowledge.

D. Logical thinking ability.

E. Statistical consulting ability.

Course Introduction	This course will cover the statistical concepts and techniques that are most commonly used in medical studies of survival analysis. We will learn survival functions, hazard rates, types of censoring and truncation. Methods of our focus will include life tables, nonparametric method (Kaplan-Meier), parametric regression models, semi-parametric regression models for comparing survival distributions.

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	Censoring and Truncation Mechanisms	C2	B
2	Nonparametric Methods	C2	A
3	MLE	C2	A
4	Hypothesis Testing	C2	A
5	Parametric Regression	C4	B
6	Semi-parametric Regression	C4	B

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	Censoring and Truncation Mechanisms	Lecture	Report
2	Nonparametric Methods	Lecture	Report
3	MLE	Lecture	Report
4	Hypothesis Testing	Lecture	Report
5	Parametric Regression	Lecture	Report
6	Semi-parametric Regression	Lecture	Report

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	105/09/12 ~ 105/09/18	Introduction	
2	105/09/19 ~ 105/09/25	Censoring and Truncation Mechanisms	
3	105/09/26 ~ 105/10/02	Real Life Examples	
4	105/10/03 ~ 105/10/09	Real Life Examples	
5	105/10/10 ~ 105/10/16	Nonparametric Methods for Survival Analysis	
6	105/10/17 ~ 105/10/23	Nonparametric Methods for Survival Analysis	
7	105/10/24 ~ 105/10/30	MLE with Left-Truncated, Right-Censored Data	
8	105/10/31 ~ 105/11/06	MLE with Interval-Censored Data and Truncated Data	
9	105/11/07 ~ 105/11/13	MLE with Doubly Interval-Censored Data	
10	105/11/14 ~ 105/11/20	Regression Analysis of Survival Data	
11	105/11/21 ~ 105/11/27	Regression Analysis of Survival Data	
12	105/11/28 ~ 105/12/04	Parametric Regression Models	

13	105/12/05～ 105/12/11	Parametric Regression Models	
14	105/12/12～ 105/12/18	Semi-parametric Regression Models	
15	105/12/19～ 105/12/25	Semi-parametric Regression Models	
16	105/12/26～ 106/01/01	Regression Methods for Grouped Survival Data	
17	106/01/02～ 106/01/08	Regression Methods for Grouped Survival Data	
18	106/01/09～ 106/01/15	Final Exam Week	

Requirement	
Teaching Facility	Computer, Projector
Textbook(s)	The Statistical Analysis of Failure Time Data, 2nd Edition, Kalbfleisch and Prentice, Wiley-Interscience 2002.
Reference(s)	
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： % ◆ Mark of Usual： % ◆ Midterm Exam： 30.0 % ◆ Final Exam： 30.0 % ◆ Other〈Assignments〉：40.0 %
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.**