



Course Specification

— (Postgraduate)

Course Title: Survival Analysis

Course Code: 202673-3

Program: M.Sc. in Statistics

Department: Mathematics and Statistics

College: Science

Institution: Taif University

Version: 2023

Last Revision Date: 7/4/1445



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A. General information about the course:

1. Course Identification:

1. Credit hours: (3)

2. Course type

A. University College Department Track

B. Required Elective

3. Level/year at which this course is offered: (.....)

4. Course general Description:

Survival data and distributions - Survival data models - Inference using parametric models - The proportional hazards model - Statistical computer packages for survival analysis – Likelihood construction - Inference based on ranks in the accelerated failure time model

5. Pre-requirements for this course (if any):

6. Pre-requirements for this course (if any):

7. Course Main Objective(s):

Survival analysis is a collection of statistical techniques for the analysis of data on “time-to-event” as a response variable and its relationships to other explanatory variables. The notion of “event” depends on the context and the applications. This course covers:

- Understanding time-to-event data and survival probabilities
- Understanding the notion of censoring
- Understanding the survival curve and other ways of representing survival distributions

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		





No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify).....	
Total		

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize the fundamentals of Survival Analysis	K1	<ul style="list-style-type: none"> Lectures Group discussions 	<ul style="list-style-type: none"> Quizzes Exams Assignments
1.2	Outline Kaplan-Meier survival curves , log-rank test	K1	<ul style="list-style-type: none"> Lectures Group discussions 	<ul style="list-style-type: none"> Quizzes Exams Assignments
1.3	Outline Cox Proportional Hazards	K2	<ul style="list-style-type: none"> Lectures Group discussions 	<ul style="list-style-type: none"> Quizzes Exams Assignments
1.4	Describe Cox Proportional Hazards model and its characteristics	K3	<ul style="list-style-type: none"> Lectures Group discussions 	<ul style="list-style-type: none"> Quizzes Exams Assignments
2.0	Skills			
2.1	Apply basic methods for estimation and statistical inference when working with censored data.	S2	<ul style="list-style-type: none"> Lectures Group discussions 	<ul style="list-style-type: none"> Quizzes Exams Assignments



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Evaluate , and compare between two groups.	S4	<ul style="list-style-type: none"> Lectures Group discussions 	<ul style="list-style-type: none"> Quizzes Exams Assignments
3.0	Values, autonomy, and responsibility			
3.1	Participate effectively within groups and independently.	V1	Projects	Through the oral presentation of the projects.
3.2	Express mathematical and statistical ideas orally and in writing	V4	Projects	Through the oral presentation of the projects.

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Survival Analysis	3
2.	Kaplan-Meier survival curves	3
3.	log-rank test	3
4.	The Cox Proportional Hazards model	3
5.	The Cox Proportional Hazards model and its characteristics	3
6.	Evaluating the proportional hazards assumption	3
7.	The stratified cox procedure	3
8.	Extension of the cox proportional hazards model for time-dependent variables	3
9.	Extension of the cox proportional hazards model for time-dependent variables	3
10.	Parametric survival models.	3
11.	Parametric survival models	3
12.	Recurrent event survival analysis.	3
13.	Competing risks survival analysis	3
14.	Competing risks survival analysis	3
15.	Design issues for randomized trials	3
Total		45

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam	8th	30%



No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
2.	Final exam	16 th	70%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Kleinbaum, DG and Klein M. Survival Analysis: A Self-Learning Text, 2nd Edition. New York: Springer (2005).
Supportive References	
Electronic Materials	
Other Learning Materials	Blackboard system

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture halls, containing white boards, and electronic monitors - The seats fit the number of students - Laboratories equipped with suitable numbers of computers
Technology equipment (Projector, smart board, software)	Data Show
Other equipment (Depending on the nature of the specialty)	Wi-Fi internet connections

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of students assessment		
Quality of learning resources	Students	Indirect
The extent to which CLOs have been achieved	Peer reviewer	Direct
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)





G. Specification Approval Data:

COUNCIL /COMMITTEE	DEPARTMENT OF MATHEMATICS AND STATISTICS
REFERENCE NO.	
DATE	7/4/1445

