هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	**Advance biostatistics**
Course Code:	**2024212-3**
Program:	Bachelor in Mathematics
Department:	Mathematics and Statistics Department
College:	**Faculty of Sciences**
Institution:	**Taif University**
Version:	**1**
Last Revision Date:	20/05/2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3					
2. Course type					
A.	☐University	☐College	☒ Department	☐ Track	☐Others
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: Level 8 / Fourth Year					
4. Course general Description:					
This course provides an introduction to data analysis, simple and multiple linear regression analysis, model building strategies in regression analysis to adjust for confounding and dealing with effect modification, logistic regression analysis for binary outcome data, analysis of time to event data including life table, Kaplan-Meier survival plot, log rank test and Cox proportional Hazards model. The learning method will include formal lectures on the topics, hands-on problem-solving tutorials, computer laboratory sessions to demonstrate the use of R, Python and SPSS software and presentation on the use of the methods in clinical and public health research.					
5. Pre-requirements for this course (if any)**:**					
Theory of Statistics (2023101-3)					
6. Co--requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					

- **Recognize the statistical analysis for Health Research.**
- **Describe elementary features of survival data.**
- **Explain the statistical techniques for analyzing the associations among several variables**
- **Estimate time-to-event data analysis.**

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	**3Hr /Week**	100%
2	E-learning		
3	Hybrid • Traditional classroom		

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

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

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 statistical analysis for Health Research	K2	• Lectures • Group discussions	• Quizzes • Assignments
1.2	Describe elementary features of survival data.	K2	• Lectures • Group discussions	• Exams • Assignments
2.0	**Skills**			
2.1	Explain the statistical techniques for analyzing the associations among several variables	S4	• Interactive classes • Group discussions	• Quizzes • Assignments
2.2	Use Z, T, F, and Chi-square tests statistics for making statistical inferences	S4	• Lectures • Group discussions	• Exams • Quizzes
2.3	Estimate time-to-event data analysis.	S5	• Lectures • Self-learning through the website	• Exams • Quizzes • Assignments
3.0	**Values, autonomy, and responsibility**			
3.1	Work effectively within groups and independently.	V1	• Interactive classes • Give students tasks of duties	• Assessment of design projects that have elements of interpersonal skills

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to data analysis for clinical trials statistics	3
2.	Statistical measurement in Health Research	3
3.	Estimation and Sampling distribution	3
4.	Hypothesis testing methods	3
5.	Linear and Multiple regression.	3
6.	Correlation analysis.	3
7.	**First Midterm exam**	3
8.	Qualitative independent variables	3
9.	Variable selection procedure	3
10.	Logistic regression	3
11.	Analysis of variance, ANOVA	3
12	Survival analysis, time to event data	3
13.	**Second Midterm exam**	3
14.	Censoring, the Kaplan Meier Procedure	3
15	Comparing survival curves.	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	Continuous Evaluation	10 %
2.	Assignments, report	Continuous Evaluation	10 %
3.	Midterm 1 Exam	8-9	15%
4.	Midterm 2 Exam	12-13	15%
5.	Final Exam	15-16	50%

*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	W. DANIEL." BIOSTATISTICS A Foundation for Analysis in the Health Sciences"(Georgia), 10th edition, 2013, Wiley, Printed in the United States of America.

Supportive References	Indian Journal of Public Health: India (2015).
Electronic Materials	http://sdl.summon.serialssolutions.com/search?s.q=%20%20%20BIOSTATISTICS%20A%20Foundation%20for%20Analysis%20in%20the%20Health%20Sciences#!/search?ho=t&l=ar-AR&q=%20%20%20BIOSTATISTICS%20A%20Foundation%20for%20Analysis%20in%20the%20Health%20Sciences
Other Learning Materials	KOLKATA, ESSENTIALS OF BIOSTATISTICS, (2016)

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
Technology equipment (Projector, smart board, software)	Data show, Blackboard
Other equipment (Depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Program Leader	Direct & Indirect
Effectiveness of students assessment	Faculty, Program Leader	Direct
Quality of learning resources	Students, Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	Direct & Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Department Council
REFERENCE NO.	4
DATE	October 2023