Course Specification
— (Postgraduate)

Course Title:	Non-Parametric Statistics
Course Code:	202665-3
Program:	M.Sc. in Statistics
Department:	Mathematics and Statistics
College:	Science
Institution:	Taif University
Version:	2023
Last Revision Date:	7/4/1445

Table of Contents

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: (N/A)

4. Course general Description:

This course contains some very important topics in statistics. These topics are:
The statistical theory of counting and ranking – The projection principle- One and two samples U statistics theorems – Empirical and quantile processes – Goodness of fit tests for complete and randomly censored data – nonparametric density estimator.

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

None

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

None

7. Course Main Objective(s):

1. **Understand the statistical theory of counting and ranking.**
2. **Understand goodness of fit tests for complete and randomly censored data.**
3. **Determine nonparametric density estimator.**
4. **Understand the projection principle.**
5. **Understand the one and two samples U statistics theorems.**
6. **Understand the empirical and quantile processes.**

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100 %
2	E-learning		
3	Hybrid		

No	Mode of Instruction	Contact Hours	Percentage
	• Traditional classroom • E-learning		
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	**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 theory of counting and ranking.	K1	Lectures, group discussion	Exams, Quizzes, Assignments
1.2	Outline goodness of fit tests for complete and randomly censored data.	K2	Lectures, group discussion	Exams, Quizzes, Assignments
1.3	Describe the empirical and quantile processes.	K3	Lectures, group discussion	Exams, Quizzes, Assignments
2.0	**Skills**			
2.1	Apply one and two samples U statistics theorems.	S2	Lectures, group discussion	Exams, Quizzes, Assignments, Report
2.2	Explain the projection principle.	S4	Lectures, group discussion	Exams, Quizzes, Assignments, Report

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
3.1	Participate effectively within groups and independently.	V1	Collaborative Learning Self-learning	Scientific activity
3.2	Accept critical thinking, communication skills, and mathematical and statistical methods for solving many problems in other disciplines.	V4	Collaborative Learning Self-learning	Scientific activity

C. Course Content:

No	List of Topics	Contact Hours
1.	The statistical theory of counting and ranking, The projection principle.	9
2.	One sample U statistics theorem, Two sample U statistics theorem.	9
3.	Empirical and quantile processes, Goodness of fit tests for complete.	9
4.	Goodness of fit tests for randomly censored data, Continue goodness of fit tests for randomly censored data.	9
5.	Nonparametric density estimator.	9
Total		**45**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes + home works+ oral presentation +written test+ group project	Continues	30%
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	Larry Wasserman , All of Nonparametric Statistics, 2006, Springer.
Supportive References	Nigel C. Smeeton and Peter Sprent, Applied Nonparametric Statistical Methods, 2008, Wiley.

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.)	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		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department Council
REFERENCE NO.	
DATE	7/4/1445

قسم الرياضيات والإحصاء
Mathematics and Statistics Department

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