Course Specification
— (Postgraduate)

Course Title:	**Introduction to statistical programming**
Course Code:	**202593-3**
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: (First Year/ First Level)

4. Course general Description:

Introduction to R - Basic features of R - Basic Statistics with R - Integration and Differentiation – Simulation - Generating samples from probability distributions – Fitting distributions with R – Some graphical statistical packages in R.

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

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

7. Course Main Objective(s):

After careful study of this course, student should be able to do the following:
1- Provide an introduction to R
2- Read data into R, manipulate and analyze it.
3- Organize, and comment R code.
4- Understand the R environment for downloading, installing, and using packages.
5- Do basic programming to write their own functions.
6- Use loops. Create standard and customized graphics • Perform basic statistical operations

2. Teaching Mode: (mark all that apply)

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

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

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	15
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 R programming	K1	• Lectures Group discussions	• Quizzes • Exams Assignments
1.2	**Outline** the Reading data into R, manipulate and analyze it.	K2	• Lectures Group discussions	• Quizzes • Exams Assignments
...				
2.0	**Skills**			
2.1	**Apply** the R programming to estimate the parameters .	S2	• Lectures Group discussions	• Quizzes • Exams Assignments
2.2	**Evaluate**, and compare between estimators.	S4	• Lectures Group discussions	• 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	V4	Projects	Through the oral

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	and statistical ideas orally and in writing			presentation of the projects.
...				

C. Course Content:

No	List of Topics	Contact Hours
1-3	R and R Studio, Introduction to Basic features of R - Basic Statistics with R.	9
4-6	Using R for Data Analysis, Using R for Integration and Differentiation	9
7-9	Using R for Differentiation, Using R for Generating samples from probability distributions.	9
10-12	Fitting distributions with R, Some graphical statistical packages in R	9
13-15	Using R for Simulation, Some applications on the uses of R.	9
Total		**45**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes + Homeworks+ 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	Braun, W. John and Duncan J. Murdoch. 2008. A First Course in Statistical Programming with R. Cambridge University Press.)
Supportive References	AMY S. WAGAMAN, ROBERT P. DOBROW 2014, Probability with applications and R. John Wiley & Sons.
Electronic Materials	1.The R statistical software program. Available from: https://www.r-project.org/ 2. RStudio an Integrated Development Environment (IDE) for R. Available from: https://www.rstudio.com/

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	**Students**	Indirect
Quality of learning resources	**Peer reviewer**	Direct
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

قسم الرياضيات والإحصاء
Mathematics and Statistics
Department

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