



Course Specification

— (Bachelor)

Course Title: Applied Ordinary Differential Equations

Course Code: MTHS 231

Program: Applied Statistics & Data Management

Department: Mathematics

College: College of Science

Institution: Majmaah University, Saudi Arabia

Version: 2023

Last Revision Date: 08/09/2023



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A. General information about the course:

1. Course Identification

1. Credit hours: (3(2+2))

2. Course type

A. University College Department Track Others

B. Required Elective

3. Level/year at which this course is offered: (Level 2 First year)

4. Course General Description:

Basic Concepts and Definitions- Organization and Graphical Representation of the Data- Graphical Representation- Measures of Central Tendency- Measures of Dispersion- Mathematical Concepts - Definitions and Concepts in Probability Calculus Concept of Probability Function- Conditional Probability and Independence of Event permutations and combinations, point and interval estimation, correlation and simple linear regression, and hypothesis tests for proportions, means and variances.

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

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

1. Definition of statistics, population, and sample
2. Understanding the concept of statistics and parameters
3. Introducing basic statistical methodology of data analysis including; graphs, descriptive statistics
4. Deducing measures of location and dispersions (mean and variance)
5. Interpret probabilities and use probabilities of outcomes to calculate probabilities of events in discrete sample spaces- exclusive and independent events
6. The definition of the random variable, some discrete and continuous distributions

2. Teaching mode (mark all that apply)



No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	48	80
2	E-learning	12	20
3	Hybrid <ul style="list-style-type: none"> • 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	
3.	Field	
4.	Tutorial	30
5.	Others (specify)	
Total		60

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 and differentiate between key terms.	K1	Direct teaching: Inquiry-based instruction Power Points and discussions Aimed teaching: Discovery and oral questions	<ul style="list-style-type: none"> • Homework • Quizzes • Midterms • Final Exam • Discussions
1.2	Display data graphically and interpret graphs: stem-plots, histograms, and box plots.	K1	Direct teaching: Inquiry-based instruction Power	<ul style="list-style-type: none"> • Homework • Quizzes • Midterms • Final Exam





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			Points and discussions Aimed teaching: Discovery and oral questions	<ul style="list-style-type: none"> Discussions
2.0	Skills			
2.1	Apply various types of sampling methods to data collection.	S2	Encourage students to look for some complicated problems	<ul style="list-style-type: none"> Homework Quizzes Midterms Final Exam Discussions
2.2	Create and interpret frequency tables.	S2	Assignments	<ul style="list-style-type: none"> Homework Quizzes Midterms Final Exam E-exam
2.3	Recognize, describe, and calculate the measures of location of data: quartiles and percentiles	S2	Encourage students to look for some complicated problems	<ul style="list-style-type: none"> Homework Quizzes Midterms Final Exam
3.0	Values, autonomy, and responsibility			
3.1	Recognize, describe, and calculate the measures of the center of data: mean, median, and mode.	V1	Direct teaching: Inquiry-based instruction Power Points and discussions	<ul style="list-style-type: none"> Homework Quizzes Final Exam E-exam
3.2	Recognize, describe, and calculate the measures of the spread of data: variance, standard deviation, and range.	V1	Direct teaching: Inquiry-based instruction Power Points and discussions Aimed teaching: Discovery and oral questions	<ul style="list-style-type: none"> Homework Quizzes Discussions Final Exam
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C. Course Content

No	List of Topics	Contact Hours
1	Basic Concepts and Definitions- Organization and Graphical Representation of the Data- Graphical Representation	12
2	Measures of Central Tendency- Measures of Dispersion- Mathematical Concepts - Definitions and Concepts In Probability Calculus Concept of Probability Function	12
3	Conditional Probability And Independence Of Event permutations and combinations, point and interval estimation	12
4	correlation and simple linear regression, and hypothesis tests for proportions, means and variances	9
5	and hypothesis tests for proportions, means and variances	7
6	means and variances	8
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	1 ST Midterm	7 th week	30%
2.	Activities	Through of semester	10%
3.	Quizzes	Through of semester	10%
4.	2 ND Midterm	10th week	10%
5.	Final exam	End of semester	40%

*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	Applied Statistics and Probability for Engineers. seventh edition D.C. Montgomery & G. C. Runger, John Wiley & Sons 2011
Supportive References	Frederik MiChel Dekking Cornelis Kraaikamp Hendrik Paul Lopuhaa“Ludolf Erwin Meester , Springer-Verlag London Limited , 2005
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment





Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom with capacity of 25-students. Laboratory with capacity of 25-students.
Technology equipment (projector, smart board, software)	Data show, Smart Board
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching		
Effectiveness of Students assessment	Students/ internal committee	Direct (Students Evaluation Electronically Organized By Deanship Of Registration And Admission)/ Verification Of Students' Papers
Quality of learning resources	Staff members (Peer Reviewer)	Indirect (Frequent meetings consultation among the teaching staffs)
The extent to which CLOs have been achieved	Staff members (course coordinators)	Direct (Meeting between course coordinators and the tutors)
Other	Students/ internal committee	Direct (Students evaluation electronically organized by Deanship of registration and admission)/ Verification of students' papers

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Mathematics Department
REFERENCE NO.	5
DATE	1/10/2023 (16/3/1445)

