Course Specification
(Bachelor)

Course Title:	**Calculus I**
Course Code:	**211MATH-3**
Program:	**B. Sc. in Mathematics**
Department:	**Mathematics**
College:	**Science**
Institution:	**Jazan University**
Version:	**2024**
Last Revision Date:	**9/2024**

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 2/Year 2

4. Course general Description:

This course is designed to provide students with

- Functions.
- Limits and Continuity.
- Derivatives of Functions.
- Applications of Differentiation.

5. Pre-requirements for this course (if any): Math 101

6. Co- requirements for this course (if any): None

7. Course Main Objective(s):

After finishing the course, the student is expected to be familiar with the following:

- Importance of differentiation in Science, Engineering, Management and other fields.
- The basic rules of differentiation and their applications.
- Development of logical thinking and necessary skills to solve problems.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	45	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	42
2.	Laboratory/Studio	0
3.	Field	0
4.	Tutorial	3
5.	Others (specify)	0
	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	Distinguishing mathematical concepts relevant to Functions, Limits and Derivatives, Differentiation Rules, Application of Derivatives.	K1	Lectures Web based work Classroom dissections (online) Group work (online) Problem solving	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.2	Identify structures and features of Mathematics problems in Functions, Limits and Derivatives, Differentiation Rules, Application of Derivatives.	K2	Lectures Web based work Classroom dissections (online) Group work (online) Problem solving	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.3	Explain notations and concepts required for the solution of Mathematical problem in Functions, Limits and Derivatives, Differentiation Rules, Application of Derivatives.	K3	Lectures Web based work Classroom dissections (online) Group work (online) Problem solving	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.0	Skills			
2.1	Apply aspects relevant to Functions, Limits and Derivatives, Differentiation Rules, Application of derivatives.	S1	Lectures Web based work Classroom dissections (online) Group work (online) Problem solving	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.2	Compute rates/quantities in Functions, Limits and Derivatives, Differentiation Rules,	S2	Lectures Web based work Classroom dissections (online) Group work (online) Problem solving	Written exam (Problem solve, MCQ, true/false, Proof, Short

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	Application of Derivatives.			answer), Quizzes, Assignments
2.3	Apply various math rules, techniques and theorems in dealing with Functions, Limits and Derivatives, Differentiation Rules, Application of Derivatives.	S3	Lectures Web based work Classroom dissections (online) Group work (online) Problem solving	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
3.0	Values, autonomy, and responsibility			
3.1	Cultivate a mathematical attitude and nurture the interest.	V1	Group work and interactive discussion.	Assignments, Discussion.
3.2	Realize the importance of responsibilities through different modes of practice, competition and related activities.	V2	Group work and interactive discussion.	Assignments, Discussion.
3.3	Inculcating values and ethics in thought, expression and deed.	V3	Group work and interactive discussion.	Assignments, Discussion.

C. Course Content

No	List of Topics	Contact Hours
1.	Functions	10
2.	Limits and Derivatives	13
3	Differentiation Rules	12
4	Application of derivatives	10
	Total	45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework and Quiz	3	5
1.	First exam	6	20
2.	Homework and Quiz	10	5
3.	Second exam	12	20

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4.	Final exam	15	50
5.	Homework and Quiz	3	5

*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	J. Stewart, Calculus, Early Transcendentals Sixth Edition, (2008).
Supportive References	• Calculus, H. Anton, 8th Edition, John Wiley and Sons, (2005). • Calculus, R. E. Larson, R. P. Hostetler, and B. H. Edwards, 7 Edition, Houghton Mifflin Company, (2002). • Calculus, G. B. Thomas, Early Transcendentals, 11 Edition, Addition-Wesley, New York (2006). • Calculus, E. Swokowski, M. Olinic, and D. Pence, 6 Edition, PWS Publishing Company, (1994).
Electronic Materials	Web sites dedicated to differential and integration available on the internet
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, Computer lab.
Technology equipment (projector, smart board, software)	Data show; Smart Board, Mathematics software.
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Peer and program leader	Indirect (Course Evaluation Survey)- Indirect peer evaluation
Effectiveness of students assessment	Students, Program assessment committee	Direct/ Indirect
Quality of learning resources	Students, Faculty members	Indirect
The extent to which CLOs have been achieved	Instructor	Direct/Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	**Board Of Mathematics Department**
REFERENCE NO.	**2417**
DATE	**29/03/1446 A. H.; 2/10/2024 A. D.**