



Course Specifications

Course Title:	Calculus 2
Course Code:	MTH 102
Program:	BS-Mathematics
Department:	Mathematics
College:	College of Sciences, AlZulfi
Institution:	Majmaah University, Saudi Arabia

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description.....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	4
C. Course Content	4
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	5
2. Assessment Tasks for Students	6
E. Student Academic Counseling and Support	6
F. Learning Resources and Facilities	7
2. Facilities Required.....	7
G. Course Quality Evaluation	7
H. Specification Approval Data	8

A. Course Identification

1. Credit hours:	4 (3+1)
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Second Level/First year
4. Pre-requisites for this course (if any):	Calculus (1): MTH 101
5. Co-requisites for this course (if any):	N/A

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	75%
2	Blended	15	25%
3	E-learning	0	0%
4	Distance learning	0	0%
5	Other	0	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	0
3	Tutorial	30
4	Others (specify)	30
	Total	105

B. Course Objectives and Learning Outcomes

<p>1. Course Description</p> <p>This course covers the generalization of the concepts of calculus such as recognize Definite Integral and its properties- Mean value theorem of integral, The fundamental theorem of Calculus- Indefinite integrals- Standard integrals- Derivatives and Integrals of hyperbolic and inverse hyperbolic functions, Techniques of Integrations: Substitution method- Integration by Parts- Trigonometric Substitutions- Integrals involving Quadratics- Integration by Partial Fractions and applications of Integration.</p>
<p>2. Course Main Objective</p> <p>Generally,</p> <ol style="list-style-type: none"> 1- To enable the students to understand the concepts of Integration. 2- The course aims at providing the student with the proper knowledge, cognitive skills, interpersonal skills, responsibility, communication skills and use of information technology skills. <p>Specially, Study of main concepts of Integration as follows</p>

- 1-Studying Definite integral and its properties.
- 2- Studying the mean value theorem of integral.
- 3- Studying the fundamental theorem of Calculus.
- 4- Having the knowledge of Indefinite integral and Standard integrals.
- 5- Having the knowledge of integrals of hyperbolic and inverse hyperbolic functions.
- 6- Having the knowledge of Integration technique.
- 7- Applied integrations to evaluate areas and volumes.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define the definite integration, fundamental theorem of calculus, mean value theorem, area under a curve.	K1
1.2	The students will explain and interpret a general knowledge of important mathematical concepts.	K ¹
1.3		
1.4		
2	Skills :	
2.1	Enable students to analyses the mathematical problems.	S ^ξ
2.2	Acquiring skill in the use of various methods of integration.	S ^ξ
2.3		
2...		
3	Values:	
3.1	State the physical problems by mathematical method.	C ^ξ
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Definite Integral and its properties. Mean value theorem of integral. The fundamental theorem of Calculus.	8
2	Indefinite integrals - Standard integrals - Derivatives and Integrals of hyperbolic and inverse hyperbolic functions.	8
3	Techniques of Integrations: Substitution method- Integration by Parts- Trigonometric Substitutions.	12
4	Techniques of Integrations: Integrals involving Quadratics- Integration by Partial Fractions	12
5	Convergence and Divergence of sequences and series- Taylor and MacLurin series. Improper Integrals	8

6	Applications of Integration. Calculating areas and volumes using definite .integration	8
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Define the definite integration, fundamental theorem of calculus, mean value theorem, area under a curve.	Direct teaching: Inquiry-based instruction PowerPoints and discussions Aimed teaching: Discovery and oral questions	Quizzes Midterms Final examination E-exam Oral Exam
1.2	The students will explain and interpret a general knowledge of important mathematical concepts.	Direct teaching: Inquiry-based instruction PowerPoints and discussions Aimed teaching: Discovery and oral questions	Quizzes Midterms Final examination
1.3	.		
2.0	Skills		
2.1	Enable students to analyses the mathematical problems.	Direct teaching: Inquiry-based instruction PowerPoints and discussions Aimed teaching: Discovery and oral questions	Assignments Quizzes Home work Oral Exam
2.2	Acquiring skill in the use of various methods of integration.	Direct teaching: Inquiry-based instruction PowerPoints and discussions Aimed teaching:	Quizzes Midterms Final examination E-exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		Discovery and oral questions	
...			
3.0	Values		
3.1	State the physical problems by mathematical method.	Direct teaching: Inquiry-based instruction PowerPoints and discussions Aimed teaching: Discovery and oral questions	Assignments Quizzes Home work
3.2			
...			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam 1	7	20
2	Midterm Exam 2	12	20
3	Homework	Through of semester	5
4	Team work and Presentation	Through of semester	5
5	Quizzes	Through of semester	5
6	E-Tests	12	5
7	Final Examination	15	60
	Total		100

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- 1- Office hours per week in the lecturer schedule.
- 2- The contact with students by e-mail and website.
- 3- Activation of the virtual classrooms and academic guidance via Black Board **LMS**.

F. Learning Resources and Facilities

Required Textbooks	Calculus /Smith/Minton Mc Graw Hill 20129780071316576 Calculus and analytical Geometry (9 th Edition) / George B. Thomas, Ross L. Finney/ Addison-Wesley publishing company/1996
Essential References Materials	
Electronic Materials	http://joshua.smcvt.edu/alculus http://faculty.mu.edu.sa/khaled/calculus_1 http://www.youtube.com/calculus/
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room with speakers and internet access. Classroom with capacity of 30-students. Library
Technology Resources (AV, data show, Smart Board, software, etc.)	Blackboard
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students/ internal committee	Direct (Students evaluation electronically organized by Deanship of registration and admission)/ Verification of students' papers
Extent of achievement of course learning outcomes	Staff members (Peer Reviewer)	Indirect (Frequent meetings consultation among the teaching staffs)
Quality of learning resources.	Staff members (course coordinators)	Direct (Meeting between course coordinators and the tutors)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Mathematics Department
Reference No.	27
Date	8/8/1442 H-21/3/2021 G

Head of Department

Dr. Muqrin Almuqrin

