



Course Specifications

Course Title:	Fundamentals of Integral calculus
Course Code:	MATH 200
Program:	Bachelor of Science in Mathematics
Department:	Mathematics
College:	Science
Institution:	University of Tabuk

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	3
C. Course Content	4
D. Teaching and Assessment	4
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	4
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	5
1. Learning Resources	5
2. Facilities Required.....	5
G. Course Quality Evaluation	6
H. Specification Approval Data	6

A. Course Identification

1. Credit hours: 04+1 Hours/Week
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: L3/Y2
4. Pre-requisites for this course (if any): MATH 101
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	60
2	Laboratory/Studio	
3	Tutorial	15
4	Others (specify)	
	Total	75

B. Course Objectives and Learning Outcomes

1. Course Description This course is designed to help students develop calculus skills, where the course help students to master the basic methods of integration and their applications. The course also introduce students to sequences and Infinite Series and their convergence.
2. Course Main Objective -Students will be able to recall basic rules and theorems of integral calculus. -Students will be able to apply integration methods to solve geometrical and physical problems . -Students will be able to analyze the convergence of infinite series.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Students will be able to recall concepts of integration.	K1
1.2	Students will be able to recognize methods of integration in practical problems.	K2
2	Skills :	

CLOs		Aligned PLOs
2.1	Students will be able to use the fundamental theorem to solve problems of integration.	S3
2.2	Students will be able to identify the best methods and the analytical procedures to find the right result.	S1
2.3	Students will be able to interpret integration of functions and their graphs.	S1
3	Values:	
3.1	Students will demonstrate responsibility to solve given assignments on their own and submit the solution on time.	V1

C. Course Content

No	List of Topics	Contact Hours
1	Indefinite integrals, Integration by substitution.	3 Hrs
2	Definite integral, The fundamental Theorem of calculus, Definite integral by Substitution	3 Hrs
3,4	Hyperbolic Functions, Area Between Two Curves, Volumes By Slicing ; Disks And Washers.	6 Hrs
5,6	Area Between Two Curves, Volumes By Slicing ; Disks And Washers. Volumes By Cylindrical Shells, Length of a plane Curve, Area of a Surface of Revolution, Length of a plane Curve.	6 Hrs
6	Mid-Exam 1	
7	Integration by parts, Trigonometric Integrals.	3 Hrs
8	Improper Integrals, Sequences	3 Hrs
9	Monotone Sequences, Infinite Series	3 Hrs
10	Convergence Tests, The Comparison ,Ratio, and Root tests	3 Hrs
11	Alternating Series; Conditional convergence , Maclurin and Taylor polynomials	3 Hrs
11	Mid-Exam 2	
12,13	Maclurin And Taylor series; Power Series, Maclurin and Taylor series ; power series	6 Hrs
14,15	Revision & Final Exam	6 Hrs
Total		45 Hrs

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 and Understanding		
1.1	Students will be able to recall concepts of integration.	Introducing new ideas through case study	Quizzes I II Midterm Exams
1.2	Students will be able to recognize methods of integration in practical problems.	Lectures Class Discussions	Final Exams homework assignments
...			
2.0	Skills		
2.1	Students will be able to use the fundamental theorem to solve problems of integration.	Lectures Class Discussions	Quizzes I II Midterm Exams
2.2	Students will be able to use the fundamental theorem to solve problems of integration.		Final Exams
2.3	Students will be able to identify the best methods and the analytical procedures to find the right result.		Homework assignments.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.4	Students will be able to interpret integration of functions and their graphs.		
3.0	Values		
3.1	Students will demonstrate responsibility to solve given assignments on their own and submit the solution on time.	Lectures Assign tasks	Quizzes Homework assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works and Assignments and Quizzes	Weekly basis	10%
2	Mid Exam-I	6 th week	25%
3	Mid Exam-II	11 th week	25%
4	Final Exam	At end of the Semester	40%

*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 :
Six office hours per week in the lecturer schedule.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Calculus, Early Transcendentals ,10th ed Author ; Howard Anton, I. Bivins, S. Davis
Essential References Materials	Courant, Richard, and Fritz John. Introduction to calculus and analysis I. Springer Science & Business Media, 2012.
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1.Lecture Room with capacity of 30 students and equipped with White Board, Overhead projector and internet connection. 2.Library
Technology Resources	Projectors

Item	Resources
(AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct and Indirect
Extent of achievement of course learning outcomes	Teachers	Direct
Quality of learning resources	Students	Indirect

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	Program and study plan committee
Reference No.	
Date	25/08/2021