هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Fundamentals of Integral calculus
Course Code:	MATH1201
Program:	Bachelor of Science in Mathematics
Department:	Mathematics
College:	Faculty of Science
Institution:	University of Tabuk
Version:	4
Last Revision Date:	09 September 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours:					
4 Credit hours (3 h Theoretical + 1 h Practical)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level2/Year2)					
4. Course general 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.					
5. Pre-requirements for this course (if any)**:**					
MATH 1102					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
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.**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	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**	45
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	15
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	Recall concepts of integration.	K1	Introducing new ideas through case study Lectures Class Discussions	Quizzes Midterm Exam Final Exam homework assignments
1.2	Describe methods of integration in practical problems.	K2		
2.0	**Skills**			
2.1	Solve the analytical procedures to solve problems of integration.	S1	Lectures Class Discussions	Quizzes Midterm Exam Final Exam Homework assignments.
2.2	Demonstrate integration of functions and their graphs.	S2		
2.3	Apply the fundamental theorem.	S3		
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate responsibility to solve given assignments on their own and submit the solution on time.	V2	Lectures Assign tasks	Quizzes Homework assignments

C. Course Content

No	List of Topics	Contact Hours
1.	The Indefinite integral.	(3+2) Hrs
2.	Integration by Substitution.	(3+2) Hrs
3.	The Definite integral, The Fundamental Theorem of Calculus.	(3+2) Hrs
4.	Evaluating Definite Integrals by Substitution	(3+2) Hrs
5.	Hyperbolic Functions.	(3+2) Hrs
6.	Area Between Two Curves.	(3+2) Hrs
7.	Volumes by Slicing; Disks and Washers.	(3+2) Hrs
8.	Length of a Plane Curve; Area of a Surface of Revolution.	(3+2) Hrs
9.	Integration by Parts.	(3+2) Hrs
10.	Integrating Trigonometric Functions; Trigonometric Substitution	(3+2) Hrs
11.	Integrating rational functions by partial fractions	(3+2) Hrs
12.	Improper Integrals; Sequences	(3+2) Hrs
13.	Infinite Series, Convergence Tests.	(3+2) Hrs
14.	Maclurin and Taylor Polynomials.	(3+2) Hrs
15.	Maclurin and Taylor Series; Power Series.	(3+2) Hrs
Total		75 hrs

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Activities	Weekly basis	5%
2.	Homework	Weekly basis	5%
3.	Quizzes	Weekly basis	10%
4.	Mid Exam1	6^{th} week	20%
5.	Mid Exam2	11^{th} week	20%
6.	Final Exam	At end of the 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	**I. Bivins, S. Davis Howard Anton, Calculus, Early Transcendentals ,10th ed ; 1981.**
Supportive References	Courant, Richard, and Fritz John. Introduction to calculus and analysis I. Springer Science & Business Media, 2012.
Electronic Materials	Saudi electronic library https://www.sdl.edu.sa/

Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1.Lecture Room with capacity of 30 students and equipped with White Board, Overhead projector and internet connection. 2.Library
Technology equipment (projector, smart board, software)	Projectors
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct/Indirect
	Department/Faculty	Direct/Indirect
	External committees	Indirect
Effectiveness of Students assessment	Students	Direct/Indirect
	Department/Faculty	Direct/Indirect
	External committees	Indirect
Quality of learning resources	Students	Direct/Indirect
	Department/Faculty	Direct/Indirect
	External committees	Indirect
The extent to which CLOs have been achieved	Students	Direct/Indirect
	Department/Faculty	Direct/Indirect
	External committees	Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**Approval by the Department Council**
REFERENCE NO.	DEPARTMENT COUNCIL NO (7)
DATE	**14/09/2023**