



Course Specifications

Course Title:	Calculus
Course Code:	193 MATH
Program:	MMET, EPET, CHET
Department:	Basic Sciences and Supporting Studies
College:	College of Applied Industrial Technology
Institution:	Jazan University

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	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	5
1. Learning Resources	5
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	6



A. Course Identification

1. Credit hours: 3hrs
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: Third level/ Second year
4. Pre-requisites for this course (if any): 092 MATH
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	30
2	Laboratory/Studio	--
3	Tutorial	30
4	Others (specify)	--
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

This is a theoretical course designed to provide knowledge and educational experience to students in order to solve mathematical problems involved in technical specialty courses. The topics may include: limits and continuity, differentiation, applications of differentiation, indeterminate form, L'Hopital rule, indefinite and definite integrals with their applications. The course should enable the students to acquire sufficient understanding in ordinary differential equations of first order and modeling.

The course is introduced through three classes weekly. There are 2 classes (1 hour each) for theoretical part and 2 hours class for tutorial for which students discuss and solve the problems of the lectures.

2. Course Main Objective

Calculus is an important course in mathematics, because it is the basis in studying other courses.

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

- Show the importance of differentiation and integration in branches of science and engineering and recognize the relationship between them.
- Understand the basic rules of differentiation, integration and their applications.
- Develop the student's logical thinking and providing students with skills necessary to solve problems.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Compute the different types of limits.	K1
2	Skills :	
2.1	Demonstrate knowledge of the derivative in some special functions.	S1
2.2	Examine the chain rule and L'Hopital rule.	S1
2.3	Explain the basic rules of integration and develop the concept of Laplace Transform.	S2
3	Values:	
3.1	Observe the ability to work independently and meet deadlines.	V1

C. Course Content

No	List of Topics	Contact Hours
1	<u>Limits and Continuity</u> a. Limit by definition, theorems b. Computing limits c. Limits at infinity; End behavior of a function d. Continuity	14
2	<u>The Derivative</u> a. Derivative of functions b. The product and quotient rules c. Derivatives of trigonometric functions	14
3	<u>Topics in Differentiation</u> a. Derivatives of logarithmic and exponential functions b. The Chain rule; Implicit functions; c. L'Hopital's rule; indeterminate form	14
4	<u>Integrations</u> a. Indefinite integrals b. Integration by substitution d. Definite integrals e. Laplace transform	14
	Revision of theoretical concepts	4
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 and Understanding		
1.1	Compute the different types of limits.	Lecture, tutorial, active learning	Quiz, exams
2.0	Skills		
2.1	Demonstrate knowledge of the derivative in some special functions.	Lecture, tutorial, active learning	Quiz, exams
2.2	Examine the chain rule and L'Hopital rule.	Lecture, tutorial, active learning	Quiz, exams
2.3	Explain the basic rules of integration and develop the concept of Laplace Transform.	Lecture, tutorial, active learning	Quiz, exams
3.0	Values		
3.1	Observe the ability to work independently and meet deadlines.	Active learning	Class activity

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes	All weeks	20%
2	Assignments & Class activity	All weeks	15%
3	Midterm Exam	Week 8	15%
4	Final Term Exam	As scheduled	50%

*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 :

Office hours are specified and instructors can be reached through emails.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> Lecture Notes Calculus: Howard Anton, Irl Bivens and Stephen Davis, 10th Editions, John Wiley and Sons.
Essential References Materials	<ul style="list-style-type: none"> Calculus: J. Stewart, 5th Edition, Brooks/Cole Publishing Company. Calculus: R.E. Larson, R.P. Hostetler and B.H. Edwards, 7th Edition, Houghton Mifflin Company Calculus: G. B. Thomas, Early Transcendentals, 11th Edition, Addition-Wesley, New York. <p>Calculus: E. Swokowski, M. Olinic, and D. Pence, 6th Edition, PWS Publishing Company</p>

Electronic Materials	<ul style="list-style-type: none"> • Not utilized
Other Learning Materials	<ul style="list-style-type: none"> • Not utilized

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms should be furnished for 25 students with <ul style="list-style-type: none"> • White board • Appropriate Chairs
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> • Computer with data show • Calculator
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> • Not utilized

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Confidential student Course Evaluation Survey	Institution	Online Direct Survey
End of semester CLO	Course Coordinator	Direct Survey

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	7
Reference No.	CAIT 210704
Date	28-9-2021