



# Course Specifications

<b>Course Title:</b>	Calculus 2
<b>Course Code:</b>	112 Math-3
<b>Program:</b>	Mathematics
<b>Department:</b>	Mathematics
<b>College:</b>	Science And Arts
<b>Institution:</b>	Najran University



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## A. Course Identification

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

## 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

## 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	3
	<b>Total</b>	<b>48</b>
<b>Other Learning Hours*</b>		
1	Study	20
2	Assignments	10
3	Library	7
4	Projects/Research Essays/Theses	
5	Office hours	15
	<b>Total</b>	<b>52</b>

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This course is a 3 credit course. It serves as a continuation of calculus I course. The topics including Riemann Sums, definite and indefinite integrals, fundamental theorem of calculus, Integration techniques, improper integrals, and applications of the definite integrals.



## 2. Course Main Objective

To introduce the concepts of definite and indefinite integrals, Integration techniques, and some applications of definite integrals.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1	Write the definition of indefinite and definite integrals.	
1.2	Define the derivative and the integral of the basic uncton (exponential, logarithmic, trigonometric, inverse trigonometric and hyperbolic functions.	
1.3	Recognize the different techniques of integration (Substitution rule, integration by parts, trigonometric and hyperbolic substitutions, partial fractions, special substitutions).	
1...		
2	<b>Skills :</b>	
2.1	Calculate the definite integrals using Riemann' sum	
2.2	Evaluate indefinite and definite integrals by different methods of integration.	
2.3	Applying the definite integrals for evaluating the area of plane regions, arc length, and volumes.	
2...		
3	<b>Competence:</b>	
3.1	Applied methods of integration to evaluate the areas and volumes	
3.2		
3.3		
3...		

## C. Course Content

No	List of Topics	Contact Hours
1	Riemann Sums The definite integrals properties of the definite integrals Antiderivatives and the indefinite integrals integration off basic functions Mean Value Theorem and the Fundamental Theorem of Calculus.	9
2	Indefinite integrals and the substitution rule Integrals involving the trigonometric and Hyperbolic functions Integral involving the inverse of trigonometric and Hyperbolic functions	9
3	Integration techniques: integration by parts trigonometric and hyperbolic substitutions Partial fractions	9
4	Integrals involving quadratic functions Special substitutions Integrals involving power of trigonometric functions	9
5	Improper integrals	3

6	Application of the definite integrals: Arc length Areas, Volumes	6
Total		

## 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	<b>Knowledge</b>		
1.1	Write the definition of indefinite and definite integrals.	Lecture discussions	Quiz Written exam
1.2	Define the integrals of the basic functions.	Lecture discussions	Quiz Written exam
1.3	Recognize the appropriate integration technique.	Lecture discussions	Quiz Written exam
2.0	<b>Skills</b>		
2.1	Evaluate the indefinite and definite integrals using different integration techniques.	Lectures discussions	homework Quizzes Written exam
2.2	Applied the definite integrals for finding the area of bounded regions and volume of the solid.	Lectures discussions	homework Quizzes Written exam
2.3			
3.0	<b>Competence</b>		
3.1	Describe the applications of the definite integrals in word life	Lectures discussions	Oral exam Observation card
3.2			
...			

### 2. Assessment Tasks for Students

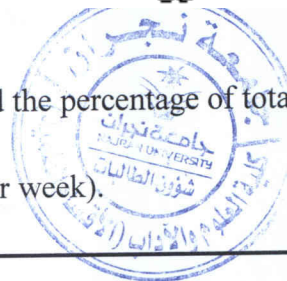
#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	written test 1	7	15
2	written test 2	13	15
3	Quizzes	open	5
4	Oral exam	14	5
5	Homework	open	10
6	Final Exam	End of semester	50
7			

\*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 :

- Introduce the syllabus, the assessment task and the percentage of total assessment score for the course in the first lecture.
- Office hours for a teaching staff (one hour peer week).



## F. Learning Resources and Facilities

### 1. Learning Resources

Required Textbooks	1- Thomas, Calculus, 11th edition. 2- James Stewart, Calculus: Early Transcendental.
Essential References Materials	
Electronic Materials	1- <a href="http://www.siskiyous.edu/.../lecturenotes.html">www.siskiyous.edu/.../lecturenotes.html</a> 2- <a href="http://www.ms.unimelb.edu.au/.../2006Fallmath">www.ms.unimelb.edu.au/.../2006Fallmath</a> 3- <a href="http://www.math.ksu.edu/syllabi/220-s02.pdf">www.math.ksu.edu/syllabi/220-s02.pdf</a>
Other Learning Materials	

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom include 25 seats
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Data show Smart Board
<b>Other Resources</b> (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
Student course evaluation survey at the end of semester	students	Indirect (questionnaire)
Effectiveness of teaching and assessment	Peer reviewer	Indirect (observation card)

**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	
Reference No.	
Date	

