



## Course Specifications

<b>Course Title:</b>	Calculus (2)
<b>Course Code:</b>	202263-3
<b>Program:</b>	<b>Bachelor in Information Technology</b>
<b>Department:</b>	Department of Mathematics
<b>College:</b>	<b>College of Science</b>
<b>Institution:</b>	<b>Taif University</b>

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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 checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 5/2
<b>4. Pre-requisites for this course (if any):</b> Calculus (1) (202261-3)
<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	5	100%
2	Blended	0	0
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	50
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	<b>Total</b>	50

## B. Course Objectives and Learning Outcomes

<b>1. Course Description</b>	
This course reinforces and extends the concepts and techniques of limits, differentiation and integration of functions taught in Calculus I, and introduces the concept of sequences and series and their application to problems in science and engineering	
<b>2. Course Main Objective</b>	
Introduce the concept of sequences and series and their application to problems in science and engineering.	
<b>3. Course Learning Outcomes</b>	
	<b>CLOs</b>
1	<b>Knowledge and Understanding</b>
2	<b>Skills :</b>
	<b>Aligned PLOs</b>



CLOs		Aligned PLOs
2.1	Apply integration techniques to solve practical problems such as finding the area between two curves the volume of a solid of revolution.	S1
2.2	Compute integrals using appropriate integration techniques such as substitution trigonometric substitution by parts by partial fractions...	S1
2.3	Determine whether an improper integral is convergent or divergent	S1
2.4	Determine whether an infinite sequence is convergent or divergent and find its limit if it is convergent.	S1
2.5	Determine whether an infinite series is convergent or divergent using an appropriate test divergence test integral test comparison tests ratio test root test...	S1
2.6	Represent functions as power series and approximate functions with Taylor polynomials	S1
<b>3</b>	<b>Values:</b>	

### C. Course Content

No	List of Topics	Contact Hours
1	Review of Calculus I	2
2	Area and Volumes Between Curves	3
3	Integration by parts and Trigonometric Integrals	5
4	Trigonometric Substitution Integrals and of Integration of Rational Functions by Partial Fractions	5
5	Strategy for Integration & 1 <sup>st</sup> midterm exam and Improper Integrals	5
6	Curves Defined by Parametric Equations & Calculus with Parametric Curves and Polar Coordinates	5
7	Sequences and Series (Convergence and Divergence)	5
8	The Integral Test and Estimates of Sums and the Comparison Tests	5
9	Alternating Series, Absolute Convergence and the Ratio and Root Tests	5
10	Strategy for Series Testing and 2 <sup>nd</sup> midterm exam	5
11	Power Series	3
12	Representations of Functions as Power Series & Taylor and Maclaurin Series	2
<b>Total</b>		<b>50</b>

### D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and Understanding</b>		
<b>2.0</b>	<b>Skills</b>		
2.1	Apply integration techniques to solve practical problems such as finding the area between two curves the volume of a solid of revolution.	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Compute integrals using appropriate integration techniques such as substitution trigonometric substitution by parts by partial fractions...	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.3	Determine whether an improper integral is convergent or divergent	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.4	Determine whether an infinite sequence is convergent or divergent and find its limit if it is convergent.	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.5	Determine whether an infinite series is convergent or divergent using an appropriate test divergence test integral test comparison tests ratio test root test...	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
2.6	Represent functions as power series and approximate functions with Taylor polynomials	Lecture Discussion Problem Solving	Written Exams Quizzes Assignments
3.0	<b>Values</b>		

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments, Quizzes	3,4,6,9,10	20%
2	Midterm Exam	6	30%
3	Final Exam	12	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 :

Academic advising and counseling of students is an important component of teaching; student academic advising is a mandatory requirement of College of Computers and Information Technology (CCIT). Appropriate student advising provides support needed for the student during times of difficulty. In addition, it helps the student to build a close relationship with his/her advisor and to provide student motivation and involvement with the institution.

In addition, since faculty are usually the first to recognize that a student is having difficulty, faculty members play a key role in developing solutions for the students or referring them to appropriate services. Faculty members also participate in the formal student-mentoring program.

Additional counseling is provided by course directors, who provide students with academic reinforcement and assistance and refer “at risk” students to the Vice Dean for Academic Affairs and the Vice Dean for female section.



## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	James Stewart, Calculus; International Metric, seventh edition, Cengage Learning, 2012.
<b>Essential References Materials</b>	James Stewart, Calculus; International Metric, Cengage Learning, 2012.
<b>Electronic Materials</b>	NON
<b>Other Learning Materials</b>	NON

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>• A Lecture room appropriate for maximum 25 students with a personal computer, a data show and a smart board.</li> <li>• A Lab room appropriate for maximum 15 students with a personal computer, a data show and a smart board.</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>• NON</li> </ul>
<b>Other Resources</b> (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	Students	Students surveys and Students course evaluation
Improvement of Teaching	Course Coordinator	deficiencies based on the student Evaluation, faculty input, course file, and program assessment
Verifying Standards of Student Achievement	Curriculum Committee	<ul style="list-style-type: none"> <li>• Review CAF (Course assessment file)</li> <li>• Alumni surveys.</li> </ul> Periodic exchange and remarking of tests or a sample



Evaluation Areas/Issues	Evaluators	Evaluation Methods
		of assignments with staff at another

**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	IT Department Council/ Executive program committee
Reference No.	11
Date	23/10/21443


  
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 جامعة الطائف  
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