

## Course Syllabi

<b>Course Title and Code</b>	<b>Calculus -MATH105</b>
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➤ **Course Identification and General Information:**

<b>Department</b>	Deanship of Educational Services/Scientific Unit	<b>Course Level</b>	Level 2
<b>Contact Hours</b>	1 theory class per week for two hours 1 practical class per week for two hours	<b>Credit Hours</b>	3(2+2)
<b>Web Address</b>	<a href="http://www.des.qu.edu.sa">http://www.des.qu.edu.sa</a>		

➤ **Course Instructor/Coordinator's Name:** Dr. Mohamed Ali

➤ **Textbook Title, Author, and Year:**

• Calculus, Early transcendental (H. Anton, I. Bivens and S. Davis). Tenth Edition (WILEY)

➤ **Other Supplemental Materials:**

• None

➤ **Specific Course Information:**

- **Catalog Description:** Functions, Limits And Continuity, The Derivative, Topics In Differentiation, The Derivative In Graphing And Applications.
- **Pre-requisites:** It requires the knowledge of Mathematics at the high school.
- **Co-Requisites:** None.
- **Required, Elective, or Selected Elective:** None.

➤ **Specific Goals for the Course:** Summary of the main learning outcomes for enrolled students.

- The objective of the course is to prepare Preparatory Year Program (science branch) students for freshman mathematics courses taught in English by emphasizing on basic concepts of Calculus. The students are expected to comprehend the material of this course to improve their computational skills in Calculus. They are also expected to demonstrate their writing ability in Mathematics with logical steps. The medium of instruction is strictly ENGLISH from the day one of teaching.

➤ **Program Outcomes Addressed by the Course:**

This course provides the following outcomes with the following relationship:

<b>Preparatory Year Program Outcome</b>	<b>Relationship to Course</b>
1. The course contributes to the development of student skills in English writing, reading and conversation.	High

2. The course contributes to the development of student skills in computer and its application in learning process	Low
3. The course helps to develop the skill of the students in the learning process.	High
4. The course strengthens ties education collaborative learning (peer-to-peer and other appropriate sources).	Medium
5. The course fosters the development of student skills in creative thinking, innovative and positive.	Medium
6. The course instills the principles and positive communication within groups (enjoy the team spirit).	Medium
7. The course contributes to the development of student skills in methods of constructive dialogue.	Medium
8. The course fosters the development of student skills in making decisions.	Medium
9. The course helps to develop the skill of the students in problem solving.	high
10. The course helps to develop the skill of students on constructive criticism.	Medium
11. The course helps to develop the skill of students in compliance and accounting.	Low
12. The course helps to develop the skill of students in interaction with the University environment and for undergraduate study.	High
13. The course helps to develop the skill of students in interaction with the environment and the needs and attitudes of the community and science.	High
14. The course helps to develop the skill of students on effective interaction on student activities.	Medium
15. The course helps to develop student skills in the effective interaction in volunteer work.	Medium
16. The course helps to develop student skills in	Medium

effective leadership.	
17. The course helps to develop student skills in linking information to realistic applications.	High
18. The course helps to develop the skill of students on work ethic.	Medium
19. The course helps to develop student skills in estimating functional responsibility toward national growth.	Medium
20. The course helps to develop student skills in assessing the scientific career path chosen.	high

➤ **Brief List of Topics to be Covered:**

- Functions.
- New functions from old.
- Families of functions.
- Inverse functions.
- Exp. and Log. functions.
- Limits.
- Computing limits.
- Limits at infinity.
- Continuity.
- Continuity of Trig., Exp., and inverse functions.
- Tangent lines and rates of change.
- The derivative function.
- Introduction to Tech. of Differentiation.
- The product and quotient rules.
- Derivatives of Trig. Functions.
- The chain rule.
- Implicit differentiation.
- Derivatives of Log. Functions.
- Derivatives of Exp., and inverse Trig. Functions.
- Related Rates.
- Local linear approximation.
- L'Hopital's rule.
- Analysis of functions I.
- Analysis of functions II.
- Analysis of functions III.
- Absolute Maxima and Minima.

➤ **Outcome Assessment:**

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| <p><b>1. Direct Assessment</b></p> <p><input checked="" type="checkbox"/> Midterm Exam I</p> |
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- Midterm Written Exam II
- Final Exam
- Quizzes
- Homework
- Integrative Projects
- Students' Portfolios
- Case Study
- Oral Exams
- Written Reports
- Participation in Lecture
- Illustrative Presentations
- Use of Computer Facilities by Students
- Reading of References Related to Course Topics
- Team Work
- Practice in the Lab

**2. Indirect Assessment**

- Pre-Course Questionnaire
- Post-Course Questionnaire
- Group Discussions
- Students' Interviews

➤ **Course Outline:**

Weeks	Contact Hours	Chapter	Topics
1	4	Revision	Revision
2	4	Chapter 0: Before Calculus	Section 0.1 Section 0.2
3	4		Section 0.3 Section 0.4 Section 0.5
4	4	Chapter 1: Limits and Continuity	Section 1.1 Section 1.2
5	4		Section 1.3 Section 1.5
6	2		Section 1.6
	2	Chapter 2: The Derivative	Section 2.1
7	4		Section 2.2 Section 2.3
8	4		Section 2.4 Section 2.5
9	Holiday	Holiday	Holiday
10	2		Section 2.6
	2	Chapter 3: Topics in Differentiation	Section 3.1
11	Mid-term Ex	Mid-term Exam	Mid-term Exam
12	4	Derivatives of Logarithmic Functions	Section 3.2

		Derivatives of Exponential and Inverse Trigonometric Functions	Section 3.3
13	4	Local Linear Approximation; Differentials	Section 3.5
		L'Hopital's Rule; Indeterminate Forms	Section 3.6
14	4	Chapter 4: The Derivative in Graphing and Applications	
		Analysis of Functions I	Section 4.1
		Analysis of Functions II	Section 4.2
15	4	Absolute Maxima and Minima	Section 4.4
16	4	Revision	Revision
17	<b>Final Exam</b>	<b>Final Exam</b>	<b>Final Exam</b>
18	<b>Final Exam</b>	<b>Final Exam</b>	<b>Final Exam</b>
	<b>56</b>	<b>Total Contact Hours</b>	

**Marks Distribution:**

Quiz No.(1) : 5 Marks

Quiz No.(2) : 5 Marks

Mid-term Exam : 30 Marks

Final Exam : 60 Marks

**Total : 100 Marks**