



Future Academy Higher Future Institute for Specialized Technological Studies

Course Specification

1- Course information:	
Course Code:	BSC101
Course Title:	Mathematics (1)
Year/level	1 st
Academic Programs	Computer Science Program (B.Sc.)
Contact hours/ week	(Theoretical = 2hrs / Tutorial= 2hrs), (Total=4hrs)

2- Course aims:

This course aims to provide students with the basic concepts of mathematics, Prepare a graduate who is able to recognize the importance and possess the problem-solving skills that are necessary for life-long learning.

3- Intended learning outcomes of the course (ILOs):

a- Knowledge and understanding:

On successful completion of this course, the student should be able to:

- a-1 recognize the fundamental ideas, facts of mathematics
- a-2 understand the methods, procedures, and tools used in mathematics
- a-3 comprehend the fundamentals of calculus as it is related to the field of computer science.

b- Intellectual skills:

On completing this course, the student should be able to:

b1: differentiate between the different laws and use it to different problems.

b2: analyze given information and use it to solve calculus problems.

- b3: think about the importance of calculus and their different applications.
- b4: select and apply appropriate mathematical tools for solving calculus problems.

c- Professional and practical skills:

At the end of this course, the student will be able to:

c1: apply the different laws to describe the mathematical problems.

c2: solve different calculus problems by selecting appropriate law.

c3: identify the required mathematical methods to the solution of the calculus problems

d- General and transferable skills:

On successful completion of this course, the student should be able to:

d-1 display the skills necessary to manage one's learning and to use a variety of learning resources d-2 demonstrate suitable numeracy abilities while understanding and explaining situations with a quantitative component.

d-3 use information effectively.

4- Course contents

Week		Number	of hours	ILO's				
vv eek No	Topics/units	Lectur	Tutorial					
INO.	_	e hours	hours					
1	Introduction to Mathematics	2	2	a1, a2, b1, b2, c3, d2				
2	Sets	2	2	a1,b2, c1,d1				
3	Functions, Domain & range	2	2	a1, a2, b1, c2, d3				
4	New function of old one & Quiz 1	2	2	a1, a2, b2, b3,c1,d2, d3				
5	Types of functions, composite functions and Inverse of function	2	2	a3,b3,c2,d3				
6	Limits & Limits of trigonometric functions	2	2	a1, a2, b2, b3,c1,d2, d3				
7	Midterm Exam	2	2	a1, a2, b2, b3,c1,d2, d3				
8	Continuity	2	2	a1, b3,c1,d2, d3				
9	Introduction to derivatives	2	2	a1, a2, b1, b3, c1, d1				
10	Derivative using rules	2	2	a1,b3, c1, d3				
11	Derivative of trigonometric functions + Quiz 2	2	2	a2, b2, b3 ,c2 ,c3, d1, d2				
12	Application on derivative extrema of functions	2	2	a1,b2,c2, d1				
13	The mean value theorem& the first derivative test.	2	2	a1,b2,c1,d1				
14	Revision + Quiz 2	2	2	a1, a2, a3,b2, b3,c1, c2, d2, d3				

5- Teaching and learning methods

Methods		ILO's																		
	a1	a2	a3	a4	a5	b1	b2	b3	b4	b5	c1	c2	c3	c4	c5	d1	d2	d3	d4	d5
Lectures								\checkmark								\checkmark				
Tutorial / Practical																				
sections																				
Self-learning																				
Assays and reviews																				
Discussion groups																				
Brainstorming																				

Blended-learning										
E-learning										

6- Teaching and learning methods for Low-achieving students

- Extra teaching hours for those who need help
- More quizzes to assess their ability for understanding the course
- Encourage the team work for those students with other advanced ones to increase their participation and understanding

7-Student assessment

Assessment method	Time	Grade weight (%)	Week	ILOs
Course Work (Every	15	Every week	a1, a2, b1, b2, b3, c1, c2, d1, d2
Tutorial Exercise	week			
and Assignments)				
Quiz 1	1	5	Week#4	a1, a2, b2, b3, c1,d2, d3
Mid-term exam	2	15	Week#7	a1, a2 ,b2, b3,c1,d2, d3
Quiz 2	1	5	Week#11	a1, a2, b2, b3,c1,d2, d3
Final Written		60		a1, a2,b2, b3, c1,d2, d3
exam				

8-List of references

8.1. Student notebooks:

Comprehensive instructor notes are available on the course web page (google Classroom).

8.2. Essential textbooks: Calculus, Stokowski, Fifth Edition, 1991.

8.3. Recommended textbooks:

```
.....
```

8.4. Journals, Periodical and Reportsetc.

.....

8.5. Websites

- <u>https://www.wolfram.com/wolfram-u/courses/mathematics/introduction-</u> <u>to-calculus</u>
- <u>https://centerofmath.com/</u>

Course Coordinator: Dr. Amira El-Desokey **Head of department:** Prof. Dr. Yasser F. Ramadan **Date of Approval:** 24/7/2024