



Future Academy Higher Future Institute for Specialized Technological Studies Course Specification

1- Course information:

Course Code:	BSC301
Course Title:	Mathematics (3)
Year/level	3 rd
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 and system equations, 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:

- a1: recognize the fundamental ideas, facts of linear equations, graphs, matrix, and determinants.
- a2: understand the methods, procedures, and tools.

b- Intellectual skills:

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

- b1: analyze given information and use it to solve math problems.
- b2: think about the importance of math and their different applications.
- b3: select and apply appropriate mathematical tools for solving math 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 math problems.

d- General and transferable skills:

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

d1: use information effectively.

d2: demonstrate suitable numeracy abilities while understanding and explaining situations with a quantitative component.

4- Course contents

Wook		Number	of hours	ILO's
No.	No. Topics/units		Tutorial hours	
1	Introduction to Matrices	2	2	a1,b2, b3,c3,d2
2	Def. of matrix, types of matrices	2	2	a1, a2, b1, b2, c1, c2, d1
3	Operation on matrices	2	2	a1, a2, b2, b3, c1, c2, d1
4	Adjoint of matrix and co- factor matrix, & Q1	2	2	a1, a2, b2, b3, c1, c2, c3, d2
5	Gauss Jordan method	2	2	a1,b3,c1,d2
6	Inverse Matrix 2*2	2	2	a1,b2,c2,d1
7	Midterm Exam	2	2	a1, a2, b2, b3, c1, c2, c3, d2
8	Inverse Matrix 3*3	2	2	a1,b2,c2,d1
9	solve system equations	2	2	a1, a2, b1, b2 c1, c2, d1, d2
10	Determinants & properties of determinants.	2	2	a1,b2,c2,d2
11	Vector Space & subspace+ Quiz 2	2	2	a1, a2, b2, b3, c1, c2, c3, d2
12	Linear Independence, Basis & dimension	2	2	a1, a2, b1, b3, c1,c2,d1
13	Eigen values & Eigen vectors	2	2	a1, a2, b2, b3, c1, c2, d1, d2
14	Revision	2	2	a1, a2, b2, b3, c1, c2, c3, d2

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																				
Tutorial / Practical																				
sections																				
Self-learning																\checkmark				
Assays and reviews																				
Discussion groups																				
Brainstorming																				
Blended-learning																				
E-learning																\checkmark				

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	Time	Grade	Week	ILOs					
method		weight							
		(%)							
Course Work (Every	15	Every week	a1, a2, b1, b2, b3, c1, c2, d1,					
Tutorial Exercise	week			d2					
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:

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8.4. Journals, Periodical and Reportsetc.

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8.5. Websites

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

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