

University : Shatt Al-Arab University
College
College : Shatt Al Arab University
College
Department : Computer Technology
Engineering
Stage: Second
Lecturer Name : Murtaja Ali Saare
Scientific Title : Assistant Professor
Qualification:



Republic of Iraq
The Ministry of Higher
Education and Scientific
Research
Supervision and Scientific
Evaluation Body

Course Weekly Outline

Name	Murtaja Ali Sari			
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Course Name	Math			
Course Objective	1- Providing you with information to keep pace with the era of technological and scientific development. 2- Get used to making a decision by logical thinking by analyzing situations and problems. 3. Gain accuracy in expression and performance			
Course Description	1. Recognizes the requirements of the science profession and ethical responsibility as well as the need for lifelong learning And the ability to engage in it . 2. Enables mathematical, basic and necessary sciences to conduct analysis and design of systems. 3. Develops the student's ability to dialogue and discuss.			
References	<ul style="list-style-type: none"> • Thomas, Calculus by Anton, Bivens and Davis 			
External Sources	<ul style="list-style-type: none"> • Calculus I. • Advanced Engineering Mathematics by Alan Jeffrey. • Basic Engineering Mathematics tutorials. 			
Course Assessment	Term Exam	Project	Quizzes and Attendance	Final exam
	%30		%10	%60
General Notes				

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Week	Date	Topics Covered	Goals
1	4/10/2022 18/10/2022 25/10/2022	Vector analysis	Explain and predict physical phenomena in the study of mechanics. A vector is an image or symbol that shows the movement or force transmitted from point A to point B. Vector has characteristics in terms of size and direction. Numerical has the property of size only.
2	1/11/2022	Vector field	Vector fields can usefully be thought of as representing the speed of moving flow in space, and this physical intuition leads to concepts such as divergence (which represents the rate of change of flow volume) and wrapping (which represents a flow rotation).
3	8/11/2022 15/11/2022	Linear algebra	Linear algebra provides concepts necessary for many areas of computer science, including graphics, image processing, coding, machine learning, computer vision, optimization, graph algorithms, quantitative computation, computational biology, information retrieval, and web research.
4	22/11/2022 29/11/2022	Vector calculations	The importance of vector analysis has increased significantly with the advent of computers. Through their use, complex calculations in spatial geometry (intersection, measurement, rotation, reflection, etc.) and physics (calculations involving the parallelogram of force, the center of mass, the momentum of inertia, etc.
5	6/12/2022 13/11/2022 20/11/2022 27/11/2022	Scalars and vector unit	Vectors and measurements are important in many areas of mathematics and science. Vectors can be defined in a two-dimensional or three-dimensional space. Vector graphics are sometimes used in computers because they can be scaled to a larger size without losing any image quality.
6	6/12/2022 13/12/2022	Orthogonal vector	The orthogonality between two vectors can be adjusted by replacing the point multiplication function with a more general function called the internal product.
7	24/1/2022 26/1/2022	Dot product	
8	31/1/2022	cross product	

	2/2/2022		
9	7/2/2022 9/2/2022	Theory for vector field	Vector fields are often used to model, for example, the speed and direction of a fluid moving throughout space, or the force and direction of some force, such as a magnetic force or the force of gravity, where it changes from one point to another.
10	14/2/2022 16/2/2022	Vector variable function	Vector value jobs are often encountered in machine learning, computer graphics, and computer vision algorithms. They are especially useful for determining parametric equations for space curves.
11	21/2/2022	Polar coordinates – gradient in polar	A polar graph can help you view insights of different data points on a radial axis. Visualization design is often used to compare multivariate datasets. You can draw the chart in Cartesian plane where the x axis wraps around the perimeter.
12	23/2/2022	Spherical coordinates	Spherical coordinates are useful in analyzing systems that have a certain degree of symmetry around a point, such as the size of space inside a vaulted stadium or the wind speed in the planet's atmosphere. A ball that has the Cartesian equation $x^2 + y^2 + z^2 = c^2$ has the simple equation $\rho = c$ in spherical coordinates.
13	28/2/2022 30/3/2022	Complex number	Complex numbers can be used to solve the quadratic of zeros. The quadratic formula resolves $ax^2 + bx + c = 0$ for x values. If the formula provides a negative in the square root, then complex numbers can be used to simplify zero. Composite numbers are used in electronics and electromagnetism.
14	2/3/2022 23/3/2022	Polar form of complex number	
15	28/3/2022 30/3/2022	Algebra for complex number	
16	4/4/2022	Algebra for Spherical coordinates	Spherical coordinates determine the position of a point in three-dimensional space based on the distance ρ from the origin and two angles θ and ϕ . If one is familiar with polar coordinates, it is not difficult to understand the angle because it is basically the same angle θ of polar coordinates.
17	6/4/2022	Infinite series	Strings are used in most areas of mathematics, even in the study of finite structures (such as combinations) through generating functions. In addition to their prevalence in mathematics, infinite strings are also widely used in other quantitative disciplines such as physics, computer science, statistics, and finance.
18	11/4/2022	Power series	
19	13/4/2022	Convergence and divergence series	
20	18/4/2022 20/4/2022	Number and Complex series	
21	25/4/2022 27/4/2022	Complex variable	Complex analysis is the study of complex numbers with their derivatives, processing and other properties. Complex analysis is a very powerful tool with an unexpectedly large number of practical applications to solve physical problems.
22	2/5/2022	Cauchy Riemann	A complex function is differential if it meets equations on a field at the complex level. There are two types of equations known as the Koshi-Riman equations. And

		equations	if both equations are correct, then the complex function is complicit derivable.
23	4/5/2022	Differential equation	Differential equations have a remarkable ability to predict the world around us. They are used in a variety of disciplines, from biology, economics, physics, chemistry and engineering. They can describe the exponential growth and decay, the population growth of species or the change in return on investment over time.
24	9/5/2022 11/5/2022	Differential equation of the first order	
25	16/5/2022	Differential equation of n order	
26	18/5/2022	Application	
27	23/5/2022 25/5/2022	Multiple integrations	Integrative learning is the process of connecting concepts and experiences so that information and skills can be applied to new and complex issues or challenges.
28	30/5/2022	Surface area	The surface area of a three-dimensional object is the total area of all its faces. In real life, we use the concept of surface spaces for different objects when we want to wrap something, draw something, and eventually while building things to get the best possible design.
29	1/6/2022	Green theorem	Green's theory is mainly used to merge the line with the curved plane. This theory illustrates the relationship between line integration and surface integration.
30	6/6/2022	Stokes theorem	

Lecturer signature

Head of Department Signature