



كلية الهندسة – جامعة قناة السويس



وحدة ضمان الجودة



Course Specification

Course Code: BSM 013

Course Title: Mathematics (1)

(1). Basic information

Program Title	Electrical Power and Machine Engineering.			
Department offering the program	Electrical Engineering Dept.			
Department offering the course	Basic sciences and mathematics Dept.			
Course Code	BSM 013			
Year/level	second term- 2022/2023 / Zero Level			
Specialization	Major			
Teaching Hours	Total	Practical	Tutorial	Lectures
	4	0	2	2
Date of approval of Bylaw	2008			

(2).Course Aims

No.	Aims
1.	Acquire the student with the essential knowledge about Calculus and some of its applications (Functions, Limits and continuity, Differentiation, Applications of Differentiation, and Partial Differentiation) and to have knowledge about Analytic Geometry and its applications (straight line, Ellipse, parabola, hyperbola and circle equations).

(3). Learning Outcomes of Course (LOs)

A1.1	Recognize the functions (graphs and their properties), the differentiation and its applications, the partial differentiation and its applications and the geometric graphs and their equations.
A1.2	State acquaint with the continuity and different limits.
A1.3	Solve a variety of differentiation problems and the equations of straight line, Ellipse, parabola, hyperbola and circle.
A1.4	Use the suitable methods for solving the different types of differentiation and the suitable equations for different types of graphs.
A1.5	Distinguish the kinds of different type's differentiation and different types of geometric Graphs such that straight line, Ellipse, parabola, hyperbola and circle equations.
A1.6	Gain experience to design differentiation problems and geometric problems and solve them

(4). Course Contents					
Week No.	Topics	Lecture	Tutorial	Practical	Total
1	Functions.	2			2
2	Limits.	2	2		4
3	Continuity.	2	2		4
4	Functions: trigonometric	2	2		4
5	Functions: trigonometric - hyperbolic	2	2		4
6	Functions: logarithmic	2	2		4
7	Functions: exponential, inverse functions	2	2		4
8	Midterm exam				
9	Rules of differentiation for different functions	2	2		4
10	Applications of Differentiation	2	2		4
11	Equations of Straight lines	2	2		4
12	Circles and their applications	2	2		4
13	Equations of Ellipse	2	2		4
14	Equations of parabola	2	2		4
15	Equations of hyperbola	2	2		4
16	Final exam				
	total	28	26		54

(5). Teaching and Learning methods	
No.	Teaching Method
1.	Interactive lectures
2.	Active learning e.g., group discussion, brainstorming, demonstration.
3.	Problem and Project based learning
4.	Workshop
5.	Self-Learning

(6). Teaching and Learning methods of Disabled Students
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No.	Teaching Method	Reason
1.	Additional tutorial	
2.	Online lectures	

(7). Students Assessment

)7.1(Students Assessment Method		
No.	Assessment Method	Los
1	Attendance	
2	Reports	A1.1,A1.2,A1.3
3	Quiz 1 / Quiz 2	A1.4,A1.5,A1.6
4	mini project	A1.6,A1.2,A1.3
5	Mid-term Exam	A1.5,A1.4
6	Final Exam	A1.2,A1.5,A1.3

)7.2 (Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports/ Sheets	Bi-weekly
3	Quiz 1 / Quiz 2	4& 10
4	Mid-term Exam	8
5	Final Exam	16

)7.3 (Weighting of Assessments			
No.	Assessment Method	Weights %	Weights
1	Attendance	5%	5
3	Quiz 1 / Quiz 2	10%	10
4	Reports/ Sheets	10%	10
5	Mid-term Exam	25%	25
7	Final Exam	50%	50
Total		100%	100

(8). List of References

[1].	Advanced Engineering Mathematics, Erwin Kreyszig, 10th edition (August 16, 2011) - Publisher: Wiley
[2].	William E. Boyce, Richard: "Elementary Differential Equations and Boundary Value Problems", John Wiley & Sons, Inc.(4ed.2014)

(9). Facilities required for teaching and learning

1.	Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
2.	Moodle and Microsoft teams
3.	Data show

(10).Matrix of Aims and LOs of the Course			
No.	Topics	Aims	LOs
1.	Recognize the functions (graphs and their properties), the differentiation and its applications, the partial differentiation and its applications and the geometric graphs and their equations.	1	A1.1
2.	State acquaints with the continuity and different limits.		A1.2
3.	Solve a variety of differentiation problems and the equations of straight line, Ellipse, parabola, hyperbola, and circle.		A1.3
4.	Use the suitable methods for solving the different types of differentiation and the suitable equations for different types of graphs.		A1.4
5.	Distinguish the kinds of different type's differentiation and different types of geometric Graphs such that straight line, Ellipse, parabola, hyperbola and circle equations.		A1.5
6.	Gain experience to design differentiation problems and geometric problems and solve them		A1.6

(11). Matrix of Competencies/ Program LOs with Course LOs			
No.	Competences/ Program LOs	No.	Course LOs
A1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals in mathematics by studying applications of the definite integrals and rules of set theory, fuzzy set, relations, mappings, partial fraction, complex numbers, and properties of matrices.	A1.1	Recognize the functions (graphs and their properties), the differentiation and its applications, the partial differentiation and its applications and the geometric graphs and their equations
		A1.2	state acquaint with the continuity and different limits.
		A1.3	Solve a variety of differentiation problems and the equations of straight line, Ellipse, parabola, hyperbola, and circle.
		A1.4	Use the suitable methods for solving the different types of differentiation and the suitable equations for different types of graphs.
		A1.5	Use the suitable methods for solving the different types of differentiation and the suitable equations for different types of graphs.
		A1.6	distinguish the kinds of different type's differentiation and different types of geometric Graphs such that straight line, Ellipse, parabola, hyperbola and circle equations.

Title	Name	Signature
Course Coordinator	1. Dr. Amr Hassan Abdalla	

	2. Dr. Moanis Moaz	
Head of Department	Assoc. Prof. Eyad Oda	
Date of Approval	2022/ 2023	