

GAU, Faculty of Engineering

Course Unit Title	Calculus III	
Course Unit Code	MT211	
Type of Course Unit	Compulsory, All engineering students	
Level of Course Unit	2nd Year BSc	
National Credits	3	
Number of ECTS Credits Allocated	7 ECTS	
Theoretical (hour/week)	5	
Practice (hour/week)	-	
Laboratory (hour/week)	-	
Year of Study	2	
Semester when the course unit is delivered	3	
Mode of Delivery	Face to Face	
Language of Instruction	English	
Prerequisites and co-requisites	MT112	
Recommended Optional Programme Components	-	
Objectives of the Course:		
<ul style="list-style-type: none"> ➤ Conceptual overview of theorems and methods within applied course material ➤ Teaching Methods of Convergence and divergence. ➤ Teaching three dimensional vector analysis ➤ Double, triple partial derivatives and integrals 		
Learning Outcomes		
When this course has been completed the student should be able to		Assesment.
1	Perform mathematical manipulation with complex numbers and functions	1
2	Determine convergence, divergence, absolute convergence on a given series.	1
3	Realize the power series, applications of Taylor, Maclaurin, and Binomial series.	1
4	Apply three dimensional vector analysis	1
5	Undertake mathematical operations on double and triple derivatives/integrals	3,5
Assesment Methods: 1. Written Exam, 2. Quiz		
Course's Contribution to Program		
		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	5
2	Ability to design and conduct experiments as well as to analyze and interpret data	3
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	2
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	Ability to express their ideas and findings, in written and oral form	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	1
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3
CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5: Very High)		

Course Contents			
Week			Exams
1		Introduction	
2	Appendix 1	Complex numbers	
3	Appendix 2	Complex functions and derivatives	
4	Chapter 9	Sequences	
5	Chapter 9	Taylor, Maclaurin series	E-Quiz 1
6	Chapter 9	Infinite series, Telescoping, Harmonic, Fourier series	E-Quiz 1
7	Chapter 9	Absolute and conditional convergence test	E-Quiz 1
8			Midterm
9		Source Transforms	
10		Thevenin and Norton Equivalents	E-Quiz 1
11		Maximum Power Transfer	E-Quiz 1
12	Chapter 6	Inductance and Capacitance	Quiz
13	Chapter 7	Response of First order RL and RC Circuits	E-Quiz 1
14			Lab. Exam
15			Final

Recommended Sources

Textbook: Calculus A complete course, Robert A. AdamsJames, Addison Wesley Publishing Company, (6th Edition 2007) (Other editions are also useful)

Supplementary Material (s): -

Assessments

Quiz 1 (Written)	15%	
Midterm Exam (Written)	30%	
Quiz 2 (Written)	15%	
Final Exam (Written)	40%	
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	15	5	75
Labs and Tutorials	-	-	-
Assignments	-	-	-
Project/Presentation/Report Writing	-	-	-
Exercises	30	2	60
Quizzes	2	10	20
Midterm Examination	1	20	20
Final Examination	1	20	20
Self Study	14	1	14
Total Workload			209
Total Workload/30 (h)			6.96
ECTS Credit of the Course			7