

Semester	Code	Module Title	Credits	C/E/O	GPA/NGPA
7,8	MA4130	Optimization	3	E	GPA
Hours/Week		Pre-requisites/Co-requisites	Evaluation (%)		
Lecture	Tute/Lab		CA	WE	
3	0	MA2024	30	70	
Learning Outcomes					
<p>After the successful completion of this course students should be able to</p> <ul style="list-style-type: none"> • Formulate problems in science and engineering as optimisation problems • Describe and explain different type of optimization methods • Explain and apply basic concepts in optimization, such as convexity, basic solutions, extreme values, duality, convergence rate, Lagrangian, KKT conditions 					
Syllabus Outline					
<ul style="list-style-type: none"> • Fundamentals of nonlinear optimization theory and methods. • Topics include unconstrained and constrained optimization • Lagrangian relaxation, generalized programming, and semi-definite programming. • SQP methods, and primal-dual interior methods for nonlinearly constrained optimization. Semidefinite programming and interior methods • Optimization of unimodal functions by Fibonacci sequential search, Golden section search • Apply multi-variable methods to optimisation problems using gradient methods: steepest descent, conjugate gradient • Kuhn-Tucker conditions to functions with inequality constraints, 					