

Module code	SM-4334		
Module Title	Advanced Operations Research		
Degree/Diploma	Bachelor of Science (Mathematics)		
Type of Module	Major Option		
Modular Credits	4	Total student Workload	10 hours/week
		Contact hours	4 hours/week
Prerequisite	SM-4332 Operations Research I		
Anti-requisite	None		
Aims			
The module is designed to provide the students with the skills of advanced scientific techniques of Operations Research for the best decision making of the real world problems.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	40%	- learn further techniques solving linear programming problems	
Middle order :	40%	- learn different scientific techniques to solve integer programming problems and different types of non-linear programming problems -gain introductory knowledge on dynamic programming	
Higher order:	20%	- economically interpret real world problems	
Module Contents			
<ul style="list-style-type: none"> - Advanced Topics in Linear Programming: The Revised Simplex Algorithm, Economic interpretation of duality and the role of duality theory in sensitivity analysis, Solution of degenerate LPP by simplex method, Integer Programming and its solution. - Non-linear Programming. - Game Theory. - Utility Theory and Multi-factor Decision Making: Decision making by applying Bayes' rule. Utility theory and multi-factor decision making. - Probabilistic Inventory Control Models. <p>Dynamic Programming: Introduction, Notations, Developing an optimal decision policy, Some illustrative examples, Introduction to a continuous state dynamic programming problem.</p>			
Assessment	Formative assessment	Tutorial and feedback.	
	Summative assessment	Examination: 60% Coursework: 40% - 2 class tests (40%)	