Module code	SS-4315			
Module Title	Machine Learning			
Degree/Diploma	Bachelor of Science (Computer Science)			
Type of Module	Major Option			
Modular Credits	4	Total student Workload	10	hours/week
		Contact hours	4	hours/week
Prerequisite	SS-2202 Algorithms and Data Structures SS-2207 Introduction to Artificial Intelligence and Soft Computing			
Anti-requisite	None			

Aims

This module covers the principles, approaches and techniques of machine learning, encompassing three main types of learning; supervised, unsupervised and semi-supervised.
This module is a compulsory module for Soft Computing stream.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

Lower order :	20%	- understand and differentiate between the different types of machine learning approaches - explain the principles and motivations behind the different learning approaches - understand the different machine learning algorithms - understand the limitations of the different machine learning algorithms
Middle order :	60%	- know suitable performance measures to evaluate machine learning algorithms - implement machine learning algorithms using existing codes
Higher order:	20%	- know which machine learning techniques to use for specific problems - apply machine learning techniques on common problems

Module Contents

- Introduction to machine learning and its applications;
- Supervised learning; regression and classification; support vector machines; decision trees
- Unsupervised learning; cluster analysis and validity; k-means, hierarchical clustering, fuzzy c-means
- Model-based clustering; kernel methods; principal component analysis; machine learning programming

Assessment	Formative assessment	Interactive Quizzes and Feedback
	Summative assessment	Examination: 50%
		Coursework: 50% - 2 class tests (20%) - 1 written assignment (15%) - 1 laboratory exercise (15%)