SLIIT *Discover Your Future*	**DEPARTMENT OF INFORMATION TECHNOLOGY**
	FACULTY OF COMPUTING

MODULE OUTLINE

Module Name	**Database Management Systems**		
Module Code	IT2040	Version No.	2017 - 1
Year	2	Semester	1
Credit Points	4		
Pre-requisites	IT1090		
Co-requisites	None		
Methods of Delivery	Lectures (Face-to-face) Tutorials Labs	2 1 2	Hours/Week Hours/Week Hours/Week
Course Web Site	http://courseweb.sliit.lk/		
Date of Original Approval	January, 2017		
Date of Next Review	January, 2022		

MODULE DESCRIPTION	
Introduction	The aim of the module is to enable students to design, develop and maintain a database to cater user requirements. The module covers conceptual database design, logical database design, schema refinement, SQL and database programming. Furthermore, the students will obtain hands-on-experience in developing a database and performing administrative tasks on a database using MS SQL Server.
Learning Outcomes	At the end of the module student will be able to:
	LO1: Design and develop database solutions
	LO2: Use relational query languages and database programming languages in database applications
	LO3: Use suitable database connectivity methods in software solutions

	LO4:	Design and implement database maintenance plans		
	LO5:	Propose appropriate solutions to address security and performance concerns related to databases		
Assessment Criteria	During the semester, there will be an in class test, mid-term examination and practical tests. At the end of the semester there will be a comprehensive written final exam. The distribution of marks for the assessed components of the module are as follows:			
	Continuous Assessments			
	• Practical Tests	10	%	LO1- LO5
	• In Class Tests	20	%	LO1- LO3
	• Mid-term exam	20	%	LO1- LO3
	End Semester Assessment			
	• Final Examination	50	%	LO1-LO5
	TOTAL	100	%	
Estimated Student Workload	Contact Hours			
	• Lecture	26 hours		
	• Tutorial	13 hours		
	• Laboratory	26 hours		
	Time Allocated for Assessments			
	• Continuous Assessments	4 hours		
	• Final Examination	2 hours		
	Reading and Independent Study	129 hours		
	TOTAL	200 hours		
Module Requirement	To pass this module, students need to obtain an overall mark that would qualify for a "C" grade or above			
Primary References	[1] R. Rankins, P. Bertucci, C. Gallelli, and A. T. Silverstein, *Microsoft SQL Server 2014 unleashed*, 1st ed. INpolis, IN: Sams, 2015.			
	[2] Syverson and J. Murach, *Murach's SQL server 2016 for developers: training and reference*. Fresno, CA: Mike Murach & Associates, 2016.			
	[3] A. Jorgensen, B. Ball, S. Wort, R. LoForte, and B. Knight, *Professional SQL Server 2014 administration*. Indianapolis, IN: Wrox, a Wiley brand, 2014.			

CONTENTS OF THE MODULE	
Topic	**Learning Outcomes covered**
1. Requirement Analysis • Data requirements • User identification • Security requirements • Performance requirement	**LO1**
2. Conceptual Design • EER model (ISA hierarchies and aggregation) • Design traps	**LO1**
3. Logical Database Design • Relational model • ER to relational mapping • ISA hierarchy and aggregation mapping	**LO1**
4. Schema Refinement • Use of Armstrong's Axioms to find closure for set of functional dependencies • Use of Attribute closure to find functional dependencies and keys • Normal Forms	**LO1**
5. Query Languages • Formal query languages • Advanced SQL	**LO1, LO2**
6. Database Programming • T-SQL programming constructs • Functions • Stored procedures • Views • Triggers	**LO1, LO2**
7. Database Connectivity • Open Database Connectivity (ODBC) Architecture • Java Database Connectivity (JDBC) Architecture • Type of JDBC drivers • JDBC classes and interfaces • Prepared statements • Exception handling • Transaction handling • Calling functions and stored procedures	**LO3**

8. Database installation, configuration and data migration • Installation and configuration of SQL server • SQL Server Integration Services (SSIS) • Bulk copy program (bcp)	**LO1**
9. Database Maintenance • Jobs creation • Job scheduling • Database backups and restoring	**LO1,LO4**
10. Database Security • Database server authentication methods • Server and database Roles • Ownership and user-schema separation • Authorization and permissions • Data encryption	**LO1, LO5**
11. Database Performance • Performance monitoring • Analysis of query execution • Selection and creation of indexes	**LO1, LO5**

GENERIC INFORMATION

Any type of plagiarism is not allowed.

Plagiarism: Academic honesty is crucial to a student's credibility and self-esteem, and ultimately reflects the values and morals of the Institute as whole. A student may work together with one or a group of students discussing assignment content, identifying relevant references, and debating issues relevant to the subject. Plagiarism occurs when the work of another person, or persons, is used and presented as one's own.

-------------------------End of Module Outline-------------------------