Title (Units): **COMP7510 Internet Computing and Programming (3,3,0)**

Course Aims: To introduce the basic concepts of data communications and networks; to learn the principles of the Internet and world wide web; to develop programming skills for mobile application development; to study the techniques for cloud computing and development of edge computing. Upon completion, students will understand the essential ICT infrastructure for the Internet and master the essential information and communication technology skills for Internet computing.

Prerequisite: Nil

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Describe the architectures of computer networks and operations of some standardized and popular networks
2	Explain the Internet architecture, the fundamental principles of Internet communication and the principles of world wide web and web systems
3	Explain the key concepts of cloud computing
4	Explain the key concepts of edge computing
5	Describe the fundamental elements in mobile application development
	Professional Skill
6	Develop problem solving and programming skills required for mobile application development

Calendar Description: This course introduces basic concepts of data communications and networks. The principles of the Internet and world wide web are discussed. The techniques for cloud computing and development of edge computing are studied. Students will also acquire hands-on experience in mobile application programming. Students who complete this course will be suitably prepared for the other courses offered in the MSc in IT Management curriculum.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1 - 5	Students will learn the fundamental principles and key concepts via lectures. Tutorials will be conducted to clarify concepts and to have a deeper understanding of the teaching materials, where real-world cases will be studied and problems will be given to students for in-depth discussion.
1-3, 5-6	Students will work on written assignments/programming assignments/in-class exercises/test(s)/project(s) to consolidate and apply what they have learnt.
5 - 6	Student will acquire the skills to design and develop mobile applications through lab sessions.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	40%	1 - 6	Continuous assessments in the forms of written assignments/programming assignments/in-class exercises/test(s) and project(s) are designed to measure how well the students have achieved their intended learning outcomes.
2	Examination	60%	1 - 6	Questions will primarily be analysis and skills based to assess the students' ability in understanding and application of different techniques on the course topics.

Assessment Rubrics:

Level of Achievement	Elaboration on Course Grading Description
Excellent (A)	The student's performance is outstanding in almost all the intended course learning outcomes. The student demonstrates thorough knowledge and understanding of various key concepts, principles and methods involved.
Good (B)	The student's performance is good in most of the intended course learning outcomes. The student demonstrates sufficient knowledge and understanding of various key concepts, principles and methods involved.
Satisfactory (C)	The student's performance is satisfactory. It largely meets the intended course learning outcomes. The student demonstrates moderate knowledge and understanding of various key concepts, principles and methods involved.
Fail (F)	The student's performance is inadequate. It fails to meet many of the intended course learning outcomes. The student demonstrates limited knowledge and understanding of various key concepts, principles and methods involved.

Course Content and CILOs Mapping:

Content		**CILO No.**
I	Computer Networks	1
II	Internet and World Wide Web	2
III	Mobile Application Programming	5,6
IV	Cloud Computing	3
V	Internet of Things and Edge Computing	4

References:

- F. Al-Turjman, Edge Computing: From Hype to Reality, 1st Ed., Springer, 2019.
- W. Stallings, Data and Computer Communications, 10th Ed., Prentice-Hall, 2014.
- J. F. Kurose and K. W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, 7th Ed., Addison Wesley, 2016.
- F. Kamriani and K. Roy, App Inventor 2 Essentials, Packt Publishing Ltd., 2016.
- T. Erl, Z. Mahmood and R. Puttini, Cloud Computing: Concepts, Technology & Architecture, Prentice-Hall, 2013.

Selected articles from journals, magazines and conference proceedings

Course Content:

Topic

I. Computer Networks
   A. Network architectures
   B. High-speed networks
   C. Wi-Fi
   D. Case studies

II. Internet and World Wide Web
   A. Internet architecture
   B. TCP/IP, IP addresses, domain names
   C. World wide web and web systems

III. Mobile Application Programming
   A. Programming methodologies
   B. Mobile application development

IV. Cloud Computing
   A. Cloud computing models
   B. Resource virtualization and sharing

C. Case studies

V. Internet of Things and Edge Computing
A. Internet of things
B. Edge computing: development and applications