Title (Units): **COMP7010 Advanced Topics in Computer Science & Information Systems (3,3,0)**

Course Aims: To provide students an opportunity to gain an in-depth understanding of the theories and issues in some specialized areas of computer science and information systems that are of current interest.

Prerequisite: **Research Postgraduate Student Standing**

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

No.	Learning Outcomes (LOs)
	Knowledge
1	**Explain various issues in some specialized areas of computer science and information systems**
2	**Explain various solutions for solving problems in computer science and information systems**
3	**Describe the approaches and techniques used to solve problems in computer science and information systems**
	Skill
4	**Master problem solving and/or practical skills relevant to selected problems**
	Attitude
5	**Develop a view on the importance of computer science and information systems**

Calendar Description: This course studies in-depth the theories and issues in some specialized areas of computer science and information systems that are of current interest.

Assessment:

No.	Assessment Methods	Weighting	Remarks
1	Continuous Assessment	50%	**Assignments including seminar reports and term paper will be used to evaluate how well students have learned the concepts and assess their ability to describe various issues in some specialized areas of computer science and information systems**
2	Examination	50%	**Examination will be used to evaluate students' overall understanding of various concepts and issues in some specialized areas of computer science and information systems**

Rubrics:

	Excellent (A)	Good (B)	Satisfactory (C)	Fail (F)
Explain various issues in some specialized areas of computer science and information systems	• Fully understand all the issues in some specialized areas of computer science and information systems	• Understand most of the issues in some specialized areas of computer science and information systems	• Sufficiently understand the issues in some specialized areas of computer science and information systems	• Do not understand most of the issues in some specialized areas of computer science and information systems
Explain various solutions for solving problems in computer science and information systems	• Fully understand solutions for solving problems in computer science and information systems	• Understand most of the solutions for solving problems in computer science and information systems	• Sufficiently understand the solutions for solving problems in computer science and information systems	• Do not understand most of the solutions for solving problems in computer science and information systems
Describe the	• Fully understand	• Understand most	• Sufficiently	• Do not

	Excellent (A)	Good (B)	Satisfactory (C)	Fail (F)
approaches and techniques used to solve problems in computer science and information systems	the approaches and techniques used to solve problems in computer science and information systems	of the approaches and techniques used to solve problems in computer science and information systems	understand the approaches and techniques used to solve problems in computer science and information systems	understand most of the approaches and techniques used to solve problems in computer science and information systems

Learning Outcomes and Weighting:

Content	LO No.
I-XI	**1-5**

References: Research notes and readings, survey and background papers, case studies, specialized papers, and manuscripts on the topics of study.

Course Content in Outline:

Topic

Four to six topics will be selected for in-depth discussion, which may be selected from, but are not limited to, the following list:

I. Algorithms Design and Analysis

II Discrete Structures

III. Robotics

IV. Machine Learning

V. Evolutionary Computation

VI. Autonomous Agents

VII. Computer Vision and Pattern Recognition

VIII. Computer Graphics and Animation

IX. Distribution Computing Systems

X. Fault Tolerant and Safety Critical Systems

XI. Multimedia Systems