Title (Units): **COMP4075 Social Computing and Web Intelligence (3,3,0)**

Course Aims: To introduce the fundamental concepts as well as practical applications of contemporary Artificial Intelligence (e.g., incorporating knowledge discovery and data mining, social network intelligence, and intelligent agents) and advanced Information Technology in the context of Web empowered social computing systems, environments, and activities. To discuss the techniques and issues central to the development of social computing and Web intelligence systems.

Prerequisite: i) COMP2045 Programming and Problem Solving AND
COMP2046 Problem Solving Using Object Oriented Approach AND
MATH2005 Probability and Statistics for Computer Science
Or
ii) COMP2865 Fundamental of Data Analysis and Management

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 concepts and applications of contemporary Artificial Intelligence and advanced Information Technology in the context of Web empowered social computing systems, environments, and activities
2	Explain the techniques and issues central to the development of social computing and Web intelligence systems
3	Explain the practical application of social computing and Web intelligence
	Professional Skill
4	Solve advanced technical problems in generic Web/social computing environments
5	Apply specific methods and techniques in a number of social computing and intelligent Web/social computing applications
	Attitude
6	Work as a team in tackling challenging problems in Web/social computing applications

Calendar Description: This course introduces the fundamental concepts as well as practical applications of contemporary Artificial Intelligence (e.g., incorporating knowledge discovery and data mining, social network intelligence, and intelligent agents) and advanced information technology in the context of Web empowered social computing systems, environments, and activities. In addition, it discusses the techniques and issues central to the development of social computing and Web intelligence computing systems.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1-3	Student will learn the concepts from lecture
4-5	Student will achieve the outcomes via assignment
4-5	Student will achieve the outcomes via guided laboratory
4-6	Student will achieve the outcomes via group project

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	40%	4-6	Assignments and Labs will be used to consolidate their knowledge and develop their skills in social computing and Web intelligence. Group project will further strength their understanding and problem solving skills.

2	Examination	60%	1-5	Final examination questions are designed to see how far students have achieved their intended learning outcomes. Analysis based questions will be used to assess the understanding of social computing and Web intelligence computing systems. Problem solving questions will be used to assess students' ability in tackling Web/social computing applications.

Assessment Rubrics:

	Excellent (A)	**Good (B)**	**Satisfactory (C)**	**Marginal Pass (D)**	**Fail (F)**
Describe concepts and applications of AI and advanced IT in Web empowered social computing systems	Thorough description of almost all concepts and applications	Description of most of the concepts and applications	Description of some of the concepts and applications	Description of a small number of concepts and applications	Description of only a very small number of concepts and applications
Explain the techniques and issues central to the development of Web intelligence systems	Thorough explanation of almost all techniques and issues	Explanation of most of techniques and issues	Explanation of some of techniques and issues	Explanation of small number of techniques and issues	Explanation of only a very small number of techniques and issues
Explain the practical applications of Web intelligence	Thorough explanation of almost all applications	Explanation of most of the applications	Explanation of some of the applications	Explanation of a small number of applications	Explanation of only a few applications
Solve advanced technical problems in generic Web/social computing environments	Solving almost all technical problems	Solving most of the technical problems	Solving some technical problems	Solving a small number of technical problems	Solving only a very small number of technical problems
Apply specific methods and techniques in a number of Intelligent Web/social computing applications	Application of almost all relevant methods and techniques to applications, including those involving novel solutions	Application of most of the correct methods and techniques to applications	Application of some of the correct methods and techniques to applications	Application of a small number of correct methods and techniques to applications	Application of a very small number of correct methods and techniques to applications

Course Content and CILOs Mapping:

Content		**CILO No.**
I	Introduction to Social Computing (SC) and Web Intelligence (WI)	1
II	SC and WI Methodologies and Algorithms	2,4
III	Applications of SC and WI Technologies	3,5,6

References:

- Reza Zafarani, Mohammad Ali Abbasi, and Huan Liu. Social Media Mining: An Introduction, Cambridge University Press, 2014
- Bing Liu, Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data, Springer, Second Edition, 2011.

- M. Russell, Mining the Social Web: Data Mining Facebook, Twitter, LinkedIn, Google+, GitHub, and More, Oreilly, Second Edition, 2013.
- N. Zhong, J. Liu, and Y.Y. Yao, (Eds.) Web Intelligence, Springer-Verlag, 2003.
- Articles in IEEE Computer, Special Issue on Web Intelligence, November, 2002.
- H. Marmanis and D. Babenko, Algorithms of the Intelligent Web, Manning Publications, 2009
- P. Carrington, J. Scott and S. Wasserman, Models and Methods in Social Network Analysis, Cambridge University Press, 2005.

Course Content:

Topic

I. Introduction to Social Computing (SC) and Web Intelligence (WI)

II. SC and WI Methodologies and Algorithms
   A. Network modeling, metrics and large-scale structures
   B. Community structure analysis
   C. Intelligent agents and autonomy-oriented computing
   D. Web information filtering and retrieval
   E. Web mining and farming

III. Applications of SC and WI Technologies
   A. Autonomous knowledge and information agents
   B. User profiling and personalization
   C. Social media and information diffusion
   D. Crowdsourcing