Lingnan University

Department of Computing and Decision Sciences

Course Syllabus

Course Title	:	Web Technologies and Social Networks
Course Code	:	CDS4004
Recommended Study Year	:	3 or 4
No. of Credits/Term	:	3
Mode of Tuition	:	Sectional Approach
Class Contact Hours	:	3 hours per week
Category in Major Prog.	:	Elective
Prerequisite(s)	:	CDS3004 Data Mining
Co-requisite	:	Nil
Exclusion	:	Nil
Exemption Requirement	:	Nil

Brief Course Description:

This course offers an introduction to the significant role of social networking in the Web 2.0 era. It explores web technologies to enhance user experiences within social networking applications while also facilitating data collection for web and social network analytics. The curriculum focuses on major web technologies that enable immersive user experiences and emphasizes their role in gathering data within social networking platforms. Students will gain insights into the ethical utilization of these technologies, particularly in contexts like social media marketing. Additionally, the course delves into advanced subjects covering emerging web technologies empowered by generative AI.

Aims:

The course aims to provide students with a technical foundation as well as an ethical framework for the application of data science in studies of online social networks.

Learning Outcomes (LOs):

On completion of this course, students will be able to:

1. Identify and assemble key web technologies for social network mining.
2. Develop and install software components for collecting data from social networks.
3. Apply principles of social network analysis.
4. Propose applications of social network mining and analysis.
5. Respect ethical guidelines on social network mining.

Indicative Contents:

Web technologies

JavaScript, JSON, Cloud computing, Web services, AWS API, Google API

Analytics

Social network analysis, social network mining, social semantic web, graph theory

Applications
Social media marketing, text mining, sentiment analysis, literary networks

Ethical issues
Data Science Ethical Framework

Teaching Method:

Web technologies, analytics and ethical issues are introduced and discussed in lectures through examples. The applications of data science through social networks are examined through selected case studies. Students learn to develop software for social networking mining through hand-on exercises during laboratory sessions.

Measurement of Learning Outcomes:

	Quizzes	Laboratory exercises	Case studies	Final examination
1. Identify and assemble key web technologies for social network mining	x			x
2. Develop and install software components for collecting data from social networks		x		
3. Apply principles of social network analysis	x		x	x
4. Propose applications of social network mining and analysis			x	
5. Respect ethical guidelines on social network mining			x	

1. The final examination and quizzes will cover principles of web technologies (LO1) and social network analysis (LO3).
2. Case studies will cover applications of social network analysis with an emphasis on ethical considerations. (LO3, LO4, LO5)
3. Laboratory exercises address the development of software components for social network mining. (LO2)

Assessment:

Quizzes	10%
Laboratory exercises	30%
Case studies	20%
Final examination	40%
Total	100%

Required/Essential Readings:

1. Liu, B., SpringerLink, & LINK. *Web Data Mining Exploring Hyperlinks, Contents, and Usage Data (Data-Centric Systems and Applications)*. Berlin, Heidelberg, 2005.

Recommended/Supplementary Readings:

1. Omitola, Ríos, Breslin, Ríos, Sebastián A., Breslin, John G., & Ebooks Corporation. *Social semantic web mining (Synthesis lectures on the semantic web, theory and technology*. San Rafael, California: Morgan & Claypool, 2015.
2. Liu, B. *Sentiment analysis and opinion mining (Synthesis lectures on human language technologies ; lecture #16)*. San Rafael, California: Morgan & Claypool, 2012.
3. UK Government. "Data Science Ethical Framework," 19 May 2016, https://www.gov.uk/government/publications/data-science-ethical-framework

Important Notes:

(1) Students are expected to spend a total of 9 hours (i.e. 3 hours of class contact and 6 hours of personal study) per week to achieve the course learning outcomes.

(2) Students shall be aware of the University regulations about dishonest practice in course work, tests and examinations, and the possible consequences as stipulated in the Regulations Governing University Examinations. In particular, plagiarism, being a kind of dishonest practice, is "the presentation of another person's work without proper acknowledgement of the source, including exact phrases, or summarised ideas, or even footnotes/citations, whether protected by copyright or not, as the student's own work". Students are required to strictly follow university regulations governing academic integrity and honesty.

(3) Students are required to submit writing assignment(s) using Turnitin.

(4) To enhance students' understanding of plagiarism, a mini-course "Online Tutorial on Plagiarism Awareness" is available on https://pla.ln.edu.hk/.

Rubric for Case Studies of CDS4004 – Web Technologies and Social Networks

Criteria	Very good	Satisfactory	Unsatisfactory
Adequacy of data collection	The student collects adequate amount of primary and/or secondary data relevant to the case study	The student collects a reasonable amount of primary and/or secondary data with some omissions necessary for the case study	Amount of primary and/or secondary data collected is insufficient for the case study
Rigour of analysis	The student performs systematic and methodical analysis of the case with sufficient rigour and detail	The student performs some appropriate analysis of the case with a reasonable amount of rigour and detail	The student performs little logical analysis of the case or demonstrates a lack of rigour in the analysis
Application of subject knowledge	The student demonstrates an overall understanding of subject knowledge in applying all relevant concepts and methods to the case	The student demonstrates a reasonable understanding of subject knowledge in applying the most important concepts and methods to the case	The student demonstrates little understanding of subject knowledge in applying very few/irrelevant concepts and methods to the case
Presentation	Content of submission/ presentation is well formatted with a clearly readable layout and very few grammaticalmistakes	Content of submission/ presentation is properly formatted with a reasonable layout and no more than a few grammatical mistakes	Content of submission/ presentation is not properly formatted and/or there are more than a few grammatical mistakes
Observation/ Reflection	Well documented observation/ reflection of the process or results of work	Some relevant observation/ reflection of the process or results of work	Little or no relevant observation/ reflection of the process or results of work

Rubric for Examination(s) of CDS4004 – Web Technologies and Social Networks

Criteria	Very good	Satisfactory	Unsatisfactory
Extent of knowledge acquired	The student demonstrates a clear understanding of the subject knowledge broadly	The student demonstrates a reasonable understanding of major parts of the subject knowledge	The student demonstrates limited understanding of only certain parts of the subject knowledge
Skilfulness/ Competence/ Correctness	The student demonstrates a high level of skilfulness/ competence in his/her work with mostly correct results	The student demonstrates a reasonable level of skilfulness/ competence in his/her work with reasonably correct results	The student does not demonstrate a reasonable level of skilfulness/ competence in his/her work with questionable results
Presentation	Content of submission/ presentation is well formatted with a clearly readable layout and very few grammatical mistakes	Content of submission/ presentation is properly formatted with a reasonable layout and no more than a few grammatical mistakes	Content of submission/ presentation is not properly formatted and/or there are more than a few grammatical mistakes

Rubric for Lab Exercise(s) of CDS4004 – Web Technologies and Social Networks

Criteria	Very good	Satisfactory	Unsatisfactory
Completeness	Over 80% of the requirements are genuinely fulfilled.	At least half of the requirements are fulfilled.	Less than half the requirements are fulfilled.
Rigour/ Leve of detail	The student clearly follows a rigorous procedure and produces a high level of detail	The student executes a proper procedure with reasonable rigour and produces sufficient detail	No clear procedure is followed and/or the amount of detail produced is insufficient
Skilfulness/ Competence/ Correctness	The student demonstrates a high level of skilfulness/ competence in his/her work with mostly correct results	The student demonstrates a reasonable level of skilfulness/ competence in his/her work with reasonably correct results	The student does not demonstrate a reasonable level of skilfulness/ competence in his/her work with questionable results
Presentation	Content of submission is well formatted with a clearly readable layout and very few grammatical mistakes	Content of submission is properly formatted with a reasonable layout and no more than a few grammatical mistakes	Content of submission is not properly formatted and/or there are more than a few grammatical mistakes
Observation/ Reflection	Well documented observation/ reflection of the process or results of work	Some relevant observation/ reflection of the process or results of work	Little or no relevant observation/ reflection of the process or results of work

Rubric for Quiz(s) of CDS4004 – Web Technologies and Social Networks

Criteria	Very good	Satisfactory	Unsatisfactory
Extent of knowledge acquired	The student demonstrates a clear understanding of the subject knowledge broadly	The student demonstrates a reasonable understanding of major parts of the subject knowledge	The student demonstrates limited understanding of only certain parts of the subject knowledge