DEREE COLLEGE SYLLABUS FOR: **ITC 4541 WEB SCIENCE** (Updated Fall 2020)	**3/0/3** **UK LEVEL: 6** **UK CREDITS: 15**
PREREQUISITES:	ITC1070 Information Technology Fundamentals ITC 2088 Introduction to Programming ITC 3234 Object Oriented Programming ***or*** ITC 2197 Object Oriented Programming Techniques MA 2010 Statistics I ***or*** MA 2021 Applied Statistics for Business ***or*** MA 2025 Applied Statistics for Science ITC 3160 Fundamentals of RDBMS
COREQUISITES:	None.
CATALOG DESCRIPTION:	Social network characteristics. Network measures and models. Data mining in social networks.
RATIONALE:	The course aims to acquaint students with methods of analysis of online social networks that include modelling at the micro, meso and macro scale. Moreover, the course also aims to mine the information that is stored in social networks.
LEARNING OUTCOMES:	As a result of taking this course, the student should be able to: 1. Adapt or combine network measures to construct social or generalised information network models 2. Design methods to mine the structural and content information in social or generalised information network models 3. Formulate techniques that are based on structural or content information to build recommender systems or systems that extract higher level modalities
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: • Classroom lectures, discussions, and review of real-world cases based on specific theoretical concepts. • Laboratory practical sessions. • Office hours: Students are encouraged to make full use of the office hours of their instructor, where they can ask questions and go over lecture material. • Use of the Blackboard Learning platform, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.

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<td>ASSESSMENT:</td>
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Summative:
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<tr><td>1st assessment: Midterm Examination
Problem solving or short essay questions</td><td>30%</td></tr>
<tr><td>2nd assessment: Portfolio of student work and oral assessment
(not eligible for 2nd marking)</td><td>10%</td></tr>
<tr><td>Final assessment: Project
Programming or use of tools to model or analyse a social network</td><td>60%</td></tr>
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Formative:
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<tr><td>Laboratory exercises & in class quizzes</td><td>0%</td></tr>
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The formative assessments aim to prepare students for the final examination and the programming project.
The 1st summative assessment tests the LO 1.
The 2nd summative assessment tests the LOs 1-3.
The final summative assessment tests the LOs 1-3.

The final assessment tests all learning outcomes of this module, therefore students pass the module if the average module grade is 40% or higher.
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<tr>
<td>INDICATIVE READING:</td>
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REQUIRED READING:

Zafarani, R., Abbasi, M.A. & Liu, H., (2014), Social Media Mining, An Introduction, Cambridge

RECOMMENDED READING:

Aggarwall Ch. C., (2015), Data Mining, Springer
Easley, D., & Kleinberg, J. (2010). Networks, crowds, and markets reasoning about a highly connected world. New York: Cambridge University Press.
Jannach, D., Zanker, M., Felfernig, A., Fruedrich, G., (2010) Recommender Systems, an Introduction, Cambridge
Manning, C., & Raghavan, P. (2008). Introduction to information retrieval. New York: Cambridge University Press.
Newman, M. (2010). Networks: An introduction. Oxford: Oxford University Press.
Russell, M. A., (2013), Mining the Social Web, O'Reilly
Social Networks Journal, Elsevier
http://www.journals.elsevier.com/social-networks

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<td>INDICATIVE MATERIAL:
(e.g. audiovisual, digital material, etc.)</td>
<td>REQUIRED MATERIAL: N/A

RECOMMENDED MATERIAL: N/A</td>
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<td>COMMUNICATION REQUIREMENTS:</td>
<td>Daily access to the course's site on the College's Blackboard CMS and the acg mail.
Effective communication skills using proper written and oral English.</td>
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<td>SOFTWARE REQUIREMENTS:</td>
<td>Indicative list of software:
Pajek http://mrvar.fdv.uni-lj.si/pajek /
Cfinder http://www.cfinder.org/
NodeXL http://nodexl.codeplex.com /
Gephi https://gephi.github.io /
Weka http://www.cs.waikato.ac.nz/ml/weka /</td>
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	Python Programming Language NetworkX library for Python https://networkx.github.io / Java Programming Language Mongo Database: https://www.mongodb.org
WWW RESOURCES:	• Social Network Analysis: http://www.barabasilab.com/pubs-socialnets.php • Social Network Analysis Project, Stanford http://snap.stanford.edu • Network Science book, http://barabasi.com/networksciencebook • Social Media Lab http://socialmedialab.ca • Java Library http://jgrapht.org/ • Data set collection: http://grouplens.org/datasets/movielens/ • Data set collections http://www-personal.umich.edu/~mejn/netdata/
INDICATIVE CONTENT:	1. Introduction to social media mining 2. Introduction to Networks of information, user and others 3. Network Measures 4. Network Models 5. Community detection 6. Information Retrieval 7. Data Mining 8. Information diffusion 9. Recommender Systems