



COURSE DESCRIPTION

1. Program Information

1.1 University	“Alexandru Ioan Cuza” University of Iasi
1.2 Faculty	Faculty of Computer Science
1.3 Department	Department of Computer Science
1.4 Study Domain	Computer Science
1.5 Study Cycle	Undergraduate Studies
1.6 Study Program / Qualification	Computer Science/ Computer Science

2. Course Information

2.1 Course Name	Social Media Network Analysis						
2.2 Course Teacher	Anca Vitcu, PHD (Associate Professor, Department of Technical Sciences, UAUIM, Bucharest)						
2.3 Seminary Teacher	Anca Vitcu, PHD (Associate Professor, Department of Technical Sciences, UAUIM, Bucharest)						
2.4 Study Year	III	2.5 Semester	2	2.6 Evaluation	P	2.7 Course Status*	OP

* OB – Compulsory / OP – Optional

3. Total estimated hours (hours per semester and didactic activities)

3.1 Hours per week		in which: 3.2 course		3.3 seminary/laboratory	
(3 sessions; 4 weeks/session)					
1 st session	7		7		-
2 nd session	4		-		4
3 rd session	3		-		3
3.4 Hours in curriculum	56	in which: 3.5 course	28	3.6 seminary/laboratory	28
Time Distribution					hours
Manual study, Course support, Bibliography, and others					25
Supplementary Documentation in library, in electronic forums, and on the field					15
Seminaries/laboratories preparation, homeworks, reports, portfolios and essays					15
Tutoring					
Evaluation					4
Other activities: consultations for project implementation for each team (anytime is needed) – in lab or using e-communication (e-mail, skype).					20-30 min
3.7 Total hours individual study					55
3.8 Total hours per semester					115
3.9 Credits					

4. Preconditions (if necessary)

4.1 Of Curriculum	Fundamentals of graph theory
4.2 Of Skills	Measuring and mapping collections of connections

5. Conditions (if necessary)

5.1 For Course Operation	-----
5.2 For Seminary/Laboratory Operation	Presence required



6. Specific Skills Acquired

Professional Skills	Knowledge : C2.1, C3.1, C4.1, C4.2, C5.1, C5.2 Skills : D3, D4,
Transversal Skills	CT1, CT2, CT3

7. Course Objectives (from the grid of specific skills acquired)

7.1 General Objectives	Development of experimental and theoretical work on social media network analysis using a wide range of techniques from mathematics and computer science, social and political sciences, medicine and biology.
7.2 Specific Objectives	(1) Design mathematical and computational models on social media network; identification and discovery of complex, dynamics, and evolution patterns using machine learning and data mining approaches or multi-agent based simulation; construction of social media network infrastructure (2) Understand and employ: search algorithms on social media networks/large-scale graph algorithms; security and privacy in social media networks (data protection inside communities); spatio-temporal characteristics in social media networks; dynamics and evolution patterns of social networks, trend prediction. (3) Understand and use modern statistical methods in social network analysis

8. General Description

8.1	Course*	Teaching Methods	Observations (hours and bibliographic references)
1.	Overview on Modeling Collections of Connections	Lecture	2
2.	Data integration for access to compound sources of information	Lecture & interactive presentation	2
3.	Link analysis for visualizing associations and relations	Lecture & interactive presentation	2
4.	Software agents - monitoring, retrieving, analyzing, and acting on information	Lecture & interactive presentation	2



5.	Text mining - sorting throughout documents, Web pages, e-mails	Lecture & interactive presentation	2
6.	Neural networks – classification, clustering, forecasting, investigative applications	Lecture & interactive presentation	2
7.	Machine-learning algorithms for extracting rules and decision trees	Lecture & interactive presentation	2
8.	Analyzing Facebook/LinkedIn Networks	Lecture & interactive presentation	2
9.	Analyzing Twitter Networks	Lecture & interactive presentation	2
10.	Analyzing Thread Networks	Lecture & interactive presentation	2
11.	Analyzing Wiki Networks	Lecture & interactive presentation	2
12.	Analyzing Flickr Networks	Lecture & interactive presentation	2
13.	Analysing Youtube Networks	Lecture & interactive presentation	2
14.	Networks Analysis Tools	Lecture & interactive presentation	2

*) participation of 1-2 invited speakers (video conference)

Bibliography

Main references:

1. Kleinberg Jon, Easley David (2010) - Networks, Crowds, and Markets: Reasoning About a Highly Connected World, Cambridge University Press
2. Kolaczyk D. Eric (2009) – Statistical Analysis of Network Data: Methods and Models, Springer.
3. Hansen L. Derek, Shneiderman Ben, Smith A. Marc (2011) – Analyzing social media networks with NodeXL : insights from a connected world, Elsevier.
4. Mena Jesús (2003) – Investigative Data Mining for Security and Criminal Detection, Elsevier Science.

Supplementary references:

1. Hansen D., Smith M., Shneiderman B., EventGraphs: charting collections of conference connections. Hawaii International Conference on system Sciences. Forty-Forth Annual Hawaii International Conference on System Sciences (HICSS). January 4-7, 2011, Kauai, Hawaii.
<http://www.cs.umd.edu/localphp/hcil/tech-reports-search.php?number=2010-13>
2. Gross Thilo, Sayama Hiroki (Ed.) (2009) – Adaptive Networks: Theory, Models and Applications, Springer.
3. Journal of Social Structure: “Visualizing the Signature of Social Roles in Online Discussion Groups”
<http://www.cmu.edu/joss/content/articles/volume8/Welser/>
4. Journal of Computer Mediated Communication: “Discussion catalysts inonline political discussions: Content importers and conversation starters.”
<http://jcmc.indiana.edu/>



8.2	Seminary / Laboratory	Teaching methods	Observations (hours and bibliographic references)
1.	Selecting project themes, presentation of evaluation criteria	Debate	2
2.	Project development (stage 1)	Discussions with each team	2
3.	Project development (stage 2)	Discussions with each team	2
4.	Project development (stage 3)	Discussions with each team	2
5.	Project development (stage 4)	Discussions with each team	2
6.	Project development (stage 5)	Discussions with each team	2
7.	Project development (stage 6)	Discussions with each team	2
8.	Interim evaluation	Team presentations accompanied by discussions (recommendations)	2
9.	Project development (stage 7)	Discussions with each team	2
10.	Project development (stage 8)	Discussions with each team	2
11.	Project development (stage 9)	Discussions with each team	2
12.	Project development (stage 10)	Discussions with each team	2
13.	Projects presentations (Workshop-“Social Media Network Analysis – Methods, Models and Applications”)* ----- <i>* the best three projects will be published in volume under FII-UAIC auspices</i>	Students presentations & discussions – invitation to join the audience and participate in the final discussions will be addressed to the FCS professors and students, as well as to other UAIC members.	2
14.	Projects presentations (Workshop-“Social Media Network Analysis – Methods, Models and Applications”)* ----- <i>* the best three projects will be published in volume under FII-UAIC auspices</i>	Students presentations & discussions – invitation to join the audience and participate in the final discussions will be addressed to the FCS professors and students, as well as to other UAIC members.	2



Bibliography:

Tutorial Gephi : <https://gephi.org/>

Tutorial NodXL: <http://nodexl.codeplex.com/>

Tutorial Pajek : <http://vlado.fmf.uni-lj.si/pub/networks/pajek/>

Tutoriale WordStat: <http://provalisresearch.com/products/content-analysis-software/>

**9. Course content synchronization with the expectations of the community representatives, professional associations and employers from the program domain**

Social media networks are used in a wide range of domains from business & public sector, from research & academic environments (computer science, social sciences, mathematical sciences, medical & biological sciences, financial & management sciences, political sciences, criminal investigations).

10. Evaluation

Activity Type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 The weight of each evaluation form (%)
10.4 Course	Project evaluation: theoretical work- algorithms and analysis methods, documentation of the theoretical part	Presentation (10 min); Q&A (5 min)	40%
10.5 Seminary/ Laboratory	Project evaluation: experimental work - multidisciplinary applications of social media network analysis – complexity of the study cases, documentation on the analytical tools, issues associated to data preparation and pattern interpretation for conventional and multimedia data.	Presentation (15 min); Q&A (5 min)	60%
10.6 Minimal performance standards: capacity to model, analyse and interpret social media using dedicated tools.			

Date

Course Teacher

Seminary/Laboratory Teacher

Department Date of Approval

Director of the Department