COURSE PRESENTATION FORM – ACADEMIC YEAR 2010/2011

COURSE NAME	**Information Search and Retrieval**
COURSE CODE	70220 (BSc / MSc 509) - 72009 (MSc 270)
LECTURER	Francesco Ricci
TEACHING ASSISTANTS	Linas Baltrunas
TEACHING LANGUAGE	English
CREDIT POINTS	8
LECTURE HOURS	48
EXERCISE HOURS	24
TIME SPAN	21.02.2011 - 11.06.2011
TIME TABLE	See Timetable Page
OFFICE HOURS LECTURER	During the lecture time span: Tuesday, 14:00 – 16:00, Faculty of CS, POS Building, piazza Domenicani 3, office 2.04
OFFICE HOURS TEACHING ASSISTANT	During the lecture time span: Wednesday, 16:00 – 18:00, Faculty of CS, POS Building, piazza Domenicani 3, office 2.03
PREREQUISITES	Introductory courses in data structures and algorithms, linear algebra, probability, and data mining.
OBJECTIVES	The first objective of this course is to present the scientific underpinnings of the field of Information Search and Retrieval. We will be concerned with basic information retrieval concepts and more advanced techniques for information filtering and decision support. The World Wide Web has become the primary source of information for leisure and work activities and its huge content would be wasted if that information could not be found, analyzed, and exploited so that each user can quickly find information that is both relevant and comprehensive for their needs. Moreover the Web has become a principal driver of innovation and a range of new techniques have been introduced to tame and exploit its information content. Personalization and information filtering techniques, e.g., Recommender systems, are now largely used, particularly in eCommerce web sites, for easing the information search and discovery processes, and increasing customer fidelity and conversion rates. Hence, the second objective of this course is to provide to the student a rich and comprehensive catalogue of information search tools that can be

exploited in the design and implementation of a specific Web site, such an eCommerce or eGovernment applications for travel and tourism or health.

SYLLABUS

- Basic information retrieval concepts
- Boolean retrieval
- Indexing
- Vector space model
- Text and vector space classification
- Evaluation in information retrieval
- Recommender systems
- Collaborative- and Content-based filtering
- Hybrid recommender systems
- Knowledge based recommenders
- Conversational recommender systems
- Evaluation of recommender systems
- Human Computer Interaction and recommender systems
- Context-dependent recommender systems
- Decision making
- Web search and link analysis
- Ranking and machine learning on documents

TEACHING FORMAT

The teaching format will include frontal lectures, exercises and discussions in the lab, and projects in teams.

ASSESSMENT

- Final exam, written, 50 % of mark
  plus
- Project in a small team (2 students) 50%

The project will consist in the preparation of a system prototype for an information search and recommender system in a specific application domain selected by the students. The project results are a written report (~ 5.000 words), a system prototype and a presentation.
The report must provide background information on the systems and describe the proposed one: description of the application problem, survey of existing applications and studies, evaluation of the pros and cons of alternative techniques, system functions and core techniques, advantages for the customer.
The project will be evaluated at the end of the semester.

READING LIST

The suggested book for the information retrieval topics is:

- C. D. Manning, P. Raghavan and H. Schutze. Introduction to Information Retrieval, Cambridge University Press, 2008.

Another useful text is:

- E. Hatcher and O. Gospodnetić. Lucene in Action, 2nd Ed. Manning, 2010.

The suggested book for recommender systems topics is:

- Kantor, P.B.; Ricci, F.; Rokach, L.; Shapira, B. (Eds.). Recommender Systems Handbook. Berlin: Springer, 2010.

All the required reading material will be provided during the course and will be available in electronic format. Copy of the slides will be available as well.

SOFTWARE USED

- Java and various libraries and extensions such as Lucene.

LEARNING OUTCOME

The student will master the main techniques used nowadays for building advanced web-based information search and advisory systems such as recommender systems. At the end of the course the student will be able to motivate system design choices and finally design the core technological component of a recommender system, customized for a particular application domain.

COURSE PAGE

http://www.inf.unibz.it/~ricci/ISR/