„POLITEHNICA" UNIVERSITY OF TIMIŞOARA

SYLLABUS
for the discipline:

Research Topics in Software Systems

FACULTY OF AUTOMATION AND COMPUTERS
DOMAIN/SPECIALIZATION: SOFTWARE ENGINEERING

Year of studies: I MASTER

Semester: *1*

Course instructor: *Marius Minea & Radu Marinescu*
Applications instructor*:*

Number of hours/week/Evaluation/Credits					
Course	**Seminar**	**Laboratory**	**Project**	**Evaluation**	**Credits**
2	**0**	**0**	**0**	**D**	**3**

A. COURSE OBJECTIVES

To present research papers that have been influential in shaping the field of software systems. Students will learn to appreciate past and future developments in the field, contents and structure of a good research paper, make a critical analysis, a clear and consistent presentation, and participate actively in discussions. The papers will address topics that are essential both for researchers and practitioners. Thus, students will gain insight into the essence of the most widely used software techniques, practices and paradigms. By understanding the foundations of current approaches, they will form solid reference points for taking future competent decisions on adopting novel techniques, practices or paradigms.

B. COURSE SUBJECTS

Programming language paradigms; software system architecture and design; program semantics, specification, modeling; program analysis techniques; managing software development

C. APPLICATION SUBJECTS (laboratory, seminar, project)

D. REFERENCES

Donald D. Chamberlin, Raymond F. Boyce - SEQUEL: A Structured English Query Language, 1974

Frederick P. Brooks, Jr: The Mythical Man-Month, 1975

Walter Tichy: Software development control based on module interconnection, ICSE-4, 1979

Mark Weiser: Program Slicing, ICSE-5, 1981.

D. L. Parnas, P. C. Clements, D. M. Weiss: The Modular Structure of Complex Systems, ICSE-7, 1984

Frederick Brooks, Jr.: No Silver Bullet: Essence and Accidents of Software Engineering. Computer, 1987

Lee Osterweil: Software processes are software too, ICSE-9, 1987.

David Ungar, Randall B. Smith - Self: The Power of Simplicity. OOPSLA, 1987

David Harel, H. Lachover, A. Naamad, Amir Pnueli, Michal Politi, Rivi Sherman, Aharon Shtul-Trauring: Statemate: A Working Environment for the Development of Complex Reactive Systems, ICSE-10, 1988

David S. Rosenblum: Towards a Method of Programming with Assertions, ICSE-14, 1992

W. Harrison and H. Ossher - Subject-Oriented Programming (A Critique of Pure Objects) OOPSLA, 1993

Michael Jackson, Pamela Zave: Deriving Specifications from Requirements: An Example, ICSE-17, 1995

J. Dean, C. Chambers, and D. Grove: Selective Specialization for Object-Oriented Languages, PLDI, 1995

Bjarne Steensgaard, Points-to Analysis in Almost Linear Time, POPL, 1996

George Necula: Proof-Carrying Code, POPL, 1997

E. EVALUATION PROCEDURE

Students will each present one paper and participate in the discussion of other papers, both activities contributing to the final grade.

F. INTERNATIONAL COMPATIBILITY

1. What Makes Good Research in Software Engineering, course 17-939A, Carnegie Mellon University
   http://spoke.compose.cs.cmu.edu/ser04/course-info.htm
2. Research Topics in Software Engineering, course P02102, University of Edinburgh
   http://www.drps.ed.ac.uk/06-07/course.php?code=P02012
3. Research inSoftware Engineering, course CMSC 838p, University of Maryland
   http://www.cs.umd.edu/~vibha/838p/

Date: 28.03.2007

HEAD OF DEPARTMENT **COURSE INSTRUCTOR,**

Prof. Dr. ing. Vladimir CREȚU