

„POLITEHNICA” UNIVERSITY OF TIMIȘOARA

SYLLABUS
for the discipline:

“RESEARCH TOPICS IN COMPUTER SYSTEMS”

FACULTY: AUTOMATION AND COMPUTERS
DOMAIN / SPECIALIZATION: COMPUTER SYSTEMS ENGINEERING

Year of studies: I (MASTER)

Semester: 1

Course instructor: associate professor Marius MARCU, PhD; associate professor Mihai MICEA, PhD					
Applications instructor:					
Number of hours/week/Evaluation/Credits					
Course	Seminar	Laboratory	Project	Evaluation	Credits
2	0	0	0	Distributed	3

A. COURSE OBJECTIVES

To present research papers that have been influential in shaping the field of hardware computing 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 computer 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

Advanced computing paradigms; hardware system architecture and design; hardware modeling and simulation; computer testing techniques; managing hardware development life cycle

C. APPLICATION SUBJECTS (laboratory, seminar, project)

D. REFERENCES

A.D. Kshemkalyani, M. Singhal: Distributed Computing - Principles, Algorithms and Systems, Cambridge 2008

H. El-Rewini, M. Abd-El-Barr: Advanced Computer Architecture and Parallel Processing, Wiley, 2005

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

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

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. Special Topics in Computer Systems, course CS 260, Harvard University
<http://www.eecs.harvard.edu/~mdw/course/cs260r/>
2. Advanced Topics in Computer Systems, course CS262, Berkeley University
<http://www.cs.berkeley.edu/~brewer/cs262/>
3. Research Topics in Computer Networks, course CSE 430, University of Connecticut
http://www.cse.uconn.edu/cse_grad-courses.htm

Date: 28.03.2007

HEAD OF DEPARTMENT

COURSE INSTRUCTOR,

Prof. Dr. ing. Vladimir CREȚU

„POLITEHNICA” UNIVERSITY OF TIMIȘOARA

SYLLABUS
for the discipline:

“RESEARCH TOPICS IN INFORMATION TECHNOLOGY”

FACULTY: AUTOMATION AND COMPUTERS
DOMAIN / SPECIALIZATION: INFORMATION TECHNOLOGY

Year of studies: I MASTER

Semester: 1

Course instructor: Assoc.Prof.dr.eng. Mihai V. Micea, Assoc.Prof.dr.eng. Marius Marcu					
Applications instructor:					
Number of hours/week/Evaluation/Credits					
Course	Seminar	Laboratory	Project	Evaluation	Credits
2	0	0	0	Distributed	3

A. COURSE OBJECTIVES

To present research papers that have been influential in shaping the field of information technology. 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 IT 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

Information technology paradigms; distributed systems architecture, design, programming and testing; IT project management; Advanced DSP, smart sensors and real-time systems specification and design.

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 in Software Engineering, course CMSC 838p, University of Maryland
<http://www.cs.umd.edu/~vibha/838p/>

Date: 28.03.2007

HEAD OF DEPARTMENT
Prof. Dr. ing. Vladimir CREȚU

COURSE INSTRUCTOR,