UNIVERSITY OF CRAIOVA
DEPARTMENT: COMPUTERS AND INFORMATION
TECHNOLOGY
MASTER: COMPUTER AND COMMUNICATONS
ENGINEERING

1-ST YEAR

1. Advanced technologies in databases
2. Data security and protection
3. Data security and protection - project
4. Quality testing and ensurance
5. Data communication based on service quality
6. Wireless technologies and mobile networks
7. Advanced architecture for calculus systems
8. Advanced architecture for calculus systems - project
9. Web services technologies
10. Distributed systems modelling and simulation
11. Numeric systems for industrial process management
12. Grid Systems
13. Grid Systems - project

2-ND YEAR
1. Grid structures application
2. Grid structures application -project
3. Service-oriented architectures (option 1a)
4. Large data bases and data minning (option 1b)
5. Critical information systems
6. Critical information systems -project
7. Information systems audit
8. Information systems audit -project
9. Information retrieval systems (option 2a)
10. Applications optimization in distributed information systems (option 2b)
11. Scientific research
12. Internship – dissertation paper

1-ST YEAR

SUBJECT : ADVANCED TECHNOLOGIES IN DATABASES

NUMBER OF CREDIT POINTS: 6
SEMESTER: I
COURSE TYPE: specialty
COURSE OBJECTIVES: The course aims at introducing and provide more advanced knowledge about distributed and mobile data bases, object-relational model, aspects of designing distributed and mobile data bases, transactions in distributed systems, semi-structured data bases, geographic data bases etc.
COURSE CONTENTS: 1. Fundamental concepts; 2. Object-relational model; 3. Distributed and mobile data bases 4. Distributed transactions management; 5. Temporal data bases; 6. Spatial data bases; 7. Semistructured data bases.
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

M. Tamer Ozsu, Patrick Valduriez Principles of Distributed Database Systems 2nd Edition, Prentice-Hall, Inc.,1999

Mario Piattini, Oscar Diaz editori, Advanced Database Technology and Design Artech House, 2000

Thomas Connolly, Carolyn Begg, Anne Strachan Baze de date Proiectare * Implementare + Gestionare Teora, 2001

Robert Laberge, Srdjan Vujosevic Building PDA Databases for Wireless and Mobile Development Wiley Publishing, Inc., 2003

Ken Henderson Proceduri stocate in SQL Server. XML, HTML Teora, 2003.

Alex Kriegel, Boris Trukhonov SQL Bible Wiley Publishing, Inc., 2003

Tok Wang Ling, Mong Li Lee, Gillian Dobbie Semistructured Database Design, Springer Science+Business Media, Inc., 2005

Jose Galindo, Angelica Urrutia, Mario Piattini Fuzzy Databases: Modeling, Design and Implementation Idea Group Inc., 2006

C.J. Date The Relational Database Dictionary O'Reilly 2006

Paolo Atzeni, Stefano Ceri, Stefano Paraboschi, Riccardo Torlono Basi di dati seconda edizione McGraw-Hill 2007

Olegas Vasilecas, Johan Eder, Albertas Kaplinscas editors Databases and Information Sistems IV, IOS Press, 2007

Stephen Buxton, Lowel Fryman, Terry Helpin Database Design Elsevier, 2009

SUBJECT : DATA SECURITY AND PROTECTIONS

NUMBER OF CREDIT POINTS: 5
SEMESTER: I
COURSE TYPE: specialty
COURSE OBJECTIVES: The course aims at introducing fundamental notions about Internet data security and protection. The course starts from a historical perspective on cryptographic ciphers development and on the best known cryptanalysis instruments. Public key infrastructures, certificates use and digital signatures meant to protect and validate electronic data are analysed. The course also includes strategies to physically protect information and means of ensuring the operational security of information systems.
COURSE CONTENTS: 1. Web security issue; 2. Digital identification; 3. Internet intimacy; 4. Intimacy protection techniques and technologies; 5. The mobile code and its effects on users' security; 6. Web servers physical security; 7. Securitatea serverului in operatie; 8. Web operations security; 9. Information criminology; 10. Strategies of data access control; 11. Internet content censorship; 12. Confidentiality policies, legislation, P3P ; 13. Digital payment transactions; 14. Intellectual property/ Actuating content.
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

S. Garfinkel, Web security, privacy and commerce, O'Reilly, editia a 2-a, 2008, ISBN 059-60004-56

R. Anderson, Security Engineering, Wiley, editia a 2-a, 2008, ISBN 047-00685-23

SUBJECT : DATA SECURITY AND PROTECTIONS - PROJECT

NUMBER OF CREDIT POINTS: 1
SEMESTER: I
COURSE TYPE: project
COURSE OBJECTIVES: The course aims at introducing fundamental notions about Internet data security and protection. The course starts from a historical perspective on cryptographic ciphers development and on the best known cryptanalysis instruments. Public key infrastructures, certificates use and digital signatures meant to protect and validate electronic data are analysed. The course also includes strategies to physically protect information and means of ensuring the operational security of information systems.
COURSE CONTENTS: 1. Web security issue; 2. Digital identification; 3. Internet intimacy; 4. Intimacy protection techniques and technologies; 5. The mobile code and its effects on users' security; 6. Web servers physical security; 7. Securitatea serverului in operatie; 8. Web operations security; 9. Information criminology; 10. Strategies of data access control; 11. Internet content censorship; 12. Confidentiality policies, legislation, P3P ; 13. Digital payment transactions; 14. Intellectual property/ Actuating content.
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

S. Garfinkel, Web security, privacy and commerce, O'Reilly, editia a 2-a, 2008, ISBN 059-60004-56

R. Anderson, Security Engineering, Wiley, editia a 2-a, 2008, ISBN 047-00685-23

SUBJECT : QUALITY TESTING AND ENSURANCE

NUMBER OF CREDIT POINTS: 6
SEMESTER: I
COURSE TYPE: specialty
COURSE OBJECTIVES: Introduction of systematic notions of quality assurance of IT systems, standards of quality, testing objectives, software testing methods and techniques, as well as techniques of using software testing toolkits.
COURSE CONTENTS: 1. Software products quality; 2. Quality characteristics; 3. Fundamental metrics in software products testing; 4. Testing principles; 5. Superficial inspection and examination; 6. Depanarea; 7. Software testing techniques; 8. Subroutines and modules testing; 9. Software programs testing types.
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

Andreas Spillner,Tilo Linz,Hans Schaefer - Software Testing Foundations - 2nd Edition Rockynook, 2007

Andreas Spillner,Tilo Linz,Hans Schaefer - Software Testing Foundations - 2nd Edition Rockynook, 2007
Rex Black - Managing the testing Process - 2nd Edition John Wiley Publishing, Inc., 2002
Jeff Tian - Software Quality Engineering; Testing, Quality Assurance, and Quantifiable Improvement - John Wiley & Sons, Inc., 2005
Glenford J. Myers The Art of Software Testing - 2nd Edition John Wiley & Sons, Inc., 2005.
www.ti.com
Ilene Burnstein - Practical Software Testing - Springer-Verlag New York, Inc., 2003,
Hiromi Oshima, Noboru Okino, Yasuhiro Kawata - Memory Testing Method and Memory Testing Apparatus - US2001/0052093, Dec. 13, 2001
Ching Jer - Method of Testing Cash Memory - US 6,754,857, Jun. 22, 2004

SUBJECT : SERVICE QUALITY-BASED DATA COMMUNICATIONS

NUMBER OF CREDIT POINTS: 6
SEMESTER: I
COURSE TYPE: specialty
COURSE OBJECTIVES: Introduction of basic concepts on the issues regarding the applications designed to be used on the internet. Introduction of concepts concerning service quality, traffic congestiona and queue management, data flux management, service quality management, etc.
CONȚINUTUL CURSULUI: 1. Concepts regarding service quality (QoS; 2. QoS Architecture; 3. QoS within a network element; 4. Classification – flux identification; 5. Differentiated quality services; 6. Traffic congestion management methods; 7. Queue management; 8. Traffic restriction policies; 9. Connection efficientizing mechanisms; 10. Service quality management; 11. QoS Applications.
TEACHING LANGUAGE: Romanian
EVALUATION: written examination
BIBLIOGRAPHY:
Tanenbaum, A.S., Maarten van Steen: Distributed Systems Principles and Paradigms, Prentice Hall, 2002
Ferguson, Paul, and Huston, Geoff. Quality of Service: Delivering QoS on the Internet and in Corporate Networks. New York: John Wiley & Sons, 1998
Vegesna, Srinivas. IP Quality of Service for the Internet and the Intranets. Indianapolis: Cisco Press, 2000.
RFC 2386, "A Framework for QoS-Based Routing in the Internet.".

SUBJECT : WIRELESS TECHNOLOGIES AND MOBILE NETWORKS

NUMBER OF CREDIT POINTS: 6
SEMESTER: I
COURSE TYPE: synthesis
COURSE OBJECTIVES: Introduction of basic concepts regarding wireless technologies and mobile networks issues, as well as data security in such networks. Introduction of concepts concerning smart–client applications and wireless applications used on the Internet.
COURSE CONTENT: 1. Mobile network introduction; 2. Mobile equipment; 3. Wireless networks; 4. Mobile applications architecture; 5. Mobile and wireless message sending; 6. Data security in mobile and wireless networks; 7. "Smart Client" applications designing. 8. Wireless applications Internet designing; 9. Organisation-level data.
TEACHING LANGUAGE: Romanian

EVALUATION: written examination
BIBLIOGRAPHY:
Stallings W. – High-Speed Networks and Internets Performance and Quality of Service, Second Edition, Prentice Hall, 2002
Tanenbaum T.S. – Computer Networks, 4th edition, Prentice Hall, 2003
[3]. E. Ramos, A. Schoroeder and A. Beheler – Computer Networking Concepts, Macmillan, 1996
[Gallo & Hancock – Computer Comm. And networking Technologies, Thomson Learning.2001
C. Siva Ram Murthy and Mohan Gurusamy – WDM Optical Networks: Concepts, Design, and Algorithms, Prentice Hall PTR, November 2001
Mancas D., Garnita S. – Comunicatii optice - principii, tehnici, tehnologii.

SUBJECT : ADVANCED ARCHITECTURES FOR CALCULUS SYSTEMS

NUMBER OF CREDIT POINTS: 5
SEMESTER: II
COURSE TYPE: specialty
COURSE OBJECTIVES: The course aims at broadening the knowledge concerning calculus systems architecture, the emphasis being on those architectures which are oriented towards parallel processing. The students will develop scientific competences in the domain of calculus systems, multiple instructions flows and multiple data flows.
COURSE CONTENT: 1. Basic notions and concepts concerning numeric systems structure. The representation of calculus systems at structural level. Calculus systems PMS description. General characteristics of calculus systems and of the subsequent functional unit. 2. Clasificarea Flyn a sistemelor de calcul în functie de fluxul de instructiuni si fluxul de date: SISD, SIMD, MISD, MIMD. Studierea sistemelor de calcul SIMD. Algoritmi executabili pe structuri SIMD. Organizarea memoriei în structurile SIMD. Descrierea sistemelor reprezentative din clasa SIMD. 3. Interconnecting networks between processors and memory. 4. MIMD calculus systems. The architecture and programming of multiprocessor systems. Strongly coupled systems. Weakly coupled systems. MIMD-type systems description. 5. Hierarchic interconnecting networks. Interconnection with perfect intercalation. Delta a^n x b^n interconnection. 2 x 2 Delta interconnecting. 6. The description of the fastest 10 TOP500 calculus systems in the world at this moment. 7. Introductory elements in serial and parallel benchmarkingul.
TEACHING LANGUAGE: Romanian
EVALUATION: written examination
BIBLIOGRAPHY:
Structura si Arhitectura Sistemelor Numerice; T. Moisa, N. Tapus – 1999
Introduction to Parallel Computing: Design & Analysis of Algorithms; V. Kumar, A. Grama, A. Gupta, G. Karypis; Addison Wesley; 2nd edition 2003
The Sourcebook of Parallel Computing; J. Dongarra, I. Foster, W. Grapp, K. Kennedy; Morgan Kaufmann 2002
Computer Architecture: A Quantitative Approach; J. Hennesy, D.A. Patterson; Morgan Kaufmann; 3rd Edition 2002
Advanced Computer Architecture: Parallelism, Scalability, Programmability; K. Hwang; McGraw-Hill 1992
Parallel Computer Architecture: A Hardware/Software Approach; D.Culler, J.P. Singh, A. Gupta; Morgan Kaufmann 1998.

SUBJECT : ADVANCED ARCHITECTURES FOR CALCULUS SYSTEMS -PROJECT

NUMBER OF CREDIT POINTS: 1
SEMESTER: II
COURSE TYPE: specialty
COURSE OBJECTIVES: The course aims at broadening the knowledge concerning calculus systems architecture, the emphasis being on those architectures which are oriented towards parallel processing. The students will develop scientific competences in the domain of calculus systems multiple instructions flows and multiple data flows.
COURSE CONTENT: 1. Basic notions and concepts concerning numeric systems structure. The representation of calculus systems at structural level. Calculus systems PMS description. General characteristics of calculus systems and of the subsequent functional unit. 2. Clasificarea Flyn a sistemelor de calcul în functie de fluxul de instructiuni si fluxul de date: SISD, SIMD, MISD, MIMD. Studierea sistemelor de calcul SIMD. Algoritmi executabili pe structuri SIMD. Organizarea memoriei în structurile SIMD. Descrierea sistemelor reprezentative din clasa SIMD. 3. Interconnecting networks between processors and memory. 4. MIMD calculus systems. The architecture and programming of multiprocessor systems. Strongly coupled systems. Weakly coupled systems. MIMD-type systems description. 5. Hierarchic interconnecting networks. Interconnection with perfect intercalation. Delta a^n x b^n interconnection. 2 x 2 Delta interconnecting. 6. The description of the fastest 10 TOP500 calculus systems in the world at this moment. 7. Introductory elements in serial and parallel benchmarkingul.
PROJECT CONTENT: Designing requirements analysis; Project topic presentday research stage; Project specifications (for each project);
The description of the system and component modules architecture; Module implementation; Implementation testing; Performances analysis; Conclusions.
TEACHING LANGUAGE: Romanian
EVALUATION: Project

BIBLIOGRAPHY:
Structura si Arhitectura Sistemelor Numerice; T. Moisa, N. Tapus – 1999
Introduction to Parallel Computing: Design & Analysis of Algorithms; V. Kumar, A. Grama, A. Gupta, G. Karypis; Addison Wesley; 2nd edition 2003
The Sourcebook of Parallel Computing; J. Dongarra, I. Foster, W. Grapp, K. Kennedy; Morgan Kaufmann 2002
Computer Architecture: A Quantitative Approach; J. Hennesy, D.A. Patterson; Morgan Kaufmann; 3rd Edition 2002
Advanced Computer Architecture: Parallelism, Scalability, Programmability; K. Hwang; McGraw-Hill 1992
Parallel Computer Architecture: A Hardware/Software Approach; D.Culler, J.P. Singh, A. Gupta; Morgan Kaufmann 1998.

SUBJECT : WEB SERVICES TECHNOLOGIES

NUMBER OF CREDIT POINTS: 6
SEMESTER: II
COURSE TYPE: synthesis
COURSE OBJECTIVES: Introduction of the basic notions and concepts of web services, as a means of developing and efficiently accessing intranet and internet applications.
COURSE CONTENT: 1. Introduction; XML data description; 2. Web services description; 3. Web services locating; 4. SOAP Protocole; 5. Web services development and use.
TEACHING LANGUAGE: Romanian

EVALUARE: written examination

BIBLIOGRAPHY:
Lenuta Alboaie, Sabin Buraga: Servicii Web, Concepte de baza si implementari; Ed. Polirom 2006; ISBN 973-681-522-6
Joseph Poozhikunnel; Developing a Simple Service Oriented Architecture; http://www.15seconds.com/issue/050119.htm
Sandy Carter; The New Language of Business SOA & Web 2.0; Publishing as IBM Press; ISBN-13: 978-0-13-195654-4; First printing, February 2007
Martin Keen, Greg Ackerman, s.a.; ibm.com/redbooks ; Patterns: SOA Foundation - Business Process Management Scenario; August 2006.
Surekha Durvasula, Martin Guttmann, s.a.; SOA Practitioners' Guide; sept. 2006; Part 1, Part 2, Part 3;
Eiman Elnahrawy; Creating Applications Using MySQL, JDBC, and JSP; Sept. 2003
Using IE's Web Service Behavior To Create Rich ASP.NET Applications; Jul 8, 2004
http://www.15seconds.com/issue/040708.htm
Web-Services Axis; http://ws.apache.org/axis/;
Web Services Section; http://www.15seconds.com/focus/Web%20Services.htm
Brian Hochgurtel; Cross-Platform Web Services Using C# & JAVA (Programming Series); Amazon.com
Richard Monson-Haefel (Author); J2EE Web Services: XML SOAP WSDL UDDI WS-I JAX-RPC JAXR SAAJ JAXP; Amazon.com

SUBJECT : DISTRIBUTED SYSTEMS MODELING AND SIMULATION

NUMBER OF CREDIT POINTS: 6
SEMESTER: II
COURSE TYPE: synthesis
COURSE OBJECTIVES: The course contributes to an in-depth approach of computers and IT basic and applied knowledge about system modeling. Advanced concepts and methods used to model and simulate complex dynamic systems are presented.
COURSE CONTENT: 1. Complex dynamic system modeling; 2. The synthesis of mathematical models for complex systems; 3 Reducerea ordinului modelelor matematice ale sistemelor complexe; 4. The Modeling of Physical Systems by Bond – graph method.
TEACHING LANGUAGE: Romanian
EVALUATION: examination

BIBLIOGRAPHY:
G. Hall, J.M. Watt, Modern Numerical Methods for Ordinary Differential Equations, Clarendon Press Oxford, 1976.
K. Dekker, J. G. Verwer, Stabilitz of Runge Kutta methods for stiff nonlinear differential Equations, North Holland, 1984.
N. Racoveanu, Gh. Dodescu, I. Mincu, Metode numerice pentru ecuatii cu derivate partiale de tip hiperbolic, Ed. Tehnica, Buc. 1976.
Nicolae D., Vînătoru M., Cauţil I.- Tehnici de modelare şi identificare , curs - Reprografia Universităţii din Craiova, 1981.
N.. Racoveanu, Gh. Dodescu, I. Mincu, Metode numerice pentru ecuatii cu derivate partiale de tip parabolic, Edit. Tehnică, Buc. 1977.
S. Ungureanu, Sensibilitatea sistemelor dinamice, Ed. Tehnica, Buc. 1988.

D. S. Naidu, Singular perturbation methology in control systems, Peter Peregrinus, 1988.

E. Bobasu, I. Cautil, Modelare si simulare. Teorie si aplicatii, curs Reprografia Universitatii din Craiova, 2000.

J. Thoma, Simulation by Bondgraphs. Introduction to a graphical method, Springer Verlag, 1990.

Ljung, T. Glad, Modeling of Dynamic Systems, Prentice Hall, 1994.

SUBJECT : NUMERIC SYSTEMS FOR INDUSTRIAL PROCESSES MANAGEMENT

NUMBE ROF CREDITS: 6
SEMESTER: II
COURSE TYPE: synthesis
COURSE OBJECTIVES: The course presents the basic concepts concerning the issues specific to the numeric management of industrial processes in the following directions: the integration of discrete and sampling systems calibration theory within implementation practical aspects, the deepening of some methods of designing the numeric management algorythms for linear and non-linear systems.
COURSE CONTENT: 1. The representation of numeric automatic self-calibrating systems; 2. The mathematical description of discrete systems and signals throughout time; 3. Numeric management algorythms; 4. The practical implementation of numeric management algorythms; 5. Adaptive systems; 6. The adaptive linearizing management of non-linear systems.
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

Călin S., Petrescu Gh., Tăbuş I., Sisteme automate numerice, Editura Ştiinţfică şi Enciclopedică, Bucureşti, 1984.

Călin S. s.a., Reglarea numerică a proceselor tehnologice, Ed. Tehnică Bucureşti 1984.

Dumitrache I. Ingineria reglării automate, Politehnica Press, Bucureşti, 2005.

Houpis C., Lamont G., Digital control systems, Mc. Graw Hill, 1992.

Iserman R., Digital Control Systems, Springer Verlag, 1981.

Marin C., D. Popescu, E. Petre, C. Ionete, D. Selişteanu,Teoria sistemelor, Ed.Universitaria Craiova, 2001

Marin, C., Sisteme discrete în timp, Editura Universitaria Craiova, 2005.

Marin C., Sisteme cu eşantionare, Editura SITECH Craiova, 2007.

Petre E., Sisteme automate neliniare - Aplicaţii în biotehnologie, Ed. Universitaria, Craiova, 2002.

Petre E., Selişteanu, D., Modelarea şi identificarea bioproceselor de depoluare, Ed. Universitaria, Craiova, 2005.

Sastry, S., Bodson, M., Adaptive Control: Stability, Convergence and Robustness. Englewood Cliffs, NJ: Prentice-Hall, 1989.

Sastry, S., Nonlinear Systems - Analysis, Stability and Control, Springer, 1999.

* * * MATLAB - "Nonlinear Control Design Toolbox"

* * * LabVIEW - User's Manual, National Instruments, 2001.

SUBJECT : GRID SYSTEMS

NUMBER OF CREDIT POINTS:5
SEMESTER: II
COURSE TYPE: synthesis
COURSE OBJECTIVES: The course aims at an in-depth approach to calculus systems architecture, with emphasis on parallel and distributed systems. At the end of the course, the students will acquire the main concepts, models and technologies which are specific to the large-area distributed and parallel systems. The students will be able to effectively use the instruments of design and implementation for parallel and distributed systems. The specific competences are based on computer clusters, GRID technology, P2P, and Coud Computing.
COURSE CONTENT: The evolution of parallel and distributed calculus systems; The concept of parallelism; Indicators of parallel structures evaluation; General characteristics of parallel calculus model; Divided memory systems; Computer clusters; Program systems specific to computer clusters; GRID hierarchic architecture; GRID protocols, services and interfaces; The abstract model of management system in GRID; Resource model; GRID systems connectivity; Resource division; Multiple resource coordination; The relation with other technologies; P2P computing; Cloud Computing.
TEACHING LANGUAGE: Romanian
EVALUATION: written examination
BIBLIOGRAPHY:

Ian Foster, Carl Kesselman ,Steven Tuecke The Anatomy of the Grid Enabling Scalable Virtual Organizations

Klaus Krauter1, Rajkumar Buyya2, and Muthucumaru Maheswaran1 A Taxonomy and Survey of Grid Resource Management Systems

R. Buyya, D. Abramson, J. Giddy, Nimrod/G: An Architecture for a Resource Management and Scheduling System in a Global Computational Grid,

R. Buyya, D. Abramson, J. Giddy, An Economy Grid Architecture for Service-Oriented Grid Computing,

P2P Next Next Generation Peer-to-Peer Content Delivery Platform FP7 project.

SUBJECT : GRID SYSTEMS - PROJECT

NUMBER OF CREDIT POINTS: 1
SEMESTER: II
COURSE TYPE: synthesis
COURSE OBJECTIVES: The course aims at an in-depth approach to calculus systems architecture, with emphasis on parallel and distributed systems. At the end of the course, the students will acquire the main concepts, models and technologies which are specific to the large-area distributed and parallel systems. The students will be able to effectively use the instruments of design and implementation for parallel and distributed systems. The specific competences are based on computer clusters, GRID technology, P2P, and Coud Computing.
COURSE CONTENT: The evolution of parallel and distributed calculus systems; The concept of parallelism; Indicators of parallel structures evaluation; General characteristics of parallel calculus model; Divided memory systems; Computer clusters; Program systems specific to computer clusters; GRID hierarchic architecture; GRID protocols, services and interfaces; The abstract model of management system in GRID; Resource model; GRID systems connectivity; Resource division; Multiple resource coordination; The relation with other technologies; P2P computing; Cloud Computing.
TEACHING LANGUAGE: Romanian
EVALUATION: project
BIBLIOGRAPHY:

Ian Foster, Carl Kesselman ,Steven Tuecke The Anatomy of the Grid Enabling Scalable Virtual Organizations

Klaus Krauter1, Rajkumar Buyya2, and Muthucumaru Maheswaran1 A Taxonomy and Survey of Grid Resource Management Systems

R. Buyya, D. Abramson, J. Giddy, Nimrod/G: An Architecture for a Resource Management and Scheduling System in a Global Computational Grid,

R. Buyya, D. Abramson, J. Giddy, An Economy Grid Architecture for Service-Oriented Grid Computing,

P2P Next Next Generation Peer-to-Peer Content Delivery Platform FP7 project.

2-ND YEAR

SUBJECT : GRID STRUCTURES APPLICATIONS

NUMBER OF CREDIT POINTS: 5
SEMESTER: I
COURSE TYPE: synthesis
COURSE OBJECTIVES: The course aims at introducing the basic concepts regarding the issues of the design and implementatin of the applications to be run in Grid structures. Through applications, exercises and problems, lab classes are meant to clarify the theoretical aspects and to create designing/ programming abilities concerning the applications to be used in Grid structures.
COURSE CONTENT: Grid systems evolution; Software infrastructure for high performance calculus; The implementatin of Grid production systems; Grid systems anatomy; "Open Grid" services architecture; Grid structure; Grid type Web Services and applications; Databases and Grid; Data Grid systems; Service virtualization for "Data Grid" ; Peertopeer Grid-type systems; Grdi calculus media; Grid applications calssification; Middleware for Grid calculus; Grid resources alloting and control; Stocking systems.
TEACHING LANGUAGE: Romanian
EVALUATION: written examination
BIBLIOGRAPHY:
Fran Berman, Geoffrey Fox, Tony Hey. Grid Computing: Making the Global Infrastructure a Reality, John Wiley & Sons, Ltd, 2003

Cunha, Jose C.; Rana, Omer F. – Grid Computing: Software Environments and Tools, Springer, 2006

Maozhen Li, Mark Baker – The Grid: Core Technologies, John Wiley & Son's, 2006

Ian J. Taylor – From P2P to Web Services and Grids, Springer, 2005.

SUBJECT : GRID STRUCTURES APPLICATIONS
PROJECT

NUMBER OF CREDIT POINTS: 1
SEMESTER: I
COURSE TYPE: synthesis course
COURSE OBJECTIVES: The course aims at introducing the basic concepts regarding the issues of the design and implementatin of the applications to be run in Grid structures. Applications, exercises and problems, laboratory work are meant to clarify the theoretical aspects and to build design/ programming abilities concerning the applications to be used in Grid structures.
COURSE CONTENT: Grid systems evolution; Software infrastructure for high performance calculus; The implementatin of Grid production systems; Grid systems anatomy; "Open Grid" services architecture; Grid structure; Grid type Web Services and applications; Databases and Grid; Data Grid systems; Service virtualization for "Data Grid" ; Peertopeer Grid-type systems; Grdi calculus media; Grid applications calssification; Middleware for Grid calculus; Grid resources alloting and control; Stocking systems.
TEACHING LANGUAGE: Romanian
EVALUATION: project
BIBLIOGRAPHY:
Fran Berman, Geoffrey Fox, Tony Hey. Grid Computing: Making the Global Infrastructure a Reality, John Wiley & Sons, Ltd, 2003

Cunha, Jose C.; Rana, Omer F. – Grid Computing: Software Environments and Tools, Springer, 2006

Maozhen Li, Mark Baker – The Grid: Core Technologies, John Wiley & Son's, 2006

Ian J. Taylor – From P2P to Web Services and Grids, Springer, 2005.

SUBJECT : SERVICE-ORIENTED ARCHITECTURES

NUMBER OF CREDIT POINTS: 6
SEMESTER: I
COURSE TYPE: synthesis
COURSE OBJECTIVES:
COURSE CONTENT:.
TEACHING LANGUAGE: Romanian
EVALUATION: written examination
BIBLIOGRAPHY:

SUBJECT : LARGE DATA BASES (WAREHOUSES) AND DATA MINING

NUMBER OF CREDIT POINTS: 6
SEMESTER: I
COURSE TYPE: synthesis
COURSE OBJECTIVES: The course will introduce students to the basic concepts and techniques of Data Mining and Data Warehouses. Also, it will develop skills of state-of-the-art data mining and data warehouses software for solving practical problems. This course is designed to provide a thorough understanding of the business potential of data warehousing, how to build and maintain data warehouses, and how to use data warehouses for business advantage.
COURSE CONTENT: 1. Data Warehousing: Data Models. Data structures. Design. Data warehousing process. Online analytical process. Tools and languages. Data mart and practical issues. 2. Data Mining: Data Mining Methods. Algorithms.Mining Databases.Knowledge discovery process. Tools and languages and application issues.
TEACHING LANGUAGE: Romanian
EVALUATION: written examination

BIBLIOGRAPHY:
Advances in Data Warehousing and Mining, David Taniar, IGI Publishing, USA

Data Warehousing, Data Mining, and OLAP (Data Warehousing/Data Management), Alex Berson, Stephen J. Smith, Computing Mcgraw-Hill, 1997

Data Mining: Practical Machine Learning Tools and Techniques, Second Edition, Ian H. Witten, Eibe Frank, Morgan Kaufmann, 2005

SUBJECT : CRITICAL INFORMATION SYSTEMS

NUMBER OF CREDIT POINTS: 5
SEMESTER: I
COURSE TYPE: Specialty
COURSE OBJECTIVES: The students are presented the principles of critical information systems specificity and development, the key processes associated to their life cycle, the standards in engineering programming concerning this field and the tools necessary to automatize development

processes. At the end of the course, the students will know the ways in which complex critical information systems can be developed by software engineer teams, applying the domain standards.

COURSE CONTENT:. 1. Critical information systems introduction; 2. Proceses specific to SIC soft development ; 3 Development standards for SIC soft; 4. CASE tools for SIC soft development.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Software Engineering (8h Edition); Ian Sommerville; Addison Wesley; 2004

Critical Systems Engineering: note de curs, adaptate dupa Amaar, H. & Lateef, "Realtime Software Engineering with ICASE", West Virginia University, 2004, textbook;

Douglass, B.P: Real-Time UML: Advances in the UML for Real-Time Systems, Addison Wesley, 2004

Grosu, M.: Sisteme de calcul timp-real - note de curs, an IV C/CE, 200

Software Development and Documentation Standard, MIL-STD-498, US Department of Defence, Washington DC, December, 1994

Douglass, B.P: ROPES: Rapid Object-oriented Process for Embedded Systems, White paper.

SUBJECT : CRITICAL INFORMATION SYSTEMS PROJECT

NUMBER OF CREDIT POINTS: 1

SEMESTER: I

COURSE TYPE project

COURSE OBJECTIVES: The students are presented the principles of critical information systems specificity and development, the key processes associated to their life cycle, the standards in engineering programming concerning this field and the tools necessary to automatize development processes. At the end of the course the students will know the ways in which complex critical information systems can be developed by software engineer teams, applying the domain standards.

COURSE CONTENT:. 1. Critical information systems introduction; 2. Proceses specific to SIC soft development ; 3 Development standards for SIC soft; 4. CASE tools for SIC soft development.

Project content:

Each studnet gets the specifications referring to the elaboratin of a soft for a critical system, the project to be made having to follow all the stages presented during the course. Faculty Computers will be used and PC 104 systems from the BS lab „Real time calculus systems"

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Software Engineering (8h Edition); Ian Sommerville; Addison Wesley; 2004

Critical Systems Engineering: note de curs, adaptate dupa Amaar, H. & Lateef, "Realtime Software Engineering with ICASE", West Virginia University, 2004, textbook;

Douglass, B.P: Real-Time UML: Advances in the UML for Real-Time Systems, Addison Wesley, 2004

Grosu, M.: Sisteme de calcul timp-real - note de curs, an IV C/CE, 200

Software Development and Documentation Standard, MIL-STD-498, US Department of Defence, Washington DC, December, 1994

Douglass, B.P: ROPES: Rapid Object-oriented Process for Embedded Systems, White paper.

SUBJECT : INFORMATION SYSTEMS AUDIT

NUMBE ROF CREDITS: 5

SEMESTER: I

COURSE TYPE: synthesis

COURSE OBJECTIVES: The purpose is to introduce and review notions connected to the evaluation process characterising information systems audit, the risks associated to information systems, their general control, appplicatin control, etc.

COURSE CONTENT: 1. Introduction to information system audit; 2. Risks associated to information systems; 3. Information system general control; 4. Application control ; 5. Computer assited audit techniques.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

A. Eden,V. Stanciu, Auditul Sistemelor Informatione, Editura Dual Tech, 2006

A. Munteanu, Auditul sistemelor informatione contabile, Editura Polirom, 2001

J. Champlain, Auditing Information Systems, John Wiley & Sons, Inc., 2003

ISO/IEC 17799:2005 "Information technology - Security techniques - Code of Practice for information security management"

ISO/IEC 27001:2005 "Information technology - Security techniques – Information Security management systems – requirements"

SUBJECT : INFORMATION SYSTEMS AUDIT PROJECT

NUMBER OF CREDIT POINTS: 1

SEMESTER: II

COURSE TYPE: synthesis

COURSE OBJECTIVES: The purpose is to introduce and review notions connected to the evaluation process characterising information systems audit, the risks associated to information systems, their general control, appplicatin control, etc.

COURSE CONTENT: 1. Introduction to information system audit; 2. Risks associated to information systems; 3. Information system general control; 4. Application control ; 5. Computer assited audit techniques.

Project topics:

Information applications risk evaluation and controlEvaluarea Communication means and anetwork risks and control

E-Banking Systems risks and security.

The audit of the Systems managing client/ Server data bases (exp. MS SQL SERVER, MySQL, ORACLE);

E -commerce application audit.

TEACHING LANGUAGE: Romanian

EVALUATION: project

BIBLIOGRAPHY:

Eden,V. Stanciu, Auditul Sistemelor Informatione, Editura Dual Tech, 2006

A. Munteanu, Auditul sistemelor informatione contabile, Editura Polirom, 2001

J. Champlain, Auditing Information Systems, John Wiley & Sons, Inc., 2003

ISO/IEC 17799:2005 "Information technology - Security techniques - Code of Practice for information security management"

ISO/IEC 27001:2005 "Information technology - Security techniques – Information Security management systems – requirements.

SUBJECT : INFORMATION RETRIEVAL SYSTEMS

NUMBER OF CREDIT POINTS: 6
SEMESTRU: I
TIPUL DISCIPLINEI: core course
COURSE OBJECTIVES: The course is meant to make the students acquainted with a multitude of methods used in visual search based on content, considering the characteristics: colour, texture and form. Present-day retrieval systems are presented, and also those created within our department to make a contrastive study based on the methods used, starting from the fact that there are no standards in this respect. The analysis underpins the retrieval quality and the interrogation execution speed. The algorithms studied during the course will be implemented and analysed during the laboratory work. The students will be provided with a detailed view on a new field in full development.
COURSE CONTENT: 1. Introduction; 2. Color-based image retrieval; 3. Texture-based image retrieval; 4. Form-based image retrieval;
5. Image retrieval based on the spatial relation among objects; 6. Content-based visual search applications in various domains.
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

Baze de date multimedia-studiu asupra unor metode de regasire a informatiei vizuale, Liana Stanescu, Ed. Universitaria 2004
Liana Stănescu, Visual Information – Processing, Retrieval and Applications, Editura SITECH Craiova, 2008
Multimedia Systems and Content-Based Retrieval, Sagarmay Deb , Idea Group Publishing, 2004
Visual Information Retrieval, Alberto del Bimbo, Morgan Kaufmann Publishers, 2001.

SUBJECT : OPTIMIZATION OF THE APPLICATIONS CONCERNING DISTRIBUTED INFORMATION SYSTEMS

CREDIT NUMBER: 6
SEMESTER: I
COURSE TYPE: compulsory
COURSE OBJECTIVES:
CONTENT:
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

SUBJECT : RESEARCH ACTIVITY

NUMBER OF CREDIT POINTS: 15
SEMESTER: II
COURSE TYPE: compulsory
COURSE OBJECTIVES:
CONTENT:
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

SUBJECT : INTERNSHIP - DISSERTATION PAPER

NUMBER OF CREDIT POINTS: 15
SEMESTER: II
COURSE TYPE: compulsory

COURSE OBJECTIVES:
CONTENT:
TEACHING LANGUAGE: Romanian
EVALUATION: oral examination
BIBLIOGRAPHY:

Dean,
Professor Eugen BOBAŞU, PhD