

UNIVERSITY OF CRAIOVA
DEPARTMENT: COMPUTERS AND INFORMATION
TECHNOLOGY
MASTER: SOFTWARE ENGINEERING

1-ST YEAR

1. Software applications development based on agents and services
2. Formal methods in software engineering
3. Multimedia data bases
4. Calculus complexity
5. Image processing
6. Advanced topics in Internet applications design (Option 1a)
7. e-payment secured systems (Option 1b)
8. Distributed and mobile data bases
9. Software Metrics
10. Complex graphic systems (Option 2a)
11. Legal, ethic and social issues in software engineering (Option 2b)
12. Distributed systems modeling and simulation

2-ND YEAR

1. Distributed systems programming
2. Information retrieval systems (Option 3a)
3. e-Marketing and Branding information technology (Option 3b)
4. Critical information systems engineering
5. Systems based on knowledge and semantics
6. Research activity
7. Dissertation paper

1-ST YEAR

SUBJECT: AGENTS AND SERVICES-BASED SOFTWARE APPLICATIONS DEVELOPMENT

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: synthesis

COURSE OBJECTIVES: This is one of the specialty subject matters. Results: Development strategies agent and service-based; Agent and service-based Software platforms; Architectures, notations and standards in agent and service-based software engineering; Applications: e-business, distributed assisted decision-making, crises and disaster management, semantic web, environment protection.

COURSE CONTENT: 1. Introduction to agents and services; 2. Agent and service-oriented software architectures; 3. Development methodologies agent and service-oriented; 4. Notations and models of agent and service-oriented software; 5. Agent and service-oriented software technologies (coordination, processes, transactions, workflow systems); 6. Multi-agent systems: semantics, communication, negotiation, collaboration, organizations, firms.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Wooldridge, M. J. An Introduction to MultiAgent Systems. John Willey & Sons Ltd, 2002
- Munindar P. Singh and Michael N. Huhns, Service-Oriented Computing: Semantics, Processes, Agents, John Wiley & Sons, Ltd., 2005
- Maria Fasli, Agent Technology for E-Commerce, Wiley, 2007
- B. Henderson-Sellers and P. Giorgini. Agent-oriented Methodologies. Idea Group Publishing, 2005
- Christopher D. Walton, Agency and the Semantic Web, Oxford University Press, 2007
- Fabio Luigi Bellifemine, Giovanni Caire, Dominic Greenwood, Developing Multi-Agent Systems with JADE, Wiley, 2007
- Rafael H. Bordini, Jomi Fred Hübner, Michael Wooldridge, Programming Multi-agent Systems in AgentSpeak using Jason, Wiley, 2007

SUBJECT: FORMAL METHODS IN SOFTWARE ENGINEERING

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: This is a specialty course which continues the knowledge area of the course "Complexity algorithm analysis".

COURSE CONTENT: Elements of logic and propositional calculus. Definitions and statements in Z language. Functions, relations and sequencing. Schemes and schemes operators. Data and scheme refining. Functional and calculus refinement.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- J. Davies, J. Woodcock - Using Z. Specification, Refinement, and Proof, Prentice Hall International, 1996.
- J.M. Spivey - The Z notation. A reference manual, Prentice Hall International, 1992.
- J. Jacky - The Way of Z: Practical Programming with Formal Methods, Cambridge University Press, 1997
- A. Diller - Z. An Introduction to Formal Methods, Wiley, 1994

J. Bowen - Formal Specification and Documentation using Z: A Case Study Approach, International Thomson Computer Press, 1996

Hayes - Specification Case Studies, Prentice Hall International, 1993.

SUBJECT: MULTIMEDIA DATA BASES

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: synthesis

COURSE OBJECTIVES: The course aims at familiarising students with the concepts specific to multimedia databases (images, audio, video, animation), methods of stocking and accessing data, their management, content-based interrogation which is specific to multimedia data bases, the basic characteristics which are obligatory for multimedia data bases management systems. A parallel will be made between classical database management systems and those specific to multimedia. The students will be provided with a detailed view of the field, in full development.

COURSE CONTENT: 1. Introduction; 2. Multimedia data bases interfaces and applications; 3. Concepts, analysis and design of multimedia data bases; 4. Client/server architectures and multimedia data bases; 5. Multimedia data bases management systems; 6. Content-based interrogation and retrieval in multimedia data bases; 7. Transactions, competing and retrieval in multimedia data bases; 8. Stocking manner management and multimedia data access.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Multimedia and Imaging Databases, Setrag Khoshafian, Brad Baker, Morgan Kaufmann Publishers, 1996
- Multimedia Database Management Systems, Goujun Lu, Artech House, 1999
- 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: CALCULUS COMPLEXITY

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: This is a specialty course which continues the knowledge area of the course "Complexity algorithm analysis".

COURSE CONTENT: Optimization problems; Optimization problems approximation; co-NP complexity class; The polynomial hierarchization of complexity classes; Probabilistic algorithms; Probabilistic turing machines; Probabilistic complexity classes.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- DEXTER C. KOZEN - The Design and Analysis of Algorithms; Springer Verlag 1992;
- DAVID HAREL - Algorithmics - The Spirit of Computing; Addison-Wesley 1991;
- FOSTER C. L. - Algorithms, Abstraction and Implementation; Academic Press 1992;

WEISS M. A. - Data Structures and Algorithms Analysis; Benjamin Cummings 1992;

BOVET D. P.; CRESCENZI P. - Introduction to the Theory of Complexity; Prentice Hall 1994;

BAASE S. - Computer Algorithms. Introduction to Design and Analysis; Addison- Wesley 1992;

CORMEN TH., LEISERSON CH., RIVEST R.- Introduction to Algorithms; MIT Press 1992;

AHO A. V., HOPCROFT J. E., ULLMAN J. D. - The design and Analysis of Computer Algorithms; Addison- Wesley 1975;

KNUTH D. E. - The Art of Computer Programming. Fundamental Algorithms; Addison-Wesley 1973;

HOPCROFT J. E., ULLMAN J. D. - Introduction to Automata. Theory, Languages and Computation; Addison- Wesley 1979;

MICHA HOFRI - Analysis of Algorithms. Computational Methods and Mathematical Tools; Oxford Press 1995;

MORET B. M. E., SHAPIRO H. D. - Algorithms from P to NP; Benjamin Cummings 1990;

LASSAIGNE R., ROUGEMONT M. - Logique et Complexite; Editions Hermes 1996;

BALCAZAR J., DIAZ J., GABARRO J. - Structural Complexity; Springer Verlag 1988;

MONTWANI R., RAGHAVAN P. - Randomised Algorithms; Cambridge Press 1995;

PAPADIMITRIOU CH. - Computational Complexity; Addison- Wesley 1994;

NEIL D. JONES - Computability and Complexity; MIT Press 1997;

JACQUES STERN - Fondements Mathematiques de L'informatique; McGraw-Hill 1990

GREEN D., KNUTH D. E. -Mathematics for the Analysis of Algorithms; Birkhauser 1990;

CALUDE CRISTIAN - Complexitatea calculului. Aspecte calitative; Ed. Stiintifica si Enciclopedica 1982;

BURDESCU D. D. – Analiza Complexitatii Algoritmilor; Ed. Albastra 1998;

BURDESCU D. D., PATRICIU ALEX. - O implementare a unei reduceri intre probleme NP-complete; Revista ELSE-Software nr.7/1995;

BURDESCU D. D. - Tehnici de programare in C; Ed. Radical 1995;

BURDESCU D. D., PATRICIU ALEX. - Analiza algoritmilor (indrumar de laborator), Reprografia Universitatii Craiova 1996;

BURDESCU D.D. - Analiza complexitatii algoritmilor (curs);Reprografia Universitatii Craiova 1997.

SUBJECT: IMAGE PROCESSING

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: It is a specialty subject matter which is included in Software engineering curriculum. The course aims at introducing the basic concepts and at developing the necessary competences in order to analyse, design and develop applications based on image aquisition and processing. The laboratory work is meant to facilitate the familiarization with the equipments and ways of implementing artificial sight.

COURSE CONTENT: 1. Introduction to image acquisition and processing; 2. Image analysis. 3. Image restoring; 4. Image quality increase; 5. Image compression; 6. Program

systems for image processing; 7. Image processing applications.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination/continuous assessment

BIBLIOGRAPHY :

Computer Imaging: Digital Image Analysis and Processing, Scott E Umbaugh, The CRC Press, Boca Raton, FL, January 2005, 659 pages, CVIPtools CD-ROM with book, ISBN: 0-84-932919-1

Computer Vision and Image Processing: A Practical Approach Using CVIPtools , S. E Umbaugh, Prentice Hall PTR, Upper Saddle, NJ, 1998, 504 pages, includes CD-ROM with software, ISBN 0-13-264599-8.

Machine Vision : Theory, Algorithms, Practicalities, E. R. Davies, Elsevier, 2005

Achizitia, prelucrarea si recunoasterea imaginilor, Cojocaru, D, 2003, Editura Universitaria, ISBN 973-8043-146-6, 340 pag.

Fuzzy Techniques in Computer Vision, Tănasie, R. T., Cojocaru, D., 2006, Editura Universitaria, ISBN 973-742-428-X, 978-973-742-428-0, 105 pag.

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SUBJECT: ADVANCED TOPICS IN INTERNET APPLICATIONS DESIGN

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: synthesis

COURSE OBJECTIVES: The course aims at introducing the basic concepts regarding the issues of the design of the applications to be used on the internet. The concepts are linked to the structure of the applications, users' registering and management, content management, scalability principles, etc. Lab classes are meant to ensure the understanding of theoretical aspects and to create design/programming abilities concerning internet applications through applications, exercises, problems.

COURSE CONTENT: 1. Internet applications basic notions; 2. Applications structure; 3. Users' registering and management; 4. Content management; 5. Applications modularity; 6. Mobile users adding; 7. Voice (VoiceXML) ; 8. Scalability principles ; 9. Search ; 10. Distributed calculus with HTTP, XML, SOAP, and WSDL; 11. Metadata; 12. Users' activity analysis.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination/continuous assessment

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: E-PAYMENT SECURED SYSTEMS

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: synthesis

COURSE OBJECTIVES: It is a specialty subject matter. The course presents the main forms of e-commerce and enlarges upon security issues linked to that. The students will acquire interdisciplinary knowledge covering domains such as: data

communication, information security, computer networks, e-commerce.

COURSE CONTENT: 1.Introduction to e-commerce; 2. Security issue in data Communications; 3. The trust concept/ model in an interconncted world. 4. Public key infrastructures. Digital Signatures; 5. TCP/IP network security; Secure Sockets Layer Protocol. HTTP/S Protocol; 6. TCP/IP network security; IPSec Protocol; 7. Secure Electronic Transaction Standard (SET); 8. Electronic data interchange (EDI); 9. Electronic funds transfer (EFT); 10. Online payment mechanisms; 11. Online banking;12. Internet marketing

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Warwick Ford, Michael Baum, Secure Electronic Commerce: Building the Infrastructure for Digital Signatures and Encryption, Prentice-Hall, 1997, ISBN-13: 978-0134763422

Michael Whitman, Herbert Mattord, Principles of Information Security, 3rd edition, Course Technology, 2007, ISBN-13: 978-1423901778

Charlie Kaufman, Radia Perlman, Mike Speciner, Network Security: Private Communication in a Public World, 2nd edition, Prentice-Hall, 2002, ISBN-13: 978-0130460196.

SUBJECT: DISTRIBUTED AND MOBILE DATA BASES

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: The course aims at getting the students acquainted with the concepts specific to distributed and mobile data bases. Beginning with a brief review of the basic concepts used in relational and network data bases, the course introduces concepts linked to distributed and mobile data bases design, specific architectures, interrogations solving and optimization, transactions, competition control and data retrieval in concrete situations,. A constant parallel will be made between classical data bases management systems and distributed and mobile ones. A detailed view of the field will be provided to the students.

COURSE CONTENT: 1. Introduction; 2. Architectural models for distributed data bases management systems. 3. Distributed data bases design; 4. Interrogation processing in distributed data bases systems; 5. Interrogation decomposition and data locating; 6. Transaction management in distributed data bases systems 7. Competition control in distributed data bases systems; 8.Mobile data bases systems; 9. Wireless network communication; 10. Data processing and mobility; 11. Transaction management in mobile data bases systems; 12. Mobile data bases restoring.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

Principles of Distributed Database Systems, M. Tamer Ozsu, P. Valduriez, Prentice Hall, 1999

Mobile Database Systems, Kumar Vijay, John Wiley & Sons, 2006

Building PDA Databases for Wireless and Mobile Development, R. Laberge, S.Vujosevic, Wiley, 2002

Microsoft Mobile Development Handbook, A. Wigley, D. Moth, P. Foot, Microsoft Press, 2007

Fundamentals Of Database Systems , Ramez Elmasri, Shamkant B. Navathe, Addison-Wesley Publishing Company 1994

Principles of Database and Knowledge-Base Systems vol I, J.D. Ullman , Computer Science Press 1989.

SUBJECT: SOFTWARE METRICS

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: This course allows the students to develop the folowing abilities: to determine and use quantitative information in software products development; to measure software products and processes; to use software measurements to reduce program errors and diminish their costs.

COURSE CONTENT: Notions of software products measurement theory. Purpose-based methods in measuring software products. Collecting and analysing the data resulted from measuring software products. Measuring the size of software products. Measuring the structural complexity of software products. Measuring the cost and effort necessary for software products Measuring the quality of software products. Measuring the reliability of software products Software products testing metrics. Object-oriented metrics.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

N.E. Fenton, S.L. Pfleeger - Software Metrics: A Rigorous and Practical Approach, PWS Publishing, 1998.

Stephen H. Kan - Metrics and Models in Software Quality Engineering, Addison-Wesley, 1995.

B. Robert Grady, Deborah L. Caswell - Software Metrics: Establishing a Company-wide Program, Prentice Hall, 1998.

R. Binder - Testing Object-Oriented Systems: Models, Patterns, and Tools, Addison-Wesley, 1999

D. Card, R. Glass - Measure Software Design Quality, Prentice-Hall, NJ, 1990.

SUBJECT: COMPLEX GRAPHIC SYSTEMS

NUMĂR DE CREDITE: 6

SEMESTER: II

COURSE TYPE: synthesis

COURSE OBJECTIVES: The course aims at getting the students acquainted with new concepts specific to complex graphic systems. Starting from a brief review of the basic notions in computer graphics, the course introduces concepts linked to graphic systems design, visualising and randaring architectures, graphic applications optimization, comparing several specific libraries. A detailed view of the field will be provided to the students.

COURSE CONTENT: 1. Basic notions. Introduction: Rendering process description. Image-order and Object-Order Methods. Randarea suprafetelor și a volumelor. Color spaces. Lights. Camera and projections. Coordinate systems. Transformations; 2. Visualizing Pipeline. Data objects and process objects. Topologies. Pipeline making: implicit and explicit; 3 . Data reprezentation; 4. Advanced techniques. Transparence. Programmable Pipelines. Texture Mapping. 5. Volume Rendering. Stereo rendering. Aliasing. User Interaction.

Volume Rendering. Image-order volume rendering. Object-order volume rendering. Optimizations. Volumetric Illumination. Areas of interest. 6. Application Programming Interfaces. DirectX. OpenGL and VTK.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- Dorian Dogaru – Grafica pe calculator. Elemente de geometrie computațională – vol.1., Editura didactică și pedagogică, București, 1995
- James Foley, Andries van Dam, Steven Feiner, John Hughes – Computer Graphics: Principles and Practice – Addison Wesley, 1993
- Alan Watt – 3D Computer Graphics - Addison Wesley, 2000
- Frank D. Luna - Introduction to 3D Game Programming with DirectX 9.0 - Wordware Publishing, Inc., Plano - Texas, 2003
- Tomas Möller, and Eric Haines. Real-TimeRendering. 2nd ed. Natick, Mass.: A K Peters, Ltd., 2002.
- Wendy Jones - An Introduction to 3D Computer Graphics - Course Technology PTR, 2004
- James Foley, Andries van Dam, Steven Feiner, John Hughes, Richard Philips – Introduction to Computer Graphics – Addison Wesley, 1993.

SUBJECT: LEGAL, ETHICAL AND SOCIAL ISSUES IN SOFTWARE ENGINEERING

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: synthesis

COURSE OBJECTIVES: The course contains the basics of legal, ethical and social issues in e-commerce. All chapters are a topic of study and each element is linked in multiple ways to the rest of the course, allowing the students to locate a specific topic or aspect legally or to follow the same aspect in reference materials which cover other research domains in e-business.

COURSE CONTENT: 1. The meaning of legal, ethical and social aspects in e-business. 2. Legale aspects in e-business; 3. Web etiquette rules; 4. Issues linked to global data, security and ethics in information systems, informatic criminality; 5. Ethical dilemmas in e-Business.

Reforma eticii marketingului în e-Business; 6. Etica e-business si responsabilitatea social în sec XXI

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Bohlman, H. M., & Dundas, M. J., The Legal, Ethical And International Environment Of Business. 5th Ed. Cincinnati, Ohio: West/Thomson Learning, 2002.
- Burlea Schiopoiu A., Responsabilitatea Sociala A Intreprinderilor, Editura Universitaria, Craiova, 2007.
- Floridi, L. (2006a). Information Technologies And The Tragedy Of Good Will, Ethics And Information Technology, 8, 4,253-262.
- Floridi, L. (2006b). Information Ethics, Its Nature And Scope, SIGCAS Computers And Society, Volume 36, No. 3, September 2006, 21-36.
- Frank, R.H., What Price The Moral High Ground? Ethical Dilemmas In Competitive Environments. Princeton, Nj: Princeton University Press, 2004.
- Jennings M.M., Business Ethics: Case Studies And Selected Readings, 6th Edition, South Western Educational Publishing, 2008

SUBJECT: DISTRIBUTED SYSTEMS MODELING AND SIMULATION

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: The course aims at getting the students acquainted with new concepts specific to complex graphic systems. Starting with a brief review of the basic notions in computer graphics, the course introduces concepts linked to graphic systems design, visualising and rendering architectures, graphic applications optimization, comparing several specific libraries. A detailed view of the field will be provided to the students.

COURSE CONTENT: 1. Basic notions. Introduction: Rendering process description. Image-order and Object-Order Methods. Randarea suprafetelor și a volumelor. Color spaces. Lights. Camera and projections. Coordinate systems. Transformations; 2. Visualizing Pipeline. Data objects and process objects. Topologies. Pipeline making: implicit and explicit; 3 . Data representation; 4. Advanced techniques. Transparence. Programmable Pipelines. Texture Mapping. 5. Volume Rendering. Stereo rendering. Aliasing. User Interaction.

Volume Rendering. Image-order volume rendering. Object-order volume rendering. Optimizations. Volumetric Illumination. Areas of interest. 6. Application Programming Interfaces. DirectX. OpenGL and VTK.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- Dorian Dogaru – Grafica pe calculator. Elemente de geometrie computațională – vol.1., Editura didactică și pedagogică, București, 1995
- James Foley, Andries van Dam, Steven Feiner, John Hughes – Computer Graphics: Principles and Practice – Addison Wesley, 1993
- Alan Watt – 3D Computer Graphics - Addison Wesley, 2000
- Frank D. Luna - Introduction to 3D Game Programming with DirectX 9.0 - Wordware Publishing, Inc., Plano - Texas, 2003
- Tomas Möller, and Eric Haines. Real-TimeRendering. 2nd ed. Natick, Mass.: A K Peters, Ltd., 2002.
- Wendy Jones - An Introduction to 3D Computer Graphics - Course Technology PTR, 2004
- James Foley, Andries van Dam, Steven Feiner, John Hughes, Richard Philips – Introduction to Computer Graphics – Addison Wesley, 1993.

2-ND YEAR

SUBJECT : DISTRIBUTED SYSTEMS PROGRAMMING

NUMBER OF CREDIT POINTS : 7

SEMESTER: I

COURSE TYPE : specialty

COURSE OBJECTIVES: They are linked to the design, development and implementation of distributed information applications and also to the identification of the requirements specific to the analysis and verification of these applications. This course presents the principles and techniques distributed systems design is based on: blocking, competition, etc.

COURSE CONTENT:1.Introduction to distributed systems domain; 2. Middleware in distributed systems Cap3. Distributed algorithms; 4. Distributed systems Infrastructure; 5. Data distribution; 6. Distributed systems Programming /implementation.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- G. Coulouris, J. Dollimore and T. Kindberg, Distributed Systems: Concepts and Design , Addison-Wesley, 2005 Fourth Edition.

Andrew S. Tanenbaum and Maarten Van Steen, Distributed Systems: Principles and Paradigms, Prentice Hall, September 2001.

Arno Puder, Kay Römer, Frank Pilhofer, Distributed systems architecture: a middleware approach, Morgan Kaufmann Publishers, 2006.

Tom White, Hadoop: The Definitive Guide, O'Reilly, 2009.

Jason Venner, Pro Hadoop - Build scalable, distributed applications in the cloud, aPress, 2009.

SUBJECT: INFORMATION RETRIEVAL SYSTEMS

NUMBER OF CREDIT POINTS: 8

SEMESTER: I

COURSE TYPE: synthesis

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: color, texture and form. There will be analysed the presentday retrieval systems, 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 will consider the retrieval quality and the interrogation execution speed. The algorithms studied at the course will be implemented and analysed during the lab classes. A detailed view of the field will be provided to the students.

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: e-MARKETING AND BRANDING INFORMATION TECHNOLOGY

NUMBER OF CREDIT POINTS: 8

SEMESTER: I

COURSE TYPE: synthesis

COURSE OBJECTIVES: This course explores the basic principles that underlie marketing and how e-business marketing techniques will fundamentally change the traditional marketing process.

This course prepares students for careers in a rapidly changing environment of non-linear, online, interactive advertising; new product development and distribution processes; and reliance on databases. Throughout the semester, students will learn how traditional marketing models are translated or modified into the electronic medium of the World Wide Web. This transformation will be examined theoretically and based on case studies.

COURSE CONTENT: E-Marketing Overview. Internet Audience and Consumer Behaviour. Internet Marketing Achievement. Branding Strategies in e-Marketing. Advertising Networks and Invasive Marketing. Communication Strategies in e-Marketing.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Terri C. Albert, William B. Sanders, E-Business Marketing, Upper Saddle River, NJ: Prentice Hall, 2003.

Judy Strauss, Adel El-Ansary, Raymond Frost, EMarketing, 4th ed., Prentice Hall, 2005

Brad A. Kleindl Ph.D., Brad A. Keindl, Strategic Electronic Marketing in Managing E-Business, Prentice Hall, 2001

John O'Connor, Eamonn Galvin, Martin Evans, Electronic Marketing: Theory and Practice for the Twenty-First Century, Prentice Hall, 2003

Levinson, J.C., Rubin, C., Guerilla Marketing on the Information Highway, 1996

Laudon, K.C., Traver, C.G., E-Commerce. Business, Technology, Society, Pearson Prentice Hall, 2007

Rohner, K., Ciber-Marketing, Ed. All, București, 1999.

Kotler, P., Armstrong, G., Principles of Marketing, 11th Edition, Prentice Hall, 2006

Ince, D., Developing Distributed and E-Commerce Applications, Addison-Wesley, 2002

Clarke, I., Flaherty, T., Advances in Electronic Marketing, Idea Group Publishing, 2005

SUBJECT: CRITICAL INFORMATION SYSTEMS ENGINEERING

NUMBER OF CREDIT POINTS: 7

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course objective is to introduce the students to the domain of the principles of critical information systems specification and development, acquiring the key processes associated to their life cycle, the knowledge of the standards of programming engineering in the field and also of the tools needed to automatize development processes. At the end of the course, students will have the necessary knowledge concerning the ways in which complex critical information systems can be developed by software engineers, applying the standards specific to the domain.

COURSE CONTENT: 1. Introduction to critical information systems. 2. Processes subsequent to SIC software development. 3. SIC software development standards. 4. CASE tools for SIC software 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: KNOWLEDGE AND SEMANTICS-BASED SYSTEMS**NUMBER OF CREDIT POINTS: 8****SEMESTER: I****COURSE TYPE: CA****COURSE OBJECTIVES:** It is one of specialty subject matters. Results: 1. Programmes for knowledge representation. 2. Reasoning methods. 3. Methodologies meant to develop knowledge-based systems. 4. Platforms and technologies for knowledge-based systems building. 5. Applications: expert systems, semantic web etc.**COURSE CONTENT:** 1. Introduction to knowledge and semantics-based systems; 2. Representation and reasoning using rules; 3. Representation and reasoning using ontologies; 4. Representation and reasoning with uncertainties; 5. Representation and reasoning for processes, protocols and dynamic systems; 6. Methodologies and tools meant to develop knowledge-based systems; 7. Applications: expert systems, semantic web etc.**TEACHING LANGUAGE:** Romanian**EVALUATION:** written examination**BIBLIOGRAPHY:**

Ronald Brachman, Hector Levesque, Knowledge Representation and Reasoning, Morgan Kaufmann; 1 edition, 2004

John F. Sowa, Knowledge Representation: Logical, Philosophical, and Computational Foundations, Course Technology; 1 edition, 1999

Handbook of Knowledge Representation, Frank van Harmelen, Vladimir Lifschitz, Bruce Porter, Elsevier Science, 2007

Michael C. Daconta, Leo J. Obrst, Kevin T. Smith, The Semantic Web: A guide to the future of XML, Web Services and Knowledge Management, Wiley, 2005

Grigoris Antoniou and Frank van Harmelen, A Semantic Web Primer, 2nd Edition, MIT Press, 2008

Jorge Cardoso, editor, Semantic Web services : theory, tools and applications, IGI Global, 2007

Gerd Wagner, Foundations of Knowledge Systems with Applications to Databases and Agents. Kluwer Academic Publishers/Springer, 1998.

SUBJECT: RESEARCH ACTIVITY**NUMBER OF CREDIT POINTS: 15****SEMESTER: II****COURSE TYPE: CA****COURSE OBJECTIVES:****COURSE CONTENT:****TEACHING LANGUAGE:** Romanian**EVALUATION:** oral examination**BIBLIOGRAPHY:****SUBJECT: DISSERTATION PAPER****NUMBER OF CREDIT POINTS: 15****SEMESTER: II****COURSE TYPE:** synthesis**COURSE OBJECTIVES:****COURSE CONTENT:****TEACHING LANGUAGE:** Romanian**EVALUATION:** oral examination**BIBLIOGRAPHY:****Dean,**

Professor Eugen BOBAȘU, PhD