

UNIVERSITATEA DIN CRAIOVA
DEPARTAMENTUL: DEPARTMENT OF COMPUTERS
AND INFORMATION TECHNOLOGY
LICENTA: COMPUTERS TAUGHT IN ENGLISH
SPECIALIZATION

ANUL I

1. Mathematical Analysis - D27CEL101
2. Linear Algebra and I Geometry- D27CEL102
3. Computer Programming- D27CEL103
4. Physics – General Elements- D27CEL104
5. Logical Design of Digital Computers- D27CEL105
6. Knowledge, Human Communication and Internet- D27CEL106
7. English 1 - D27CEL107
8. Special Mathematics - D27CEL208
9. Numerical Methods- D27CEL209
10. Introduction to Electrical Engineering- D27CEL210
11. Computer Programming – Programming Techniques- D27CEL211
12. Computer Programming – Programming Technique - Project- D27CEL212
13. Digital Systems Design- D27CEL213
14. Physics – Elements of Mechanical Engineering- D27CEL214
15. English 2- D27CEL215

ANUL II

1. Data Structures and Algorithms- D27CEL319
2. Data Structures and Algorithms - Project- D27CEL320
3. Electronics- D27CEL321
4. Computer Architecture- D27CEL322
5. Systems Theory and Control- D27CEL323
6. Object Oriented Programming- D27CEL324
7. Object Oriented Programming - Project- D27CEL325
8. Project Management- D27CEL326
9. English 1- D27CEL327
10. Algorithm Complexity Analysis - D27CEL428
11. Artificial Intelligence- D27CEL429
12. Computer Graphics- D27CEL430
13. Assembly Programming Languages- D27CEL431
14. Measurement Techniques- D27CEL432
15. General Economics and Accounting- D27CEL433
16. English 2- D27CEL434
17. Practical Training- D27CEL435

ANUL III

1. Digital Integrated Circuits- D27CEL540
2. Databases- D27CEL541
3. Operating Systems- D27CEL542
4. Data Communication- D27CEL543
5. Computer Structure and Organization- D27CEL544
6. Computer Structure and Organization - Project- D27CEL545
7. Visual Programming Environments- D27CEL546
8. Visual Programming Environments - Project- D27CEL547
9. Computer Networks- D27CEL648
10. Database Design- D27CEL649
11. Database Design - Project- D27CEL650
12. Microprocessors System Design- D27CEL651
13. Distributed Network Application Development- D27CEL652

14. Distributed Network Application Development - Project- D27CEL653
15. Verification and Testing of Computer Systems - D27CEL655
16. Verification and Testing of Computer Systems - Project- D27CEL656
17. I/O Systems- D27CEL657
18. Software Engineering- D27CEL658
19. Software Engineering – Project- D27CEL659
20. Computer Systems Modelling- D27CEL660
21. Practical Training- D27CEL654

ANUL IV

1. Real Time Computing Systems- D27CEL763
2. Real Time Computing Systems – Project- D27CEL764
3. Computer Networks Management- D27CEL765
4. E-Commerce- D27CEL766
5. E-Commerce – Project- D27CEL767
6. Web Applications' Design- D27CEL768
7. Web Applications' Design – Project- D27CEL769
8. Data Security- D27CEL771
9. Data Security – Project- D27CEL772
10. Frameworks for Digital Systems Development- D27CEL773
11. Models and Algorithms for Parallel Computing- D27CEL774
12. Models and Algorithms for Parallel Computing – Project- D27CEL775
13. Formal Languages and Automata- D27CEL776
14. Practical Stage for Graduation – Project- D27CEL870
15. Embedded Systems- D27CEL877
16. Embedded Systems – Project- D27CEL878
17. DSP in Communication- D27CEL879
18. High Speed Networks- D27CEL880
19. Information Systems Management- D27CEL881
20. VLSI Environments- D27CEL882
21. Compiler Design- D27CEL883
22. Compiler Design – Project- D27CEL884
23. Algorithms for Information Retrieval- D27CEL885
24. Expert Systems- D27CEL886
25. Graphical Systems- D27CEL887
26. Multimedia Application Development- D27CEL888

ANUL I

SUBJECT OF STUDY : MATHEMATICAL ANALYSIS

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The course focuses on the introduction of fundamental notions on differential and integral calculus

COURSE CONTENT: Introduction to differential calculus (Fundamental streams; complete metric spaces; Contraction principle; Numerical series; Series of powers, developments in series; Limits and continuity for functions with several variables; Partial derivatives and differentiability; Local extremes for functions with several variables; Implicit defined functions; Conditioned extremes). Introduction to integral calculus (Right Riemann integral; improper integrals; Integrals with parameters; Curve-linear integrals; Double and triple integrals; Surface integrals).

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Predoi, M., Balan, T. - Mathematical Analysis Vol I. Differential Calculus; Vol II. Integral Calculus, Ed. Universitaria, Craiova, 2005
- Predoi, M. - Analiza matematica, Ed. Universitaria, Craiova, 1994
- Predoi, M., Constantinescu, D., Racila, M. - Teme de calcul diferential, Ed. Sitech, Craiova, 2003
- Predoi, M., Constantinescu, D., Racila, M. - Teme de calcul integral, Ed. Sitech, Craiova, 2003

SUBJECT OF STUDY : LINEAR ALGEBRA AND GEOMETRY

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The aim of the course is the introduction of the fundamental notions of linear algebra, analytic and differential geometry: vector spaces, linear mappings, quadratic forms, Euclidian spaces, geometric vectors, the straight line, the plane, conics and quadric surfaces, curves and surfaces. Tutorial classes allow to fix theoretical knowledge and to create calculus control by applications.

COURSE CONTENT: 1. Vector Spaces; 2. Linear Mappings; 3. Bilinear Forms. Quadratic Forms; 4. Euclidian Spaces; 5. Geometric Vectors; 6. Straight Line and Plane; 7. Conics and Quadric Surfaces; 8. Curves in Plane and in Space; 9. Surfaces

TEACHING LANGUAGE: English

EVALUATION: written exam / on-going examination

BIBLIOGRAPHY:

- Vladimirescu, I., Munteanu, F., Algebră liniară, geometrie analitică și geometrie diferențială, Ed. Universitaria, Craiova, 2007
- Vladimirescu, I., Matematici aplicate, Repr. Univ. Craiova, 1987.
- Vladimirescu, I., Popescu, M., Algebră liniară și geometrie analitică, Ed. Univ. Craiova 1994
- Vladimirescu, I., Popescu, M., Alg. liniară, geom. n-dimensională, Ed. Radical, Craiova 1996
- Radu, C., Algebră liniară, geometrie analitică și diferențială, Ed. ALL, București, 1998

Vladislav, T., Rașa, I., Matematici financiare și ingineresti, Ed. Fair Partners, București, 2001

Udriște, C. ș.a., Probleme de algebră, geometrie și ecuații diferențiale, EDP, București, 1981

Stănășilă, O., Analiză liniară și geometrie, Ed. ALL, București, 2000

Munteanu, F. ș.a., Probleme de alg. liniară, geom. analitică, difer., Ed. Universitaria, Craiova, 2006

SUBJECT OF STUDY: COMPUTER PROGRAMMING

NUMBER OF CREDITS: 6

SEMESTER: I

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The course overall objective is to provide the students with the knowledge required and to develop elementary programming skills using modern computer programming languages, C-like, such as C, C++, Java.

COURSE CONTENT: 1. Introduction; 2. Algorithmic Design; 3. Data Structures; 4. Language Issues; 5. Programming in C.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- [A] T.H.Cormen, C.E.Leierson, R.L.Rivest, Introduction To Algorithms, MIT Press, 1990 (also translated in Romanian, Computer Libris Agora, 2000)
- [A] N.Wirth, Algorithms + Data Structures = Programs, Prentice-Hall, Englewood Cliffs, 1976
- [B] D.E. Knuth, The Art of Computer Programming - vol.1: Fundamental Algorithms, 3rd ed., Addison Wesley Longman, 1997 (also translated in Romanian, Ed.Teora, 1999)
- [B] A.V.Aho, J.E.Hopcroft, J.D.Ullman, The Design And Analysis Of Computer Algorithms, Addison Wesley, 1974
- [C] J.P.Tremblay, P.G.Sorenson, An Introduction To Data Structures With Applications, McGraw-Hill, 1984
- [B] L.Livovschi, H.Georgescu, The Synthesis And Analysis Of Algorithms (in Romanian), Bucharest, 1986
- [B] E.Horowitz, S.Sahni. Fundamentals of Computer Algorithms, Computer Science Press, 1984
- [B] E.Horowitz, S.Sahni. Fundamentals of Data Structures, Computer Science Press, 1986
- [C] R.Skvarcius, Problem Solving Using Pascal - Algorithm Development and Programming Concepts, PWS Publishers, 1984
- [B] Herbert Schildt, C: The Complete Reference, McGraw-Hill Intl, 1995 (also in Romanian, Ed.Teora, 1998)
- [C] H. Schildt, C++: The Complete Reference, McGraw-Hill Intl, 1995 (also in Romanian, Ed.Teora, 1997)
- [B] M.Mocanu, C: A Programming Guide, Ed. Sitech, 2001 (in Romanian)
- [C] R.Lafore, Data Structures and Algorithms in Java, Waite Group Press, 1998 (also translated in Romanian, Ed.Teora, 2001)
- [C] J.F. Korsh, Data Structures, Algorithms and Program Style, PWS Computer Science, Boston, 1986

SUBJECT OF STUDY : PHYSICS – GENERAL ELEMENTS

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The course focuses on the review of fundamental knowledge in general physics and applications.

COURSE CONTENT: 1. Classical Mechanics; 2. Analytical Mechanics; 3. Electrodynamics 4. Elements Of Quantum Physics

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Florea Uliu, Curs de fizica pentru facultatea de electrotehnica, vol.1 si 2, Reprogr.Univ.Craiova 1982, 1986. Reprogr.Univ.Craiova, 1991.

E. Luca si colaboratorii - Fizica, Editura Didactica si Pedagogica.

I.M. Popescu si colaboratorii - Probleme rezolvate de fizica, Editura Tehnica.

M. Puchin - Fizica, Editura Sitech.

SUBJECT OF STUDY : LOGICAL DESIGN OF DIGITAL COMPUTERS

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: An introductory course on logical design methodology, forming the basis for future stream of hardware disciplines. It is treated extensively the mathematical foundation linked to analysis and synthesis of digital devices - Boolean algebra, Switching functions and forms, Minimization procedures, Canonical forms of representation

COURSE CONTENT: 1. Fundamental concepts related to Logical Design of Digital Computers (LDDC); 2. Boolean Algebra; 3. Switching functions; 4. Boolean forms; 5. Classes of Boolean functions. Complete functional systems; 6. Canonical representation of Switching functions; 7. Minimisation of Switching functions

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Oleg Cernian, Logical Design of Digital Computers - Fundamentals, SITECH Craiova, 2005

Oleg Cernian, Logical Design of Digital Computers - Minimization and Functional Decomposition, SITECH Craiova, 2008

D. Lewin, D. Protheroe, Design of Logic Systems, Chapman & Hall, 1992

Z. Kohavi, Switching and Finite Automata Theory, McGraw Hill, 1978

V.P.Nelson, H.Troy Nagle, J.D. Irwin, B.D.Carroll, Digital Circuit Analysis & Design of Digital Systems, McGraw Hill, 1995

S.C. Lee, Digital Circuits and Logic Design, Prentice Hall, 1976

M.A. Harrison, Introduction to Switching and Automata Theory, McGraw Hill, 1965

A.D. Friedman, P.R. Menon, Theory and Design of Switching Circuits, Pitman, 1975

J. Hayes, Introduction to Digital Logic Design, Addison - Wesley, 1994

E.J. McCluskey, Introduction to the Theory of Switching Circuits, Prentice Hall, 1965

SUBJECT OF STUDY : KNOWLEDGE, HUMAN COMMUNICATION AND INTERNET

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: complementary

COURSE OBJECTIVES: The course is addressed to the first year students and intent to present an introduction to human knowledge, as a concept and application tools in the

real life: reading efficiently, writing correctly, intelligent searching information on the Internet; making different documents, etc.

COURSE CONTENT: 1. A study-tour of communication; 2. Internet and Web Searching; 3. FORUM: Community Standards-General Rules; 4. Efficient Reading; 5. Writing Guidelines for Engineering and Science Students;

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Susan Stellin : Resumes and Cover Letters; Burnes & Noble Publishing Inc., New York, 2004; ISBN: 0760737924;

Writing Guidelines for Engineering and Science Students; <http://owl.English.purdue.edu/internet/resources/genre.html> ;

<http://www.usd.edu/trio/tut/excel/10.html>;

Microsoft EXCEL Links / Microsoft EXCEL Tips / EXCEL TUTORIAL ;

http://www.exceltip.com/exceltips.php?view=excel_links

Tara Kuther, Ph.D., About.com; Prepare Your Curriculum Vitae;

<http://gradschool.about.com/cs/curriculumvita/a/vitae.htm>

PowerPoint 2002 (XP);

<http://www.gcflearnfree.org/computer/topic.aspx?id=82>

Happy Fun Communication Land; TUTORIAL: A STUDY-TOUR OF COMMUNICATION;

<http://www.rdillman.com/HFCL/TUTOR/tutor0.html>

SUBJECT OF STUDY : ENGLISH 1

NUMBER OF CREDITS: 2

SEMESTER: I

TYPE OF COURSE: complementary

COURSE OBJECTIVES: The course focuses on teaching the grammatical structures of the English language as well as on the correct using of them in conversation. Also an emphasis will be placed on activating the four main language skills: listening, reading, speaking and writing

COURSE CONTENT: 1. Network and communication; Asking questions (why questions); If clauses; Thematic vocabulary; 2. Databases; Prefixes and suffixes; Describing computer performances; Expressing results; Comparing and contrasting; 3. Artificial intelligence; Synonyms and antonyms; Past tense simple vs. present perfect; Vocabulary practice; 4. Managed and unmanaged endpoints; 5. The degrees of comparison of adjectives and adverbs; Present perfect simple and continuous in use; Gadgets and devices-describing, comparing; 6. Multimedia; The sequence of tenses; The active vs. the passive voice; Vocabulary is use conversation; Explaining and persuading; 7. Future trends in computing; Means of expressing future time; Oral vs. written presentations; Complex noun phrases and the plural of nouns; Synonymy of sentences; Word order: rules and exceptions.

TEACHING LANGUAGE: English

EVALUATION: Colloquia

BIBLIOGRAPHY:

Brookes, M, Lagoutte, F, English For The Computer World; Teora, 2001.

Vince, M, Advanced Language Practice; Macmillan Publishers, 2003;

Otman, G, Engleza Pentru Internet, Teora, 2002.

SUBJECT OF STUDY : SPECIAL MATHEMATICS

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The course represents several chapters of mathematics in respect to their utility as instruments of investigation in engineering and specific language of the specific matter. The seminar follows the topics of the course.

COURSE CONTENT: 1. Elements of complex analysis; 2. Ordinary Differential Equations; 3. Elements of Fourier Analysis

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Predoi M., Bălan T. Mathematical Analysis, Ed. Universitaria, Craiova, 2005
Bălan T., Dăneț C., Ecuații diferențiale, Ed. SITECH, Craiova, 2007
Bălan T., Șterbeți C., Analiză complexă, Ed. MJM, Craiova, 2003
Bălan T., Șterbeți C., Analiză Fourier, Ed. SITECH, Craiova, 2001
Bălan T., Matematici Speciale, Reprografia Universității din Craiova, 1980

SUBJECT OF STUDY : NUMERICAL METHODS

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The course is designed to present the main numerical methods and numerical algorithms. It also aims to enhance the ability of analysing different mathematical models in the engineering field, using the numerical techniques and to solve specific problems by turning the numerical methods into programming languages.

COURSE CONTENT: 1 Numerical methods in algebra ; 2 Function approximation; 3 Numerical methods for integral approximation; 4 Numerical methods for differential equations and partial differential equations;

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Burden R. L., Faires J. D., Numerical Analysis, Brooks Cole Ed., 2004.
C de Boor, A practical guide to splines, 2nd ed. Springer, New York, 2000.
Ciarlet P.G., Introduction à l'Analyse Numérique et l'Optimisation, Ed. Masson, Paris, 1990.
Chatelin F., Spectral approximation of linear operators, Academic Press, New York, 1983.
Demidovici B., Maron I., Éléments de Calcul Numérique, Ed. Mir Moscou, 1973.
Ebâncă D., Metode numerice in algebră, Editura Sitech, Craiova, 2005.
Mihoc Gh., Micu N., Teoria probabilităților și statistică matematică, E. D.P., București, 1980.
Militaru R., Méthodes Numériques. Théorie et Applications, Ed. Sitech, Craiova, 2008.
Philips G., Taylor T., Theory and Applications of Numerical Analysis, Academic Press, 1999.
Popa M., Militaru R., Analiză Numerică , Note de curs, Ed. Sitech, Craiova, 2003.
Popa M., Militaru R., Metode numerice - algoritmi și aplicații, Ed. Sitech, Craiova, 2007.

SUBJECT OF STUDY : INTRODUCTION TO ELECTRICAL ENGINEERING

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The main objective of this discipline is to provide the students with the most important notions on electromagnetic fields and electric circuits (the most important laws and theorems and techniques to solve common problems in various operating regimes). The lab has the role to help students to get practical abilities correlated to the theoretical notions presented at the course.

COURSE CONTENT: 1. Electric circuits in permanent sinusoidal periodic regime (A.C. regime); 2. Electric circuits in D.C. regime; 3. Linear electric circuits in periodic non-sinusoidal permanent regime (PNSR) ("distorting regime"); 4. Electric circuits in transient regime; 5. Two-port networks and filters; 6. Three-phase power systems;

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Gregory Anne, Relațiile publice în practică, Editura All Beck, 2005.
Newsom D., Totul despre relații publice, Editura Polirom, 2003.
Miculescu Simona, Relații publice din perspectiva internațională, Editura Polirom 2006.
***, Pachetul de programe OpenOffice
Nicolae, P.M., Electromagnetics I, Ed. UNIVERSITARIA, Craiova, 1997
Sora, C., Bazele electrotehnicii, EDP Buc., '82
Preda, M., Cristea, P., Bazele electrotehnicii, EDP Buc., '82
Mocanu, C. I., Teoria circuitelor electrice, EDP, Buc. '82
Preda, M., et al., Analiza topologică a circuitelor electrice, EDP Buc.
Badea, M., Bazele electrotehnicii, Reprogr. Univ. Cv., vol. I., (1977), vol II, (1979)
Cook, D.M., The Theory of Electromagnetic field, New Jersey, Prentice Hall, 1975
Marshall, S.V., Skitek, G.G., Electromagnetic Concepts and Applications, New Jersey, Prentice Hall, 1995
Rao, N.N., Elements of Engineering Electromagnetics, New Jersey, Prentice Hall, 1993
Kraus, A., Circuit Analysis, West Publishing Company, 1991

SUBJECT OF STUDY : COMPUTER PROGRAMMING – PROGRAMMING TECHNIQUES

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The aim of this course is to introduce students to basic algorithms and techniques of their systematic implementation and evaluation using usual programming languages (eg. C).

COURSE CONTENT: 1. Introduction to algorithms and programming techniques; 2. Basic algorithms analysis. Testing and correctness; 3. Sorting algorithms; 4. Data types. Lists ; 5. Stacks and queues. Dynamic memory allocation; 6. Graphs and trees; 7. Dynamic programming; 8. Greedy algorithms; 9. Graph algorithms; 10. Backtracking; 11. Combinatorial algorithms; 12. Special algorithms.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein: Introduction to algorithms. MIT Press, 2001.

SUBJECT OF STUDY : COMPUTER PROGRAMMING – PROGRAMMING TECHNIQUES - PROJECT

NUMBER OF CREDITS: 2

SEMESTER: II

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The project requires the development of a program for evaluation and experimentation with a subclass of algorithms. The focus will be on development of a clean implementation to allow the systematic testing and evaluation of the given algorithms. Special attention will be also given to readability, documentation, portability and robustness of the program.

COURSE CONTENT: 1. Recursive vs. Iterative programming; 2. Searching and sorting (sequential and binary search, selection and insertion sort; 3. Advanced sorting (merge sort, quick sort, ...); 4. List; 5. Stacks and queues; 6. Trees; 7. Greedy method; 8. Graphs: representation and traversal; 9. Dynamic programming; 10. Backtracking; 11. Combinatorial algorithms; 12. Files

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY:

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein: Introduction to algorithms. MIT Press, 2001.

SUBJECT OF STUDY : DIGITAL SYSTEMS DESIGN

NUMBER OF CREDITS: 6

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The fundamental mechanisms of designing and implementing digital devices at MSI level: ULMs, extension methods, structured realization of digital networks, programmable logic devices, sequential machines and networks, specification of sequential machines, state reduction, flip-flops, general synthesis procedure, analysis procedure, ASM charts, implementation of ASMs.

COURSE CONTENT: 1. Combinational Logic Networks (CLN); 2. CLN implementation with Programmable Logic Device (PLD); 3. Introduction to Sequential logic Networks 4. Simplification of Sequential Logic Networks; 5. Sequential Logic Networks with PLDs; 6. Design of digital systems

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

V.P.Nelson, H.Troy Nagle, J.D. Irwin, B.D.Carroll, Digital Circuit Analysis & Design of Digital Systems, McGraw Hill, 1995

S.C. Lee, Modern Switching Theory and Digital Design, Prentice Hall, 1976

D. Lewin, D. Protheroe, Design of Logic Systems, Chapman & Hall, 1992

Z. Kohavi, Switching and Finite Automata Theory, McGraw Hill, 1978

S. Lee, Design of Computers and other Complex Digital Devices, Prentice Hall, 2000

M.D. Ercegovic, T.Lang, Digital Systems and Hardware/Firmware Algorithms, John Wiley & Sons, 1985

J.P. Hayes, Introduction to Digital Logic Design, Addison - Wesley, 1994

A.D. Friedman, P.R. Menon, Theory and Design of Switching Circuits, Pitman, 1975

F.P. Prosser, D.E. Winkel, The Art of Digital Design, Prentice Hall, 1987

D.J. Comer, Digital Logic and State Machine Design, Holt, Rinehart & Winston, 1984

J.W. Carter, Digital Design with Programmable Logic Devices, Prentice Hall, 1997

T.L. Floyd, Digital Fundamentals, Prentice Hall, 2000.

SUBJECT OF STUDY: PHYSICS – ELEMENTS OF MECHANICAL ENGINEERING

NUMAR DE CREDITE : 3

SEMESTER: II

TYPE OF COURSE : fundamental

COURSE OBJECTIVES: It is one of fundamental disciplines. The course foccuses on the introduction of basic concepts with respect to the problematics of methods used to build mathematic models for the movement of mechanical systems with constant mass and a finite number of freedom degrees. Their analysis is accompanied by calculation examples and applications that reveals the studied methods.

COURSE CONTENT: 1 Slipping vectors' theory; 2 Geometry of masses; 3. The Kinematics of material points; 4 The Kinematics of rigid solid bodies and of rigid systems; 5 Dynamics

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Bagnaru, D., Cataneanu, A., Mecanica-Mecanisme, Editura Sitech, Craiova, 19972.

Buculei, M., Mecanica, vol. I, II, Reprografia Universitatii din Craiova, 19803.

Cataneanu, A., Mecanica, vol. I,II, Editura Universitaria, Craiova, 2000, 20014.

Cataneanu, A., Mecanica –Culegere de probleme Ed. Universitaria, Craiova, 20025.

Ceausu, V, Enescu, N., Ceausu, F., Culegere de probleme, Mecanica, vol. I. Statica si cinematica, Ed. Printech, Bucuresti, 19976.

Darabont, A., Vaiteanu, D., Munteanu, M., Mecanica tehnica. Culegere de probleme, Ed. Scrisul Romanesc, Craiova, 19837.

Ispas, V., Aplicatiile cinematicii in constructia manipuloarelor si robotilor industriali, Ed. Academiei Romane, Bucuresti 19908.

Mangeron, D., Irimiciuc, N., Mecanica rigidelor cu aplicatii in inginerie, Vol. I, II, III, Ed. Tehnica, Bucuresti, 1978, 1980, 19819.

Merches, I., Burlacu, L., Applied Analytical Mechanics, The Voice of Bucovina Press, Iasi, 199510.

Staicu, St., s.a, Probleme de mecanica teoretica. Mecanica analitica, Universitatea Politehnica Bucuresti, 199611.

Voinea, R., Voiculescu, D., Simion, F. P., Introducere in mecanica solidului rigid cu aplicatii in inginerie, Ed. Academiei, Bucuresti, 1989.

SUBJECT OF STUDY : ENGLISH 2

NUMBER OF CREDITS: 2

SEMESTER: II

TYPE OF COURSE: complementary

COURSE OBJECTIVES: The course focuses on teaching the grammatical structures of the English language as well as on the correct using of them in conversation. Also an emphasis will be placed on activating the four main language skills: listening, reading, speaking and writing.

COURSE CONTENT: 1. Network and communication; Asking questions (why questions); If clauses; Thematic vocabulary; 2. Databases; Prefixes and suffixes; Describing computer performances; Expressing results; Comparing and contrasting; 3. Artificial intelligence; Synonyms and antonyms; Past tense simple vs. present perfect; Vocabulary practice; 4. Managed and unmanaged endpoints; 5. The degrees of comparison of adjectives and adverbs; Present

perfect simple and continuous in use; Gadgets and devices- describing, comparing; 6. Multimedia; The sequence of tenses; The active vs. the passive voice; Vocabulary is use conversation; Explaining and persuading; 7. Future trends in computing; Means of expressing future time; Oral vs. written presentations; Complex noun phrases and the plural of nouns; Synonymy of sentences; Word order: rules and exceptions.

TEACHING LANGUAGE: English

EVALUATION: Colloquy

BIBLIOGRAPHY:

Brookes, M, Lagoutte, F, English For The Computer World; Teora, 2001.

Vince, M, Advanced Language Practice; Macmillan Publishers, 2003;

Otman, G, Engleza Pentru Internet, Teora, 2002.

ANUL II

SUBJECT OF STUDY : DATA STRUCTURES AND ALGORITHMS

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: The main goal of the discipline is the development of skills regarding the design and implementation of various data structures that allow writing performing programs, improving the skills regarding the representation of static objects as well as working with dynamic objects. Another goal is learning how to control the performance of the program against to the ratio of consumed memory/execution Speed.

COURSE CONTENT: 1. Tree structures; 2. Search trees; 3. Optimal search trees; 4. Height balanced trees; 5. Multiway trees; 6. B trees; 7. Graf structures;

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Burdescu D.D. - Algoritmi si structuri de date, Ed. Mirton, 1992.

Burdescu D.D. - Structuri de date arborescente, Ed. Mirton, 1993.

Burdescu D. D. - Structuri de date arborescente (curs) - Reprografia Universitatii din Craiova, 1993.

Burdescu D.D. ,Brezovan M - Algoritmi si structuri de date in C si Pascal (indrumar de laborator), Reprografia Universitatii din Craiova, 1995.

Burdescu D. D., Brezovan Marius, Cosulschi Mirel - Structuri de date arborescente in C si Pascal (indrumar de laborator), Reprografia Universitatii din Craiova, 2000.

Burdescu D.D. ,Badica Costin - Structuri de date (culegere de probleme) Reprografia Universitatii din Craiova, 1994.

Tremblay, Jean Paul, Sorenson, Paul - An Introduction to Data Structures with Applications - Mc Graw-Hill, 1984.

Weiss, Mark Allen - Data Structures and Algorithm Analysis, Benjamin - Cummings, Publishing Company 1992.

Horowitz Ellis - Fundamentals of Data Structures in PASCAL, Computer Science Press 1983

Cormen Thomas, Leiserson Charles, Rivest Ronald – Introduction to Algorithms, M.I.T. Press 1992"

SUBJECT OF STUDY : DATA STRUCTURES AND ALGORITHMS - PROJECT

NUMBER OF CREDITS: 2

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: The project has the main goal of covering the knowledge accumulated along the semester. The project finalizes as a practical application

COURSE CONTENT: The following operations have to be implemented:

I) Basic operations: 1. Create the structure with input data read from a text file; 2. Insert a new record; 3. Update any field ; 4. Search a record by the key; 5. Delete a record by the key; 6. Display: a.tree fashion - only the keys;

b. complete - there are displayed all data in a table

II) Specific operations: 1. Create a tree using other fields from the structure ; 2. Append data from other file; 3. Present reports on stocks using different criteria; 4. Creation of scenarios for testing the correctness of the implemented operations; 5. Save data into a file

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY:

Burdescu D.D. - Algoritmi si structuri de date, Ed. Mirton, 1992.

Burdescu D.D. - Structuri de date arborescente, Ed. Mirton, 1993.

Burdescu D. D. - Structuri de date arborescente (curs) - Reprografia Universitatii din Craiova, 1993.

Burdescu D.D. ,Brezovan M - Algoritmi si structuri de date in C si Pascal (indrumar de laborator), Reprografia Universitatii din Craiova, 1995.

Burdescu D. D., Brezovan Marius, Cosulschi Mirel - Structuri de date arborescente in C si Pascal (indrumar de laborator), Reprografia Universitatii din Craiova, 2000.

Burdescu D.D. ,Badica Costin - Structuri de date (culegere de probleme) Reprografia Universitatii din Craiova, 1994.

Tremblay, Jean Paul, Sorenson, Paul - An Introduction to Data Structures with Applications - Mc Graw-Hill, 1984.

Weiss, Mark Allen - Data Structures and Algorithm Analysis, Benjamin - Cummings, Publishing Company 1992.

Horowitz Ellis - Fundamentals of Data Structures in PASCAL, Computer Science Press 1983

Cormen Thomas, Leiserson Charles, Rivest Ronald – Introduction to Algorithms, M.I.T. Press 1992"

SUBJECT OF STUDY : ELECTRONICS

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: The course covers introduction to analysis, design and simulates building blocks and different analogue IC applications. This course involves laboratory practices and home works on experiment modules and extensive use of industry-standard CAD tools, such as Analog Workbench. Using the knowledge gained through Electronics, students will learn how to measure the characteristics of devices and circuits and the building of basic electronic circuits.

COURSE CONTENT: 1. Semiconductor diodes; 2. Junction Bipolar Transistors; 3. Field-Effect Transistors; 4. Amplifiers; 5. Signal generators; 6. Voltage regulators

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY

- Niculescu E., Purcaru D.M., Electronic Devices and Circuits. Vol. I. Ed. Universitaria, Craiova, 2002 (in Romanian).
- Allen, P. and Holberg, D., CMOS Analog Circuit Design, 2nd Ed., Oxford, 2002.
- Niculescu E., Purcaru D.M., Maria, M., Electronics. Simulations, analysis, and experiments, Ed. Reprograph, Craiova, 2006 (in Romanian).
- Spânulescu, I., Semiconductor Devices and Analogue Integrated Circuits, Ed. Victor, Bucuresti, 1998 (in Romanian).
- Gray, P.E., Meyer, C.R., Analogue Integrated Circuits. Analysis and Design, Ed. Tehnica, Bucuresti, 1997 (in Romanian).
- Dascalu, D. s.a., Electronic Devices and Circuits. Problems. Ed. Didactica si Pedagogica, Bucuresti, 1982 (in Romanian).
- Manolesu, A., Manolescu, A., Linear Integrated Circuits. Problems. Ed. Stiintifica si Enciclopedica, Bucuresti, 1987 (in Romanian).

SUBJECT OF STUDY : COMPUTER ARCHITECTURE

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: A discipline aiming at presentation of basic concepts related to computer architecture: forms of information representation in digital computers, Von Neumann's principles and model, Instruction cycle, General organisation of the CPU, Elementary Educational Computer Classification of digital computers, Machine level language, System bus, Bus arbitration, Stacks, Interrupts, Memory addressing techniques.

COURSE CONTENT: 1 Number representation in digital computers; 2 Architecture – organisation correlation; 3 Von Neumann's principle, Instruction Cycle, CPU ; 4 Elementary Educational Computing; 5 Input/Output; 6 Memory hierarchy and Addressing Techniques; 7 Conventional machine level

TEACHING LANGUAGE: English

EVALUATION: oral exam

BIBLIOGRAPHY:

- Oleg Cernian, Computer Architecture, vol. 1, SITECH Craiova, 2005
- Oleg Cernian, Computer Architecture, vol. 2, SITECH Craiova, 2008
- W. Stallings, Computer Organisation and Architecture, Prentice Hall, 2000
- S.G. Shiva, Computer Design and Architecture, Marcel Dekker, 2000
- A.S. Tannenbaum, I.R. Goodman, Structured Computer Organisation, Prentice Hall, 1998
- M.M. Mano, Computer System Architecture, Prentice Hall, 1993
- J.P. Hayes, Computer Architecture and Organisation, McGraw Hill, 1998
- Oleg Cernian, Introduction to Computer Engineering, SITECH Craiova, 1997
- A.J. Goor, Computer Architecture and Design, Addison - Wesley, 1989
- M.R. Zargham, Computer Architecture, Single and Parallel Systems, Prentice Hall, 1995
- D.A. Patterson, J.L. Hennessey, Computer Organisation and Design, Hardware/Software Interface, Morgan Kaufmann, 1998

xxx MCS - 80 Users Manual Santa Clara, INTEL Corporation, 1977

SUBJECT OF STUDY: SYSTEMS THEORY AND CONTROL

NUMBER OF CREDITS: 3

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: This course deals with the fundamental problems of systems theory, both continuous-time and discrete-time. There are presented theoretical and practical methods regarding analysis, design and implementation of control systems.

COURSE CONTENT: 1. Description and general properties of systems. Introduction; Abstract systems; Oriented systems; 2. Linear time-invariant systems (LTIS); 3. Discrete time systems (DTS); 4. Nonlinear dynamical systems; 5. Control systems; 6. Special topics on systems theory. Time variable linear systems. Distributed parameters systems. Optimal control systems. Stochastic control systems. Intelligent control systems. Fuzzy logic and neural network based control

TEACHING LANGUAGE: English

EVALUATION: written

BIBLIOGRAPHY:

- Marin C., Lectures on System Theory, Editura SITECH Craiova, 2006, ISBN 978-973-746-362-3
- Marin C., Petre E., Popescu D, Ionete C., Selisteanu D. System theory, Problems, Editura SITECH Craiova, 2006, ISBN 978-973-746-437-8, 308 pg.
- Kailath T. Linear Systems, Prentice-Hall , 1980.
- Kuo, B., Automatic Control Systems, Prentice-Hall, 1991.
- Philips, Ch.; Nagle, T., Digital Control System Analysis and Design, Prentice-Hall, 1984.
- Bennett, S., Linkens, D.D., Computer Control of Industrial Processes, Peter Peregrinus, 82.
- Min, L.J., Schrage, J.J., Designing Analog and Digital Control Systems, John Wiley, 1988.

SUBJECT OF STUDY: OBJECT ORIENTED PROGRAMMING

NUMBER OF CREDITS: 4

TYPE OF COURSE: domain

COURSE OBJECTIVES: The objectives of the course are to introduce the main concepts of the object-oriented paradigm, and also to introduce the main characteristics and principles of the C++ language. The objectives for the applications are to allow students to write software programs using C++ as the first object-oriented language, and also to allow students to use the Visual C++ integrated framework in order to write small and medium software applications.

COURSE CONTENT: A. Introduction to Object Oriented Design: 1. Programming Paradigms; 2. The C Language Extensions in the C++ Language; 3. Defining and Using Classes; 4. Constructors and Destructors; 5. Namespaces; B. Basic Elements of Object Oriented Design: 6. Object Composition ; 7. Classes Hierarchies ; 8. Nested Classes. Friend Functions and Friend Classes; 9. Operator Overloading; C. Advanced Elements of Object Oriented Design: 10. Polymorphism and Virtual Functions; 11. Parameterized Functions and Classes. The Template Mechanism; 12. Exceptions; D. Standard Libraries of the C++ Language: 13. IOstreams; 14. Generic Programming. The STL Library

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Thinking in C++, Bruce Eckel, Prentice Hall, 2000 (electronic free)
- The C++ Programming Language, Bjarne Stroustrup, Addison-Wesley, 1997
- Effective C++, Scott Meyers, Addison-Wesley, 1996
- C++ Primer, Stanley Lippman, Josee Lajoie, Addison-Wesley, 1998
- Andrei Alexandrescu, Programarea moderna în C++, Programare generica si modele de proiectare aplicate, Teora, 2002

SUBJECT OF STUDY: OBJECT ORIENTED PROGRAMMING - PROJECT
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NUMBER OF CREDITS: 2**SEMESTER:** I**TYPE OF COURSE:** domain

COURSE OBJECTIVES The objectives of the course are to introduce the main concepts of the object-oriented paradigm, and also to introduce the main characteristics and principles of the C++ language. The objectives for the applications are to allow students to write software programs using C++ as the first object-oriented language, and also to allow students to use the Visual C++ integrated framework in order to write small and medium software applications.

COURSE CONTENT: 1. Automated teller machine simulator; 2. Travel agency; 3. Personal CD library Management; 4. Evidence of books within a library; 5. C++ program analysis; 6. Administrator for owners association; 7. Search Electronic Library; 8. University employees; 9. Storage of materials; 10. Manager for a computer project; 11. Faculty admission; 12. Patients of a family doctor; 13. Invoice for payment of electricity; 14. Student Assessment; 15. Study of television programs; 16. Personal Agenda; 17. Calculator for interest / loan rates; 18. Puzzle game; 19. Track vehicles; 20. Track employees; 21. Airlines flights; 22. HTML tool; 23. C++ source browser; 24. Indentation of C/C++ source code; 25. Persistent abstract data types; 26. Evidence of the accommodation places; 27. Football championship; 28. Civil State Office; 29. Modern Santa Claus; 30. Estate agent; 31. Search in the telephone book; 32. Visit to the zoo; 33. Record company suppliers; 34. Presentation of the history book; 35. Menus / submenus; 36. Description of the relief a country

TEACHING LANGUAGE: English**EVALUATION:** project**BIBLIOGRAPHY:**

- Thinking in C++, Bruce Eckel, Prentice Hall, 2000 (electronic free)
- The C++ Programming Language, Bjarne Stroustrup, Addison-Wesley, 1997
- Effective C++, Scott Meyers, Addison-Wesley, 1996
- C++ Primer, Stanley Lippman, Josee Lajoie, Addison-Wesley, 1998
- Andrei Alexandrescu, Programarea moderna în C++, Programare generica si modele de proiectare aplicate, Teora, 2002

SUBJECT OF STUDY : PROJECT MANAGEMENT
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NUMBER OF CREDITS: 4**SEMESTER:** I**TYPE OF COURSE:** complementary

COURSE OBJECTIVES: Introduction of notions from the „body of knowledge” corresponding to Projects Management; Understanding of the differences between „program” and „software program” notions; Presentation of the general concepts “team work” and “team building”: Acquiring of the

required managerial knowledge: Introduction of ethic and professional themes in software engineering; familiarization with traditional and modern work practices; Establishing of the required abilities directly related to other specialty disciplines

COURSE CONTENT: 1. Software project. The general domain of projects management; 2. Software product (the program); 3. Software processes; 4. Project management within the general frame of software engineering; 5. Zones of knowledge and processes in the practice of managing software projects; 6. The management of project integration; 7. The management of project domain.; 8. Time management; 9. Costs management; 10. Projects quality management; 11. Human resources management; 12. Communication management; 13. Management of material resources (purchasing); 14. Risk management in projects;

TEACHING LANGUAGE: English**EVALUATION:** written exam**BIBLIOGRAPHY**

- Guide to the Project Management Body of Knowledge, 2004 (PMBOK)
- Cockburn, A., Surviving Object-Oriented Projects, Addison-Wesley, 1998.
- Roberson, S. and Robertson, R., Managing Requirements, Addison-Wesley, 1999
- Beck, K., Extreme Programming Explained, Addison-Wesley, 1999
- Mocanu M., Managementul proiectelor (curs)
- L. Landis, F. McGarry et al, Manager's Handbook for Software Development, Revision 1, SEL-84-101, November 1990
- IEEE-CS Press, Guide to the Software Engineering Body of Knowledge, trial version (1.00), A. Abran and J.W. Moore (ed.), 2001
- Pfleger S.L., Software Engineering. Theory and Practice, Prentice Hall, 1998
- Sommerville I., Software Engineering, 7th Ed., Pearson – Addison Wesley, 2004
- Schach S.R., Object-Oriented and Classical Software Engineering, 6th Ed., McGraw Hill, 2006
- Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides – Design Patterns: Elements of Reusable Object-Oriented Software, Addison Wesley, 1996
- Sinan Si Alhir - Learning UML, O'Reilly, 2003
- Tom Pender - UML Bible, John Wiley & Sons, 2003
- Joseph Schmuller - Teach Yourself UML in 24 Hours, Sams Publ. 2004

SUBJECT OF STUDY: ENGLISH 1

NUMBER OF CREDITS: 2**SEMESTER:** I**TYPE OF COURSE:** complementary

COURSE OBJECTIVES: : The course focuses on Teaching the grammatical structures of the English language as well as on the correct using of them in conversation. Also an emphasis will be placed on activating the four main language skills: listening, reading, speaking and writing.

COURSE CONTENT: 1. Network and communication; Asking questions (why questions); If clauses; Thematic vocabulary; 2. Databases; Prefixes and suffixes; Describing computer performances; Expressing results; Comparing and contrasting; 3. Artificial intelligence; Synonyms and antonyms; Past tense simple vs. present perfect; Vocabulary practice; 4. Managed and unmanaged endpoints; 5. The degrees of comparison of adjectives and adverbs; Present perfect simple and continuous in use; Gadgets and devices-describing, comparing; 6. Multimedia; The sequence of

tenses; The active vs. the passive voice; Vocabulary is use conversation; Explaining and persuading; 7. Future trends in computing; Means of expressing future time; Oral vs. written presentations; Complex noun phrases and the plural of nouns; Synonymy of sentences; Word order: rules and exceptions.

TEACHING LANGUAGE: English

EVALUATION: colloquy

BIBLIOGRAPHY:

Brookes, M, Lagoutte, F, English For The Computer World; Teora, 2001.

Vince, M, Advanced Language Practice; Macmillan Publishers, 2003;

Otman, G, Engleza Pentru Internet, Teora, 2002.

SUBJECT OF STUDY : ALGORITHM COMPLEXITY ANALYSIS

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The aim of the course is to provide a grounding of computability theory and classical methods of analysis and design techniques. The branch of computational complexity studied in this course is concerned with analyzing specific problems and specific algorithms. The objectives of the course are: 1. To consolidate the student's knowledge of algorithms and their complexity; 2. To enable the students to analyze performance of algorithms in terms of theoretical requirements; 3. To explain the use of various of data structures; 4. To consolidate the student's knowledge of optimal algorithms design.

COURSE CONTENT: 1. Introduction to Algorithms Analysis; 2. Automata, Calculus, Complexity; 3. Classes of Complexity; 4. Complexity of Optimization Problems; 5. Classes of Spatial Complexity; 6. Probabilistic Algorithms and Classes of Complexity

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Burdescu D.D. - Analiza Complexitatii Algoritmilor, Ed. Albastra 1998;

Burdescu D.D. - Analiza Complexitatii Algoritmilor (curs), 1997.

Cormen, Th.; Leiserson, Ch.; Rivest, R. - Introducere in Algoritmi, Ed Agora 2000;

Burdescu D.D.; Patriciu Alex. - Analiza algoritmilor (Indrumar de laborator); Reprografia Universitatii din Craiova 1996;

Weiss, Mark Allen - Data Structures and Algorithm Analysis, Benjamin - Cummings;Publishing Company 1992;

Bovet, Daniel Pierre; Crescenzi Pierluigi - Introduction to the Theory of Complexity,Prentice Hall 1994;

Hofri Micha - Analysis of Algorithms, Oxford University Press 1995;

Harel David - Algorithmics - The Spirit of Computing, Addison - Wesley 1994;

Foster C. L. - Algorithms, Abstraction and Implementation, Academic Press 1992;

Baase Sara - Computer Algorithms

SUBJECT OF STUDY : ARTIFICIAL INTELLIGENCE

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The aim of this course is to introduce students to the concepts and methods of artificial intelligence with a focus on representation and reasoning in classical logic. The cover will also cover an introduction to logic programming with Prolog. The objectives of the course are: 1. To introduce students to the concepts and methods of artificial intelligence with a focus on representation and reasoning; 2. To introduce students to logic and logic programming with Prolog The laboratory will allow students to program and experiment with Prolog programs and understand basic reasoning methods. The assignment requires the development.

COURSE CONTENT: Chapter 1. Introduction to artificial intelligence; 2. Representation and reasoning using definite clauses; 3. Proof with definite clauses; 4. Utilizing the representation and reasoning system of definite clauses; 5. Problem solving using state-space search; 6. Heuristic search; 7. Constraint satisfaction problems; 8. Knowledge representation; 9. Uncertainty in knowledge and reasoning; 10. Planning; 11. Machine learning

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

David Poole, Alan Mackworth, Randy Goebel : Computational Intelligence. A Logical Approach. Oxford University Press, 1998.

Stuart Russell, Peter Norvig. Artificial Intelligence: A Modern Approach, Prentice Hall, 2002.

Costin Badica, Inteligenta artificiala. Reprezentare si rationament, Editura Universitaria.

SUBJECT OF STUDY : COMPUTER GRAPHICS

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: fundamental

COURSE OBJECTIVES: The course will introduce the basic concepts regarding computer graphics, fundamental transformations, and the structure of a graphics engine and the operations that take place in this engine.

The laboratory has the purpose of putting into practice the studied information and implement them in C++.

COURSE CONTENT: 1. Mathematical Aspects for Computer Graphics; 2. Geometrical Models ; 3. Geometrical Transformatios ; 4. Modeling and Simulation Transformation Chain; 5. Visualization Transformation Chain

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Dorian Dogaru – Grafica pe calculator. Elemente de geometrie computationala – vol.1., Editura didactica sipedagogica, Bucuresti, 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

James Foley, Andries van Dam, Steven Feiner, John Hughes, Richard Philips – Introduction to ComputerGraphics – Addison Wesley, 1993

SUBJECT OF STUDY: ASSEMBLY PROGRAMMING LANGUAGES

NUMBER OF CREDITS: 4

SEMESTRE : II

TYPE OF COURSE : fundamental

COURSE OBJECTIVES: The course is meant to introduce the instruction set architecture of Intel 80x86

microprocessors and the basic concepts of assembly language programming. The laboratory will give students the opportunity to practically improve their assembly language programming skills.

COURSE CONTENT : 1. Introduction to number systems ; 2. Architectural elements ; 3. Introduction to assembly language; 4. Instruction set ; 5. Strings ; 6. Procedures; 7. Macroinstructions and assembly directives; 8. Structures and bit records; 9. Mixed programming; 10. Interrupts

TEACHING LANGUAGE: English

ÉVALUATION : written exam

BIBLIOGRAPHY :

- P.S. Dandamuri, "Introduction to Assembly Language Programming, From 8086 to Pentium Processors", Springer-Verlag, New York, 1998
- Gh. Musca, "Programare in limbaj de asamblare", Ed. Teora, 1998
- V. Lungu, "Procesoare Intel, "Programarea in limbaje de asamblare", Ed. Teora, 2000
- Turbo Assembler, version 2.0, "User's Guide", Borland International, Inc. 1800 Green Hills Road Scotts Valley, 1998
- K.A. Lemone, "Assembly Language and Systems Programming for the IBM PC and Compatibles", Little Brown & Company Canada Limited
- D. Somnea, I. Vladut, "Programarea in Assembler", Ed. Tehnica, 1992
- Gh. Marian, M. Marian, E. Dumitrascu , N. Enescu – Limbaje de asamblare – ghid

SUBJECT OF STUDY: MEASUREMENTS TECHNIQUES

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE domain

COURSE OBJECTIVES: The course presents specific matters related to fundamentals of the numerical techniques used to evaluate the physical quantities and the virtual instrumentation elements.

COURSE CONTENT: 1. Numerical and discrete descriptions of physical quantities evolution. 2. Numerical techniques for signals processing; 3. Numerical acquisition of temporal evolutions; 4. Virtual instrumentation elements.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- F.Coulon, Théorie et traitement des signaux, P.P. Romandes, '90
- J.Proakis, D. Manolakis, Digital Signal Processing, P. Hall, 2005.
- S. Tumanski, Principles of Electrical Measurement, Taylor, 2006.
- P. Paratte, Ph., Systèmes de mesure, P. P. Romandes, 1986.
- A. van Putten, Electronic Meas. Systems, Prentice Hall, 1988.
- F. Maloberti, Data Converters, Springer, 2007.
- R. van der Plassche, Integrated A/D D/A Converters, Kluwer, '94.

SUBJECT OF STUDY: GENERAL ECONOMICS AND ACCOUNTING

NUMBER OF CREDITS: 3

SEMESTRE : II

TYPE OF COURSE : complementary

COURSE OBJECTIVES: The appropriation, by the students of the fundamental notions in the field of accountancy, the knowledge and the understanding of the procedures specific

to the accountancy method; The understanding of the terminology specific to the financial-accounting field; The formation of a logical thinking in what concerns the transposition in accounting language of the main economical-financial operations that generates the activity developed by the economical agents; The understanding of the methodology and the work technique specific to accountancy.

COURSE CONTENT : 1. The object and the method of accountancy; 2. The accounting representation of the patrimony and of the financial results; 3. The accounting evaluation of the patrimonial structures; 4. Justificative documents and accounting bookkeepings; 5. The account and the double registering in accountancy; 6. The inventory of the patrimony; 7. The verification balance; 8. The annual financial statement.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

- Brabete Valeriu, Dragan Cristian – Bazele contabilitatii conforme cu directivele europene, Editura Universitaria, Craiova, 2007.
- Staicu Constantin – Bazele contabilitatii moderne, vol.1, Editura Scrisul Românesc, Craiova, 2003.
- Staicu Constantin (coordonator) – Bazele contabilitatii moderne, vol.2, Editura Universitaria Craiova, 2004.
- Sandu Maria (coordonator) – Bazele contabilitatii, Editura Scrisul Românesc, Craiova, 2005.
- Calin Oprea, Ristea Mihai – Bazele contabilitatii, Editura National, Bucuresti, 2001.
- Epuran M., Babai_a V. - Teoria generala a contabilitatii, Editia a Ila, Editura Mitron, 2002.

SUBJECT OF STUDY: ENGLISH 2

NUMBER OF CREDITS: 2

SEMESTRE : II

TYPE OF COURSE : complementary

COURSE OBJECTIVES: The course focuses on Teaching the grammatical structures of the English language as well as on the correct using of them in conversation. Also an emphasis will be placed on activating the four main language skills: listening, reading, speaking and writing.

COURSE CONTENT : 1. Network and communication; Asking questions (why questions); If clauses; Thematic vocabulary; 2. Databases; Prefixes and suffixes; Describing computer performances; Expressing results; Comparing and contrasting; 3. Artificial intelligence; Synonyms and antonyms; Past tense simple vs. present perfect; Vocabulary practice; 4. Managed and unmanaged endpoints; 5. The degrees of comparison of adjectives and adverbs; Present perfect simple and continuous in use; Gadgets and devices-describing, comparing; 6. Multimedia; The sequence of tenses; The active vs. the passive voice; Vocabulary is use conversation; Explaining and persuading; 7. Future trends in computing; Means of expressing future time; Oral vs. written presentations; Complex noun phrases and the plural of nouns; Synonymy of sentences; Word order: rules and exceptions.

TEACHING LANGUAGE: English

EVALUATION: colloquy

BIBLIOGRAPHY:

- Brookes, M, Lagoutte, F, English For The Computer World; Teora, 2001.
- Vince, M, Advanced Language Practice; Macmillan Publishers, 2003;
- Otman, G, Engleza Pentru Internet, Teora, 2002.

SUBJECT OF STUDY: PRACTICAL TRAINING**NUMBER OF CREDITS:** 2**SEMESTRE :** II**TYPE OF COURSE :** domain

COURSE OBJECTIVES: Familiarizing the student with the programming algorithms and techniques that are used for the concrete development of a software application. The practice will be done either inside the research centre "Development of Multimedia Applications" of the department of Software Engineering, either inside a software oriented company, with which the faculty has established a contract for realizing the training.

COURSE CONTENT: 1. Introductory elements concerning the object oriented programming; 2. Data structures; 3. Essential elements about the object oriented programming; 4. Advanced notions of object oriented programming; 5. Software applications design using the UML formalism; 6. Project management

TEACHING LANGUAGE: English**EVALUATION:** colloquy**BIBLIOGRAPHY:**

N/A.

ANUL III

SUBJECT OF STUDY : DIGITAL INTEGRATED CIRCUITS**NUMBER OF CREDITS:** 4**SEMESTER:** I**TYPE OF COURSE:** domain

COURSE OBJECTIVES: It is one of the domain disciplines in the study schedule. The aim of the course is the knowledge assimilation that students need in understanding the operation of the basic types of digital integrated circuits as well as the analysis and synthesis of logical combinational and sequential circuits methods.

The laboratory hours allow the consolidation of the theoretical notions and the achievement within the practice concerning digital circuits designing and using.

COURSE CONTENT: 1. Commutation drive for semiconductor devices; 2. Basic logical circuits; 3. Combinational logical circuits; 4. Sequential logical circuits

TEACHING LANGUAGE: English**EVALUATION:** written exam**BIBLIOGRAPHY :**

Filipescu, V., Circuite electronice digitale, Editura UNIVERSITARIA Craiova, 2002;

Filipescu, V., Garaiman, D., Circuite electronice digitale – Indrumar de laborator, Reprografia Universitatii din Craiova, 1997;

Maican, S., Sisteme numerice cu circuite integrate - culegere de probleme, Editura TEHNICA, Buc., 1980;

Millman, J., Grabel, A., Microelectronique, McGraw-Hill, 1991;

Stefan, Gh., Circuite integrate digitale, Editura DENIX, Bucuresti, 1993;

Sztobjanov, I., s.a., De la poarta TTL la microprocesor, Seria Electronica aplicata, Editura TEHNICA, Buc., 1987;

Toacse, Gh., Nicula, D., Electronica digitala, Editura TEORA, 1996;

Toacse, Gh., Nicula, D., Electronica digitala. Dispozitive – circuite – proiectare, Editura Tehnica, Bucuresti, 2005;

Wakerly, J. F., Circuite digitale. Principiile si practicile folosite in proiectare, Editura Teora, Bucuresti, 2000.

SUBJECT OF STUDY : DATABASES**NUMBER OF CREDITS:** 5**SEMESTER:** I**TYPE OF COURSE:** domain

COURSE OBJECTIVES: The course introduces fundamental topics in the field of databases: users, data models, entity-relationship model, relational model, relational algebra, file and index organization, distributed databases concepts. The labs consolidate the theoretical concepts and create working skills in MS Access 2000 and MS SQL Server 2000.

COURSE CONTENT: 1. Databases and Database Users; 2. Database System Concepts and Architecture; 3. Data Modelling Using the Entity-Relationship Model; 4. Record Storage and Primary File Organisation; 5. Index Structures for Files; 6. The Relational Data Model and Relational Algebra; 7. SQL - A Relational Database Language; 8. Distributed Databases

TEACHING LANGUAGE: English**EVALUATION:** written exam**BIBLIOGRAPHY:**

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

Baze de date, Burdescu D., Ionescu A., Stanescu L., Editura Universitaria, Craiova, 2004

Ghid pentru lucrari de laborator la baze de date, Ionescu A., Tipografia Universitatii din Craiova, 2004

SUBJECT OF STUDY : OPERATING SYSTEMS**NUMBER OF CREDITS:** 5**SEMESTER:** I**TYPE OF COURSE:** domain

COURSE OBJECTIVES: It is one of the so called "disciplines in domain" from the curricula corresponding to this license domain. In the first Chapters one presents the primary notions and the classifications of operating systems along with the describing of the main architectural types. Afterward one introduces the most important concepts corresponding to the processes and threads management. Then one treats the problematic of memory management and of the most important aspects of the input-output operations. In the end one presents the fundamental notions corresponding to files' management. The laboratory is meant to help the understanding of knowledge on operating with Linux and on working with threads/processes and pipes in Linux. In the second part the students will study some aspects concerning the work with the memory manager, with the I/O system, with file systems and files and with the registry in Windows. At the seminar one toggles with the case studies Windows/Linux corresponding to the notions presented at the course classes.

COURSE CONTENT: 1. Primary notions; 2. Operating systems classification. Types of os; 3. Operating Systems' Architecture; 4. Notions about processes management; 5. Memory management ; 6. I/o devices management ; 7. Files management

TEACHING LANGUAGE: English**EVALUATION:** written exam**BIBLIOGRAPHY:**

Bovet, D., Cesati, M., Understanding the Linux kernel, 2-nd Ed., O'Reilly, 2003

David S., Russinovich M., Andreas P., Windows Operating System Internals Resource Kit , 2006

Johnson M., H., Win32 System Programming: A Windows® 2000 Application Developer's Guide, 2nd Edition, Addison-Wesley, 2000.

Musatescu, C. , Sisteme de operare, Editura Radical, 1999
Nicolae, I.D., Sisteme de operare, Tipografia Universitatii din Craiova, 2004
Nicolae, I.D., Sisteme de operare I, Arhitecturi. Procese. Memorie. Dispozitive, Ed. Universitaria, 2007.
Tanenbaum , A., Modern Operating Systems – Prentice Hall, 2001

SUBJECT OF STUDY: DATA COMMUNICATION

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: It is one of the specialty disciplines. The course focuses on the introduction of basic concepts concerning data communication matters. One presents the communications environment, serial interfaces, and communication protocols at the level Data Link. The course presents the necessary basic skills for the upcoming courses of Computer Networks and Computer Networks Management. The laboratory is meant to consolidate the theoretical knowledge and to create abilities in what is concerning the serial interfaces programming through practical applications, exercises and problems.

COURSE CONTENT: 1. Distributed systems architecture; 2. Electrical interface; 3. Data transmission; 4. Communication protocols at the level at data link; 5. IEEE 802.3 CSMA/CD

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Chow, W. (1983), Computer Communications, Vol. I: Principles, Prentice-Hall
Cooper, E. (1986), Broadband Network Technology, Sytek-Prentice-Hall
Davies, D. W. and Barber, D.L.A. (1973), Communication Networks for Computers, Wiley
Halsall, F. (1988), Data Communications, Computer Networks and OSI, Addison Wesley
IEEE (1985), Logical Link Control – IEEE 802.2
Peebles, P. Z. (1987), Digital Communication Systems, Prentice-Hall
Peterson, W. W. (1961), Error Correcting Codes, MIT Press
Schwartz, M. (1987), Telecommunication Networks: Protocols, Modelling and Analysis, Addison-Wesley
Sloman, M. and Kramer, J. (1987), Distributed Systems and Computer Networks, Prentice-Hall
Stallings, W. (1985), Data and Computer Communications

SUBJECT OF STUDY: COMPUTER STRUCTURE AND ORGANIZATION

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: It is envisaged to familiarize students with fundamentals of computer arithmetic, computer organisation, memory and input-output systems, computer system quality evaluation.

COURSE CONTENT: 1. Fundamentals of computer arithmetic; 2. Organization and structure of a RISC processor; 3. Hierarchical structure of the computer memory; 4. Input/Output blocks; 5. Computer system performance analysis

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

David A. Patterson, John L. Hennessy – Computer Organization and Design – third edition revisited, Elsevier Inc., 2007
Sivarama P. Dandamudi – Guide to RISC Processors for Programmers and Engineers – Springer Science+Business Media Inc.
Andrew S. Tanenbaum - Structured Computer Organization – Fourth Edition, Prentice-Hall, Inc. 2001
Mostafa Abd-El-Barr, Hesham El-Rewini – Fundamentals of Computer Organization and Architecture - John Wiley & Sons, 2005
Hesham El-Rewini, Mostafa Abd-El-Barr – Advanced Computer Architecture and Parallel Processing - John Wiley & Sons, 2005

SUBJECT OF STUDY: COMPUTER STRUCTURE AND ORGANIZATION - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: domain

COURSE OBJECTIVES: It is envisaged to familiarize students with fundamentals of computer arithmetic, computer organisation, memory and input-output systems, computer system quality evaluation

COURSE CONTENT: Design and simulation of a simplified processor.

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY:

David A. Patterson, John L. Hennessy – Computer Organization and Design – third edition revisited, Elsevier Inc., 2007
Sivarama P. Dandamudi – Guide to RISC Processors for Programmers and Engineers – Springer Science+Business Media Inc.
Andrew S. Tanenbaum - Structured Computer Organization – Fourth Edition, Prentice-Hall, Inc. 2001
Mostafa Abd-El-Barr, Hesham El-Rewini – Fundamentals of Computer Organization and Architecture - John Wiley & Sons, 2005
Hesham El-Rewini, Mostafa Abd-El-Barr – Advanced Computer Architecture and Parallel Processing - John Wiley & Sons, 2005

SUBJECT OF STUDY: VISUAL PROGRAMMING ENVIRONMENTS

NUMBER OF CREDITS: 3

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: This course introduces the necessary concepts and tools of verification and then it describes a process for planning and carrying out an effective functional verification of a design. It also introduces the concept of coverage models that can be used in a coverage driven verification process.

COURSE CONTENT: 1. What is verification? ; 2. Verifications tools; 3. The verification plan; 4. Architecting testbenches

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Bergeron J. – Writing Testbenches: Functional Verification of HDL Models, Second Edition, Kluwer Academic Publishers, 2003
Bhasker J. – VHDL Primer, third edition, Prentice Hall, 1999
Perry D. – VHDL Programming By Example, McGraw-Hill, 2002

XILINX Corp. – VHDL Reference Guide
XILINX Corp. – SPARTAN Family Reference Guide

SUBJECT OF STUDY : VISUAL PROGRAMMING ENVIRONMENTS - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: This project introduces the necessary concepts and tools of verification and then it describes a process for planning and carrying out an effective functional verification of a design. It also introduces the concept of coverage models that can be used in a coverage driven verification process.

COURSE CONTENT: N/A

TEACHING LANGUAGE: english

EVALUATION: project

BIBLIOGRAPHY :

Bergeron J. – Writing Testbench: Functional Verification of HDL Models, Second Edition, Kluwer Academic Publishers, 2003

Bhasker J. – VHDL Primer, third edition, Prentice Hall, 1999

Perry D. – VHDL Programming By Example, McGraw-Hill, 2002

XILINX Corp. – VHDL Reference Guide

XILINX Corp. – SPARTAN Family Reference Guide

SUBJECT OF STUDY : COMPUTER NETWORKS

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The main goal of the course „Computer Networks” is to introduce the basic terminology and concepts in networking: these range from simple, limited streams of bits used to ferry data from a sender to a receiver, to various schemes for identifying, addressing, routing, and handling messages as they travel across various types of networking media. Likewise, protocols also play a crucial role in data transmission across a network. The laboratory activities give to the students the real feeling of the network applications.

COURSE CONTENT: 1. Data Communications; 2. Communications Networks; 3. Network Technologies; 4. Multiple Access; 5. Switching; 6. Naming and Addressing; 7. Routing; 8. Services and Applications; 9. Security

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

Marin Lungu – Retele de Calculatoare si Aplicatii, Editura Universitaria, 2002

Ed Tittel; Theory and Problems of Computer Networking; McGRAW-HILL, 2002

<http://www.packetizer.com>

<http://msdn.microsoft.com>

Berners-Lee, T., "WWW: Present, Past, and Future," IEEE Computer Magazine, October 1996, pp. 69—77.

Bradley Mitchell: "Introduction to VPN"; "Introduction to Hubs Part 1"; "The MAC Address An Introduction to MAC Addressing"; <http://compnetworking.about.com>

Cisco Systems; "Technology Brief Introduction to Gigabit Ethernet"

Chappell, D., "Understanding OLE and ActiveX", Microsoft Press, 1996.

Tim Donaldson: „A Comparative Analysis of High-Speed Switching for Backbone LANs: Fast Ethernet, FDDI, and Fibre Channel; Ancor Communications.

RFC2460: "Internet Protocol, Version 6 (IPv6) Specification"; December 1998

Lance Spitzner; "Configuring Network Interface Cards", August, 1999

<http://www.enteract.com/~lspitz/pubs.html>

Lantronix Tutorials- "Network SwitChing"; <http://www.lantronix.com/learning/tutorials/index.html>

Laura Cohen: "Understanding the World Wide Web"; University of Albany; <http://www.albany.edu/library/>

Lewis, T., "Where is Client/Server Software Headed," IEEE Computer Magazine, April 1995, pp. 49—55.

SUBJECT OF STUDY : DATABASE DESIGN

NUMBER OF CREDITS:4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course introduces fundamental topics in the field of databases design: the enhanced entity-relationship model, EER-relational mapping, the theory of normalization and transactions processing concepts. The labs consolidate the theoretical concepts and create working skills in Oracle DBMS.

COURSE CONTENT: 1.Enhanced Entity-Relationship and Object Modelling; 2. ER- and EER-to-Relational Mapping; 3. Functional Dependencies and Normalization for Relational Databases; 4. Practical Database Design and Tuning; 5. Transaction Processing Concepts; 6. Concurrency Control Techniques; 7. Database Recovery Techniques; 8. Database Security and Authorization

TEACHING LANGUAGE: English

FORMA DE EVALUATION: written exam

BIBLIOGRAPHY:

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

Baze de date, Burdescu D., Ionescu A., Stanescu L., Editura Universitaria, Craiova, 2004

Ghid pentru lucrari de laborator la baze de date, Ionescu A., Tipografia Universitatii din Craiova, 2004

SUBJECT OF STUDY : DATABASE DESIGN - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The project assumes the design of a complex database and its implementation using Oracle DBMS. As a result, the students get the practical skills in the field of database design.

COURSE CONTENT: 1. Design the Entity-connection model; 2. Design the associated relational model; 3. The database should include: primary and foreign keys, Update/delete on cascade rules; 4. Verify the quality of the database using normal forms; 5. Create an index for the database; 6. Implement a series of operations (queries, a function, a procedure) The database and the operations will be implemented in Oracle.

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY:

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

Baze de date, Burdescu D., Ionescu A., Stanescu L., Editura Universitaria, Craiova, 2004
Ghid pentru lucrari de laborator la baze de date, Ionescu A., Tipografia Universitatii din Craiova, 2004

SUBJECT OF STUDY : MICROPROCESSORS SYSTEM DESIGN

NUMBER OF CREDITS: 5

AN/SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The course develops the students' skills necessary to work with microprocessors and microcontrollers.

COURSE CONTENT: 1. VLSI Modules; 2. 8051 Microcontroller; 3. Dialog level; 4. Data transfer level

TEACHING LANGUAGE: English

EVALUATION: oral exam

BIBLIOGRAPHY :

INTEL – Embedded Microcontrollers, Intel Corporation, 1998

INTEL – Microprocessors and Peripheral Handbook, vol 2, Peripheral, Intel Corporation, 1988

Mohamed Rafiqzaman - Microprocessor and Microcomputer Based System Design, CRC Press 1990

SUBJECT OF STUDY: DISTRIBUTED NETWORK APPLICATION DEVELOPMENT

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The aim of this course is to introduce students to the basic elements for creation of distributed applications in computer networks, with a special focus on the middleware layer in Internet-based distributed systems.

COURSE CONTENT 1. Distributed systems. Definitions and features; 2. Architectures, models and networks of distributed systems; 3. Concurrent programming. Threads; 4. Inter-process communication in distributed systems; 5. Communication protocols for distributed systems; 6. Name and directory services; 7. Object-oriented distributed systems and remote method invocation. Java RMI; 8. Agent-oriented middleware. FIPA standards. Examples in JADE; 9. Service-oriented middleware. SOA and Web services; 10. Transactions and replication in distributed systems; 11. Distributed algorithms

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

George Coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems. Concepts and Design, Addison-Wesley, 2001

Andrew S. Tanenbaum, Maarten van Steen, Distributed Systems: Principles and Paradigms, Prentice Hall, 2002

Sukumar Ghosh, Distributed Systems: An Algorithmic Approach, Chapman & Hall/CRC, 2007

Ajay D. Kshemkalyani, Mukesh Singhal: Distributed Computing: Principles, Algorithms, and Systems, Cambridge University Press, 2008

SUBJECT OF STUDY: DISTRIBUTED NETWORK APPLICATION DEVELOPMENT - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The project will allow students to design and implement distributed applications for computer networks. The project concerns the development of a distributed application according to a given set of specifications. This requires utilization of middleware software technologies for distributed systems that were presented during the lectures and that were experimented in the lab.

COURSE CONTENT: 1. Distributed systems. Definitions and features; 2. Architectures, models and networks of distributed systems; 3. Concurrent programming. Threads; 4. Inter-process communication in distributed systems; 5. Communication protocols for distributed systems; 6. Name and directory services; 7. Object-oriented distributed systems and remote method invocation. Java RMI; 8. Agent-oriented middleware. FIPA standards. Examples in JADE; 9. Service-oriented middleware. SOA and Web services; 10. Transactions and replication in distributed systems; 11. Distributed algorithms

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

George Coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems. Concepts and Design, Addison-Wesley, 2001

Andrew S. Tanenbaum, Maarten van Steen, Distributed Systems: Principles and Paradigms, Prentice Hall, 2002

Sukumar Ghosh, Distributed Systems: An Algorithmic Approach, Chapman & Hall/CRC, 2007

Ajay D. Kshemkalyani, Mukesh Singhal: Distributed Computing: Principles, Algorithms, and Systems, Cambridge University Press, 2008

SUBJECT OF STUDY: VERIFICATION AND TESTING OF COMPUTER SYSTEMS

NUMBER OF CREDITS: 3

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES:

COURSE CONTENT: TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY:

SUBJECT OF STUDY: VERIFICATION AND TESTING OF COMPUTER SYSTEMS- PROJECT

NUMBER OF CREDITS: 2

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES:

COURSE CONTENT: TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY:

SUBJECT OF STUDY: I/O SYSTEMS

NUMBER OF CREDITS: 3

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The discipline aims to introduce basic notions related to the structure of a personal computer as well as to the structure and operation modality of IO equipment attached to numerical computers and to the interfaces attached to them. One presents to the students various structures, characteristics and problems related to the input/output systems, the main peripheral equipment of the computation systems. The students learn how to

program a peripheral equipment and to design interfaces for various IO systems.

COURSE CONTENT: 1. Personal Computers Structure; 2 Data input devices; 3. Floppy disk units; 4.Hard disk drives; 5.Optical disk drives; 6. Equipments for information visualization; 7. Printing equipments;

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Scott Mueller, Craig Zacker: PC - depanare si modernizare, editia a IV-a, Editura Teora 2005

Troubleshooting, Maintaining & Repairing Personal Computers – Stephen J. Bigelow, Editura McGraw-Hill 1996

Constantin Patrascu - Sisteme de intrare-iesire, Universitatea din Craiova 1996

Constantin Patrascu - Echipamente periferice, Editura Sitech, 2006

SUBJECT OF STUDY: SOFTWARE ENGINEERING

NUMBER OF CREDITS: 3

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The main objective of the course is to introduce students to the concepts and techniques required to build large software systems. The main objective for applications is to provide an opportunity to obtain practical experience applying the techniques on an actual development effort.

COURSE CONTENT: 1. Introduction to Software Engineering; 2. Requirements engineering; 3. Development of software systems; 4. Verification and validation of software systems; 5. Evolution of software systems

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Ian Sommerville, Software Engineering, Addison Wesley, 6th Edition, 2001

Roger Pressman, Software Engineering: a practitioner's approach, Addison Wesley, 5th Edition, 2001

James F. Peters and Witold Pedrycz, Software Engineering: an engineering approach, John-Wiely, 2000

SUBJECT OF STUDY: : SOFTWARE ENGINEERING - PROJECT

NUMBER OF CREDITS: 2

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: The main objective of the course is to introduce students to the concepts and techniques required to build large software systems. The main objective for applications is to provide an opportunity to obtain practical experience applying the techniques on an actual development effort.

COURSE CONTENT: N/A

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

Ian Sommerville, Software Engineering, Addison Wesley, 6th Edition, 2001

Roger Pressman, Software Engineering: a practitioner's approach, Addison Wesley, 5th Edition, 2001

James F. Peters and Witold Pedrycz, Software Engineering: an engineering approach, John-Wiely, 2000

SUBJECT OF STUDY: COMPUTER SYSTEMS MODELLING

NUMBER OF CREDITS: 3

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: 1. Introducing the basic concepts for modeling and discrete simulation; 2. Learning the analytical methods for modeling systems with waiting queues and networks of queues; 3. Introducing of techniques for the modeling, simulation and performances analysis at systems with complex discrete events; 4. Identification of possibilities and limits of mathematic models, their extension through simulation; 5. Using of packages and libraries of specialized programs for modeling and simulation; 6. Developing the abilities for the modeling/simulation of a system through exercises and problems, realization of a small project; 7. Students familiarization with the traditional and modern working practices; 8. Establishing of the required abilities directly related to other specialty disciplines.

COURSE CONTENT: 1.Introduction. Dynamic discrete systems (with events); 2.Systemic models for dynamic discrete systems (with events); 3. Operational models for dynamic discrete systems (with events); 4. Simulation of dynamic discrete systems (with events); 5. Specialized instruments (systems of programs) for discrete modeling and simulation

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Banks J., Carson J.S., Nelson A., Nicol D., Discrete-Event System Simulation, 3rd Ed., Prentice-Hall, 2000

Cassandras C.G., Discrete Event Systems: Modeling and Performance Analysis, Irwin & Aksent, Boston, 1993

Lazowska E.D., Zahorjan J., Scott-Graham G., Sevcik K. C.: Quantitative System Performance - Computer System Analysis Using Queueing Network Models

Mocanu M., Principii, concepte și instrumente de modelare și simulare în studiul sistemelor dinamice discrete, Ed. Sitech, 2004

Bertsekas D., Gallager R., Data Networks, Prentice-Hall, 1989

Dodescu Gh., Simularea sistemelor, Ed. Militara, 1986

Radaceanu E., Limbaje de simulare, Ed. Militara, 1981

Mihoc Gh., Ciucu G., Introducere în teoria asteptarii, Ed. Tehnica, 1967

Mihoc Gh., Ciucu G., Muja A., Modele matematice ale asteptarii, Editura Academiei, Bucuresti, 1973

Mihoc Gh., Micu N., Teoria probabilitatilor si statistica matematica, E.D.P., Bucuresti, 1980

Misra J., Distributed Discrete-Event Simulation, ACM Computing Surveys, 18 (1), March 1986, pp. 39-65

Zomaya A. (ed.), Parallel and Distributed Computing Handbook, McGraw-Hill, 1996

Ho Y.C. (Ed.), Proceedings IEEE 77-1 (Special Issue on Dynamics of Discrete Event Systems), 1989

Fujimoto R., Parallel Discrete Event Simulation, Comm.ACM, 33 (10), oct.1990, pp.31-53

Ho Y.C., Cao X.R., Perturbation Analysis of Discrete Event Dynamic Systems, Kluwer Academic, 1991

Nelson R.D., The Mathematics of Product Form Queueing Networks, ACM Computing Surveys, 25(3), 1993, pp.339-369

SUBJECT OF STUDY: PRACTICAL TRAINING

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: domain

COURSE OBJECTIVES: Familiarizing the student with the programming algorithms and techniques that are used for the concrete development of a software application. The practice will be done either inside the research centre of the department of Computer Engineering, either inside a software oriented company, with which the faculty has established a contract for realizing the training.

COURSE CONTENT: 1. Computer Networks (40 hours); 2. Database Design (40 hours); 3. Operating Systems (40 hours)

TEACHING LANGUAGE: English

EVALUATION: colloquy

BIBLIOGRAPHY :

N/A

ANUL IV

SUBJECT OF STUDY: REAL TIME COMPUTING SYSTEMS

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The primary goal of this course is to meet the student with basics of real-time systems hardware structure, real-time I/O devices programming, real-time operating systems and task scheduling algorithms. At the conclusion of this course, laboratory and project, the student will have the knowledge and skills necessary to develop software for Real-Time Data Acquisition and Control Systems, using a general purpose PC 104 embedded system and real-time kernels / operating systems.

COURSE CONTENT: 1. Introduction to Real-Time Systems Examples of RTCS, Definitions and classifications, Elements of a RT Computer Control System, Classification of RTCS, Classification of programs; 2. RTCS for Process Control Systems Categories of processes, Computers activities related to RTCS for processes control, Structures of computer systems for real-time processes control; 3. Computer hardware requirements for RTCS General hardware structure, Input/output signals from/to real world, Functional blocks of a Data Acquisition and Control System; 4. Programming the I/O devices in real-time applications Communicating methods with external devices, Programming using hardware interrupts, Counter/Timer devices, An example of Data Acquisition and Control System; 5. Real-time operating multi-tasking systems Introduction, Task management in real-time applications, A case study: RTOS QNX ; 6. Scheduling algorithms for Hard Real Time Systems Introduction, Rate-Monotonic Scheduling Algorithm, Preemptive Earliest Deadline First Algorithm, A case study: A mixed RM-EDF scheduling algorithm; 7. Real-time data communication Introduction, Real-time data communication protocols, Deadline based protocols.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Grosu, M.: Course notes – basic text

Cooling, J.E.: Real-time software Systems – An introduction to structured and OO design, PWS Publishing Company, 1998.

Krishna, C.M., K.G. Shin: Real Time Systems, McGraw-Hill Book CO., 1997.

Stuart, B.: Real Time Computer Control, 1988

Tannenbau, A. S.: Modern Operating Systems, Prentice-Hall, 1993.

SUBJECT OF STUDY: REAL TIME COMPUTING SYSTEMS - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: At the conclusion of this project, the student will have the knowledge and skills necessary to develop software for Real-Time Data Acquisition and Control Systems, using a general purpose PC 104 embedded system and real-time kernels / operating systems.

COURSE CONTENT: Each student gets a set of specifications describing the requirements of a real-time data acquisition and control system, in order to elaborate a software application using the PC104 systems existing at laboratory.

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

Grosu, M.: Course notes – basic text

Cooling, J.E.: Real-time software Systems – An introduction to structured and OO design, PWS Publishing Company, 1998.

Krishna, C.M., K.G. Shin: Real Time Systems, McGraw-Hill Book CO., 1997.

Stuart, B.: Real Time Computer Control, 1988

Tannenbau, A. S.: Modern Operating Systems, Prentice-Hall, 1993.

SUBJECT OF STUDY: COMPUTER NETWORKS MANAGEMENT

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: It is one of the specialty disciplines. The course focuses on the introduction of basic concepts concerning the management of computer networks. One presents the operation principles of a switch and of a router, the ISO-OSI model, the static routing, the dynamic routing algorithms. The course is ending a cycle of courses from this domain: Data Communications, Computer Networks and Computer Networks Management. The laboratory is meant to consolidate the theoretical knowledge and to create abilities in what is concerning the configuration and repairing computer networks through practical applications, exercises and problems.

COURSE CONTENT: 1. Introduction in computer networks management; 2. Bridging and Switching: fundamentals; 3. Routing: fundamentals; 4. Routing protocols

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Radia Perlman: Interconnections Bridges, Routers, Switches, and Internetworking Protocols

Larry L. Peterson, Bruce S. Davie: Computer Networks A Systems Approach

Christian Huitema: IPv6: The New Internet Protocol

Craig Hunt: Networking Personal Computers with TCP/IP 5. John W. Stewart III: BGP4 Inter-Domain Routing in the Internet

George Varghese: Network Algorithmics - An Interdisciplinary Approach to Designing Fast Networked Devices

Gary R. Wright, W. Richard Stevens: TCP/IP Illustrated, Volume 2 The Implementation

SUBJECT OF STUDY: E-COMMERCE

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The aim of this course is to introduce students to the basic elements for creation of e-commerce applications, including concepts, techniques, algorithms and technologies. The laboratory work concerns the experimentation with various e-commerce technologies and techniques that are needed for the development of a sample e-commerce application.

COURSE CONTENT: 1. Introduction to e-commerce; 2. Business models for e-commerce; 3. E-commerce infrastructure; 4. E-commerce marketing; 5. Security and payment; 6. Negotiation; 7. Trust and reputation; 8. Middle-agents; 9. Social networks; 10. Online content and media; 11. B2B e-commerce: supply chain and collaboration

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Kenneth C. Laudon, Carol Guercio Traver, E-Commerce: Business, Technology, Society, 4/e, Prentice Hall, 2008

Maria Fasli, Agent Technology for E-Commerce, Wiley, 2007

SUBJECT OF STUDY: E-COMMERCE-PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The project concerns the development of an e-commerce application starting according to a given set of specifications. This requires utilization of concepts and software technologies that were presented during the lectures and that were experimented in the lab.

COURSE CONTENT: 1. Introduction to e-commerce; 2. Business models for e-commerce; 3. E-commerce infrastructure; 4. E-commerce marketing; 5. Security and payment; 6. Negotiation; 7. Trust and reputation; 8. Middle-agents; 9. Social networks; 10. Online content and media; 11. B2B e-commerce: supply chain and collaboration

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

Kenneth C. Laudon, Carol Guercio Traver, E-Commerce: Business, Technology, Society, 4/e, Prentice Hall, 2008

Maria Fasli, Agent Technology for E-Commerce, Wiley, 2007

SUBJECT OF STUDY: WEB APPLICATIONS' DESIGN

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course covers aspects related to Web application architecture, Web application modelling, Web engineering, semantic and participative Web. The laboratory sessions and the project themes deal with Java-based Web technologies and frameworks.

COURSE CONTENT: 1. Introduction to Web applications' design; 2. Requirements engineering for Web applications; 3. Modelling Web applications; 4. Web application architectures; 5. Technologies for Web applications; 6. Testing Web applications; 7. Operation and maintenance of Web applications; 8. Web project management ; 9. The Web application development process; 10. Usability of Web applications; 11. Performance of Web application. 12. Security for Web applications; 13. Semantic Web; 14. Participative Web (Web 2.0)

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Gerti Kappel, Birgit Pröll, Siegfried Reich, Werner Retschitzegger (Eds.): Web engineering: the discipline of systematic development of web applications. Wiley, 2006 (main textbook)

Stefano Ceri, Piero Fraternali, Aldo Bongio, Marco Brambilla, Sara Comai, Maristella Matera: Designing Data-Intensive Web Applications. Morgan Kaufmann, 2002

Cal Henderson: Building Scalable Web Sites. O'Reilly, 2006.

Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, Alessandro Vernet: Professional Web 2.0 Programming. Wrox Professional Series, 2006.

Susan Fowler, Victor Stanwick: Web Application Design Handbook. Best Practices for Web-Based Software. Morgan Kaufmann, 2004.

T. O'Reilly: What Is Web 2.0. Design Patterns and Business Models for the Next Generation of Software, 2005.

Stefan Tanasa, Cristian Olaru: Dezvoltarea aplicatiilor Web folosind Java. Polirom, 2005.

Sabin Buraga: Proiectarea siturilor Web. Design si functionalitate. Polirom, 2005.

SUBJECT OF STUDY: WEB APPLICATIONS' DESIGN - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The project is aimed at designing and implementing a Web application, using Java-based technologies (servlets, JSP, JSF, JavaScript & Ajax) and frameworks (Struts, Spring, Hibernate). The project themes are assigned at the beginning of the semester and can be done either individually or in teams; Design stage + preparing intermediary report; Realizing practical project + preparing final report

COURSE CONTENT: 1. Introduction to Web applications' design; 2. Requirements engineering for Web applications; 3. Modelling Web applications; 4. Web application architectures; 5. Technologies for Web applications; 6. Testing Web applications; 7. Operation and maintenance of Web applications; 8. Web project management ; 9. The Web application development process; 10. Usability of Web applications; 11. Performance of Web application. 12. Security for Web applications; 13. Semantic Web; 14. Participative Web (Web 2.0)

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

Gerti Kappel, Birgit Pröll, Siegfried Reich, Werner Retschitzegger (Eds.): Web engineering: the discipline of systematic development of web applications. Wiley, 2006 (main textbook)

Stefano Ceri, Piero Fraternali, Aldo Bongio, Marco Brambilla, Sara Comai, Maristella Matera: Designing Data-Intensive Web Applications. Morgan Kaufmann, 2002

Cal Henderson: Building Scalable Web Sites. O'Reilly, 2006.

Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, Alessandro Vernet: Professional Web 2.0 Programming. Wrox Professional Series, 2006.

Susan Fowler, Victor Stanwick: Web Application Design Handbook. Best Practices for Web-Based Software. Morgan Kaufmann, 2004.

T. O'Reilly: What Is Web 2.0. Design Patterns and Business Models for the Next Generation of Software, 2005.
Stefan Tanasa, Cristian Olaru: Dezvoltarea aplicatiilor Web folosind Java. Polirom, 2005.
Sabin Buraga: Proiectarea siturilor Web. Design si functionalitate. Polirom, 2005.
0471117094

SUBJECT OF STUDY: DATA SECURITY

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course is meant to introduce the concepts of information security. The laboratory will give students the opportunity to practically improve their programming skills from a security point of view and also to apprehend the importance of security in internetworked environments.

COURSE CONTENT: 1. Introduction to information security; 2. Cryptographic tools; 3. Authentication; 4. Access control mechanisms; 5. Databases; 6. Intrusion detection; 7. Malicious software; 8. Denial of service; 9. Firewall and intrusion prevention systems; 10. Multilevel security; trust models; 11. Buffer overflow; 12. Physical and infrastructure security; 13. Security management and risk assessment; 14. Legal and ethical issues

TEACHING LANGUAGE: English

EVALUATION: written exam/ practical test

BIBLIOGRAPHY :

W. Stallings, L. Brown, "Computer Security: Principles and Practice", Prentice-Hall, 2008, ISBN-13: 9780136004240

W. Stallings, "Network Security Essentials: Applications and Standards", Prentice-Hall, 2007, ISBN-13: 9780132380331

B. Schneier, "Applied Cryptography: Protocols, Algorithms and Source Code in C", Wiley, 1996, ISBN-13: 978-0471117094

SUBJECT OF STUDY: DATA SECURITY - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The project is meant to introduce the concepts of information security. The laboratory will give students the opportunity to practically improve their programming skills from a security point of view and also to apprehend the importance of security in internetworked environments.

COURSE CONTENT: 1. Cryptographic instruments; 2. Authentication mechanisms; 3. Mechanisms for access control; 4. Databases security; 5. Intrusion detection; 6. Malign software; 7. Security in programs: "buffer overflow" attacks; 8. Attacks to information services availability / denial of services; 9. Firewall systems and intruders prevention; 10. Multi-level security; models for trust in information security; 11. Physical infrastructure and security; 12. Managing the information security and risks identification; 13. Legal and ethical aspects

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

W. Stallings, L. Brown, "Computer Security: Principles and Practice", Prentice-Hall, 2008, ISBN-13: 9780136004240

W. Stallings, "Network Security Essentials: Applications and Standards", Prentice-Hall, 2007, ISBN-13: 9780132380331

B. Schneier, "Applied Cryptography: Protocols, Algorithms and Source Code in C", Wiley, 1996, ISBN-13: 978-

SUBJECT OF STUDY: FRAMEWORKS FOR DIGITAL SYSTEMS DEVELOPMENT

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The students will learn a hardware description language and its usage in order to implement in a FPGA most of the classic logic blocks.

COURSE CONTENT: 1. Programmable logic; 2. Introduction to VHDL; 3. Basic VHDL language elements; 4. Dataflow Modeling; 5. Behavioral Modeling; 6. State Machine Description; 7. Subprograms

TEACHING LANGUAGE: English

EVALUATION: practical test

BIBLIOGRAPHY :

Bhasker J. – VHDL Primer, third edition, Prentice Hall, 1999
Perry D. – Vhdl Programming By Example, McGraw-Hill, 2002

Skahill K. – VHDL for programmable logic, Addison-Wesley, 1996

XILINX Corp. – VHDL Reference Guide

XILINX Corp. – SPARTAN Family Reference Guide

SUBJECT OF STUDY: MODELS AND ALGORITHMS FOR PARALLEL COMPUTING

NUMBER OF CREDITS: 4

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: Basic objectives of this course include, but are not limited, to the following: 1. To introduce the basic models of parallel computing; 2. To enable the student to apply a systematic methodology for designing parallel algorithms; 3. To provide the student basic knowledge for the analysis of parallel algorithms; 4. To enable the student to efficiently use the parallel constructs of parallel programming languages.

COURSE CONTENT: 1. The Architecture of Parallel Systems; 2. Parallel Computing Models; 3. Brief Introduction to Parallel Programming of Multiprocessors; 4. The General Theory of Parallel Algorithms; 5. Basic Numerical and Non-numerical Parallel Algorithms; 6. Parallel Languages

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

[A] V. Kumar, A. Grama, A. Gupta, G. Kyrypis - Introduction to Parallel Computing Benjamin/Cummings 2003

[A] R. W. Hockney, C.R. Jesshope , Parallel Computers - Architecture, Programming, Algorithms, Ed. Tehnica, Bucuresti, 1991

[A] D. Grigoras – Parallel Computing. From Systems to Applications, Computer Libris Agora, 2000

[A] M.Mocanu, Parallel Processing Algorithms and Languages (textbook, Reprografia Univ. Craiova, 1995)

[A] M.Mocanu, A.Patriciu, Parallel computing in the C language on transputer-based systems, Unix and Windows NT networks (Reprografia Universitatii din Craiova, 1998)

[B] Akl S., The Design and Analysis of Parallel Algorithms (Prentice-Hall, 1989)

[B] Chaudhuri P., Parallel Algorithms Design and Analysis (Prentice-Hall, 1992)

- [B] JaJa J., An Introduction to Parallel Algorithms (Addison Wesley, 1992)
- [B] Christofer H.Nevison et al. - Laboratories for Parallel Computing, Jones and Bartlett, 1994
- [C] Galea D., Brudaru O., An Introduction to Systolic Computation (Ed. Academiei, Bucuresti, 1994)
- [C] Hoare C.A.R., Communicating Sequential Processes, Prentice-Hall 1985

SUBJECT OF STUDY: MODELS AND ALGORITHMS FOR PARALLEL COMPUTING - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES: Basic objectives of this course include, but are not limited, to the following: 1. To introduce the basic models of parallel computing; 2. To enable the student to apply a systematic methodology for designing parallel algorithms; 3. To provide the student basic knowledge for the analysis of parallel algorithms; 4. To enable the student to efficiently use the parallel constructs of parallel programming languages.

COURSE CONTENT: 1. Synchronization problems for processes in distributed environments; 2. Numerical processing algorithms; 3. The game X-0; 4. Algorithms for text processing; 5. Algorithms for pipeline processing; 6. Sorting algorithms; 7. Algorithms for computational geometry; 8. Algorithms for graphs; 9. Algorithms for matrix processing; 10. Images processing; 11. Meta-search (search with existing search engines); 12. Algorithms for differential equations solving; 13. Algorithms for linear equations solving; 14. Designing 3D objects in more viewports; 15. Visual information retrieval in a database using color criterium.; 16. Algorithms for trees

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY:

- [A] V. Kumar, A. Grama, A. Gupta, G. Kyrypis - Introduction to Parallel Computing Benjamin/Cummings 2003
- [A] R. W. Hockney, C.R. Jesshope , Parallel Computers - Architecture, Programming, Algorithms, Ed. Tehnica, Bucuresti, 1991
- [A] D. Grigoras – Parallel Computing. From Systems to Applications, Computer Libris Agora, 2000
- [A] M.Mocanu, Parallel Processing Algorithms and Languages (textbook, Reprografia Univ. Craiova, 1995)
- [A] M.Mocanu, A.Patriciu, Parallel computing in the C language on transputer-based systems, Unix and Windows NT networks (Reprografia Universitatii din Craiova, 1998)
- [B] Akl S., The Design and Analysis of Parallel Algorithms (Prentice-Hall, 1989)
- [B] Chaudhuri P., Parallel Algorithms Design and Analysis (Prentice-Hall, 1992)
- [B] JaJa J., An Introduction to Parallel Algorithms (Addison Wesley, 1992)
- [B] Christofer H.Nevison et al. - Laboratories for Parallel Computing, Jones and Bartlett, 1994
- [C] Galea D., Brudaru O., An Introduction to Systolic Computation (Ed. Academiei, Bucuresti, 1994)
- [C] Hoare C.A.R., Communicating Sequential Processes, Prentice-Hall 1985

SUBJECT OF STUDY: FORMAL LANGUAGES AND AUTOMATA

NUMBER OF CREDITS: 5

SEMESTER: I

TYPE OF COURSE: specialiaization

COURSE OBJECTIVES: The main objective of the course is to introduce the students the principles and the basic notions concerning formal languages and automata. The objective of applications is to enable the students to use the properties of regular languages and context-free languages in the area of computers.

COURSE CONTENT: 1. Abstract language representation
2. Regular sets and right linear grammars; 3. Finite state automata; 4. Properties of finite state automata and regular sets; 5. Context-free languages ; 6. Push-down automata

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

- J.E. Hopcroft, J.D. Ullman, Introduction to Automata Theory, Languages and Computation, Addison-Wesley, 1979
- A.V. Aho, J.D. Ullman, The Theory of Parsing, Translation, and Compiling, Prentice-Hall, 1972
- T. Jucan, Limbaje formale si automate, Ed. MatrixRom, 1999
- L.D. Șerbănați, Limbaje de programare și compilatoare, Editura Academiei, 1987

SUBJECT OF STUDY: PRACTICAL STAGE FOR GRADUATION PROJECT

NUMBER OF CREDITS: 6

SEMESTER: I

TYPE OF COURSE: specialization

COURSE OBJECTIVES

COURSE CONTENT:

TEACHING LANGUAGE: English

EVALUATION: Colloquy

BIBLIOGRAPHY :

SUBJECT OF STUDY: EMBEDDED SYSTEMS

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The primary goal of this course is to meet the student with basic information for the design and software development for embedded systems. At the conclusion of the course and laboratory, the student will have the knowledge and skills necessary to develop software for embedded systems, using technical specifications as well as specific methods of design and programming languages.

COURSE CONTENT: 1. Introduction; 2. Specifications ES; 3. Embedded Operating Systems, Middleware and Scheduling

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

- Marwedel, P., Embedded System Design, Kluwer Academic Publishers, textbook
- Marwedel, P., Embedded System Design, Univ Dortmund (<http://ls12www.cs.uni-dortmund.de/%7Emarwedel/kluwer-es-book/slides.html>)
- Grosu, M., Sisteme de calcul timp-real - note de curs, an IV C/CE
- <http://www.agilemodeling.com>

SUBJECT OF STUDY: EMBEDDED SYSTEMS- PROJECT

NUMBER OF CREDITS: 1

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The primary goal of this course is to meet the student with basic information for the design and software development for embedded systems. At the conclusion of the course and laboratory, the student will have the knowledge and skills necessary to develop software for embedded systems, using technical specifications as well as specific methods of design and programming languages.

COURSE CONTENT: N/A

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

Marwedel, P., Embedded System Design, Kluwer Academic Publishers, textbook

Marwedel, P., Embedded System Design, Univ Dortmund (<http://ls12www.cs.uni-dortmund.de/%7Emarwedel/kluwer-es-book/slides.html>)

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

<http://www.agilemodeling.com>

SUBJECT OF STUDY: DSP IN COMMUNICATION

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The main goal of the discipline is development of skills regarding the architecture of a signal processor, implementation of signal processing algorithms, using of the DSP based equipment in communications.

COURSE CONTENT: 1. Digital signal processing; 2. Filtering; 3. Transforming signals into the frequency domain; 4. Encoding of Waveforms; 5. Design of DSP systems;

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

C. Marven, G. Ewers – A simple approach to digital signal processing, John Wiley & Sons, Inc. 1996

R. Chassaing, D. Horning – Digital signal processing with the TMS320C25, John Wiley & Sons, Inc. 1990

I. Ahmed – Digital control applications with the TMS320 family, Texas Instruments, Dallas, 1991

*** TMS320C5x DSK Applications Guide, Texas Instruments Europe, 1997

SUBJECT OF STUDY: HIGH SPEED NETWORKS

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course will cover topics from current research literature in networking, with emphasis on switching and traffic management. It will also introduce the new developments in modern networking systems, multimedia communications and high speed networks.

COURSE CONTENT: BACKGROUND. 1. Introduction. High-Speed LANs; HIGH-SPEED NETWORKS. 2. Frame Relay. 3. Asynchronous Transfer Mode (ATM). PERFORMANCE MODELING AND ESTIMATION. 4. Queuing Analysis. 5. Self-Similar Traffic. CONGESTION AND TRAFFIC MANAGEMENT. 6. Congestion Control in Data Networks and Internets. 7. Link-Level Flow and Error Control; TCP Traffic Control. 8. Traffic and Congestion Control in ATM Networks. INTERNET ROUTING, QUALITY OF SERVICE IN IP NETWORKS.

9. Exterior Routing Protocols and Multicast; Integrated and Differentiated Services; 10. Protocols for QOS Support.

TEACHING LANGUAGE: English

EVALUATION: written exam

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

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

SUBJECT OF STUDY: INFORMATION SYSTEMS MANAGEMENT

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course toggles with the most significant aspects of the informational technology management and of data security at informational system level. A special attention is payed to the complex storage technologies and to the standards that are widely used today for the informational systems management. One also presents the most relevant aspects concerning the computational techniques and resources management using grid technologies. The laboratory thematic focusses on the workstations and systems management at local level, on the study of various scenarios for data security providing in information systems and on applications for SAN and grid management.

COURSE CONTENT: 1. Introductory notions; 2. Informational technology management. Classifications. Terminology. Case studies; 3. Data security at informational system level; 4. Enterprise content management; 5. Complex storage technologies; 6. Standards for informational systems management; 7. Computational techniques and resources management using grid technologies.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

<http://technet.microsoft.com/en-us/library/cc261852.aspx> (Office SharePoint Server 2007), 2008

<ftp://ftp.software.ibm.com/common/ssi/pm/br/n/tsb00089usen/TSB00089USEN.PDF> (SAN IBM - IBMSystems and Tech. Group, IBMSystemStorage: The future of your business is already here), 2007

<http://www.redbooks.ibm.com/redbooks/pdfs/sg245470.pdf> (IBMSystems and Technology Group, Introduction to Storage Area Networks), 2007

<http://www.microsoft.com/windows/serversystem/storage/simplesan.msp> (Solutii Microsoft pentru SAN) 2005

<http://www.microsoft.com/downloads/details.aspx?FamilyID=4cd29b01-eed8-45f5-ab1e-ff1e1aef7b22&DisplayLang=en> (White papers pentru securitate)

ICT Infrastructure Management, ed.. itSMF SUA, 2002

Security Management, ed.. itSMF SUA, 2002

Introduction to ITIL, ed. itSMF SUA, 2005

<http://www.disasterrecoveryworld.com/>

<http://www.intel.com/design/servers/ipmi/ipmi.htm>

<http://www.microsoft.com/management>
<http://www.redbooks.ibm.com/redbooks/SG245470/wwhelp/wwimpl/js/html/wwhelp.htm>
<http://www-03.ibm.com/servers/eserver/zseries/pso/>
<http://www.oasis-open.org>
<http://www.tmforum.com>
<http://www.globus.org/ogsa/>
<http://www.dmtf.org>
<http://www.iks.inf.ethz.ch/publications/publications/ccgrid06.html>
<http://www.intel.com/technology/magazine/communications/n1022.pdf>
<http://www.blade.org/index.html>
<http://www.microsoft.com/technet/scriptcenter/preview/wsm/intro.mspix>
http://www.ggf.org/About/ggf_abt_overview.php
<http://www.grid.org/>
<http://home.aisnet.org> (pag. Association for Information Systems)
 Critical Reflections on Information Systems: A Systemic Approach, Jeimy J. Cano, IGI Publishing, SUA, 2003
 Advances in Enterprise Information Systems Book Series, editate de Univ. of Massachusetts, 2006
 Cases on Information Technology Planning, Designing and Implementation: Part of the Cases on Information Technology Series, ed. IGI Publishing, 2006
 Cases on Telecommunications and Networking: Part of the Cases on Information Technology Series, ed. IGI Publishing, ed. IGI Publishing, 2006
 Information Security Management Handbook, Harold F. Tipton, Micki Krause, CRC Press, 2008

SUBJECT OF STUDY: VLSI ENVIRONMENTS

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: This course introduces the necessary concepts and tools of verification and then it describes a process for planning and carrying out an effective functional verification of a design. It also introduces the concept of coverage models that can be used in a coverage driven verification process.

COURSE CONTENT: 1. What is verification? ; 2. Verifications tools; 3. The verification plan; 4. Architecting test benches

TEACHING LANGUAGE: English

EVALUATION: practical project

BIBLIOGRAPHY :

Bergeron J. – Writing Testbenches: Functional Verification of HDL Models, Second Edition, Kluwer Academic Publishers, 2003

Bhasker J. – VHDL Primer, third edition, Prentice Hall, 1999

Perry D. – VHDL Programming By Example, McGraw-Hill, 2002

XILINX Corp. – VHDL Reference Guide

XILINX Corp. – SPARTAN Family Reference Guide

SUBJECT OF STUDY: COMPILER DESIGN

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The main objective of the course is to introduce the students the specific notions and techniques concerning compilers and compiler design stages. The objective of applications is to enable the students to implement some translators for small languages.

COURSE CONTENT: 1. Introduction to Compiler; 2. Lexical analysis; 3. Syntax analysis; 4. Syntax-directed translation; 5. Type checking; 6. Run-Time Environments; 7. Intermediate code generation

TEACHING LANGUAGE: English

EVALUATION: written exam / practical test

BIBLIOGRAPHY :

Compilers: Principles, Techniques, and Tools, Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman, ISBN: 0-201-10088-6, Addison Wesley, 1986

Crafting a Compiler with C, Charles Fischer, Richard LeBlanc, Addison Wesley, 1991

Limbaje de programare si compilatoare, Luca Dan Serbanati, Ed. Academiei, 1987

Compiler Construction, Niklaus Wirth, Addison-Wesley, 1996, ISBN 0-201-40353-6

The Theory of Parsing, Translation and Compiling, Alfred V. Aho, Jeffrey D. Ullman, Prentice-Hall, Englewood Cliffs, 1973

SUBJECT OF STUDY: COMPILER DESIGN - PROJECT

NUMBER OF CREDITS: 1

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The main objective of the course is to introduce the students the specific notions and techniques concerning compilers and compiler design stages. The objective of applications is to enable the students to implement some translators for small languages.

COURSE CONTENT: 1. Standard Compiler Design projects (compilers for some simplified programming languages), which involve the main phases of the compiling process (scanning, parsing, semantic analysis, code generation); 2. Processors for programming languages, used to determine some quantitative information of the input programs; 3. Processors for some languages used in Web programming, used to validate the input documents and to determine their structure;

TEACHING LANGUAGE: English

EVALUATION: project

BIBLIOGRAPHY :

Compilers: Principles, Techniques, and Tools, Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman, ISBN: 0-201-10088-6, Addison Wesley, 1986

Crafting a Compiler with C, Charles Fischer, Richard LeBlanc, Addison Wesley, 1991

Limbaje de programare si compilatoare, Luca Dan Serbanati, Ed. Academiei, 1987

Compiler Construction, Niklaus Wirth, Addison-Wesley, 1996, ISBN 0-201-40353-6

The Theory of Parsing, Translation and Compiling, Alfred V. Aho, Jeffrey D. Ullman, Prentice-Hall, Englewood Cliffs, 1973

SUBJECT OF STUDY: ALGORITHMS FOR INFORMATIONAL RETRIEVAL

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The general objective of Information retrieval course is to present a wide range of methods for locating needed information in different sets of data. This means searching for information in documents, searching for documents themselves, searching for metadata which describe documents. The efficiency of the search is the key issue. There are addressed problems regarding query generation, query execution, data

structures, indexing, employed algorithms and evaluation techniques.

COURSE CONTENT: 1. Introduction to informations storage and retrieval systems; 2. Introduction to data structures and algorithms related to information retrieval; 3. Inverted files; 4. Information retrieval using the Boolean model; 5. Index construction; 6. Modifications and enhancements to the basic indexing and search processes; 7. Vector space retrieval; 8. Evaluation in information retrieval

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Andoni, A., N. Immorlica, P. Indyk, and V.Mirroknii. 2007. Nearest Neighbor Methods in Learning and Vision: Theory and Practice. MIT Press

Baeza-Yates, Ricardo, and Berthier Ribeiro-Neto. 1999. Modern Information Retrieval. Harlow: Addison-Wesley

3.Bishop, Christopher M. 2006. Pattern Recognition and Machine Learning. Springer

Cormen, Thomas H., Charles Eric Leiserson, and Ronald L. Rivest. 1990. Introduction to Algorithms. Cambridge MA: MIT Press

Duda, Richard O., Peter E. Hart, and David G. Stork. 2000. Pattern Classification (2nd Edition). Wiley-Interscience

Hastie, Trevor, Robert Tibshirani, and Jerome H. Friedman. 2001. The Elements of Statistical Learning: Data Mining, Inference, and Prediction. New York: Springer Verlag

Korfhage, Robert R. 1997. Information Storage and Retrieval. Wiley

Panos Pardalos James Abello and Mauricio Resende (eds.), 2002. Handbook of Massive Data Sets, chapter 2. Kluwer Academic Publishers.

SUBJECT OF STUDY: EXPERT SYSTEMS

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The main objective of the course is to introduce the students the specific notions and techniques concerning knowledge representation and reasoning. The objective of applications is to enable the students to use the CLIPS environment and CLIPS, COOL and FuzzyClips languages for expert systems development.

COURSE CONTENT: 1. An introduction to Expert Systems. 2. Rule-Based Systems. 3. Frame-Based Systems. 4. Reasoning with uncertainty. 5. Building Expert Systems.

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Giarratano J., Riley G. : Expert Systems. Principles and Programming, PWS Kent, 1989

Lucas O., Van Der Gaag L. : Principles of Expert Systems, Addison Wesley, 1991

Brezovan M. : Sisteme expert, Ed. Certi, 2001

SUBJECT OF STUDY: GRAPHICAL SYSTEMS

NUMBER OF CREDITS: 4

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course wishes to introduce the concept of grafic processing system. General concepts and exemplifications, the widely used grafic processing libraries – OpenGL and DirectX are presented. The

laboratory has the role of improving the studied information and of implementing them in C++ using DirectX libraries.

COURSE CONTENT: 1. Direct 3D Rendering Chain; 2. Drawing in Direct 3D; 3. Colours; 4. Lights; 5. Textures; 6. Blending; 7. Meshes

TEACHING LANGUAGE: English

EVALUATION: written exam

BIBLIOGRAPHY :

Frank D. Luna - Introduction to 3D Game Programming with DirectX 9.0 - Wordware Publishing, Inc., Plano - Texas, 2003

Tomas Möller, and Eric Haines. Real-Time Rendering. 2nd ed. Natick, Mass.: A K Peters, Ltd., 2002.

Wendy Jones - An Introduction to 3D Computer Graphics - Course Technology PTR, 2004

Kelly Murdock – 3ds Max Bible 9 – Wiley, 2007.

Dave Shreiner, Mason Woo, Jackie Neider, Tom Davis - OpenGL(R) Programming Guide: The Official Guide to Learning OpenGL(R), 5th edition, Addison-Wesley Professional, 2005.

SUBJECT OF STUDY: MULTIMEDIA APPLICATION DEVELOPMENT

NUMBER OF CREDITS: 5

SEMESTER: II

TYPE OF COURSE: specialization

COURSE OBJECTIVES: The course introduces basic concepts in multimedia field: multimedia technologies, multimedia data types (image, sound, video), compression algorithms, specific methods for multimedia data querying and two important multimedia applications: for e-learning and on multimedia databases. The lab presents the working way in some very popular authoring tools (Flash, Fireworks). During the labs and with homeworks the students must design and implement multimedia applications that combine all multimedia data types using the presented authoring tools.

COURSE CONTENT: 1. Introduction; 2. Multimedia Authoring; 3. Multimedia technologies; 4. Sound 5. Video; 6. Images; 7. Compression methods; 8. Content-based visual query; 9. Applications on multimedia databases; 10. Multimedia applications of e-learning type

TEACHING LANGUAGE: English

EVALUATION: written exam/ practical test

BIBLIOGRAPHY :

Multimedia Systems Concepts Standards and Practice, Ramesh Yerraballi,

<http://data.uta.edu/~ramesh/book/MultimediaSystems/index.html>

Baze de date multimedia-studiu asupra unor metode de regasire a informatiei vizuale, Liana Stanescu, Ed. Universitaria 2004

Networked Multimedia Systems, S.V. Raghavan, Satish K. Tripathi, Pearson Education Ltd., 1997

Multimedia Systems and Content-Based Retrieval, Sagarmay Deb , Idea Group Publishing, 2004

Multimedia Applications, Ralf Steinmetz, Klara Nahrstedt, Springer, 2004

Macromedia Flash 5, Phillip Kerman, Ed. Teora 2004

Decan,

Prof.dr. ing. Eugen BOBAȘU