

UNIVERSITY OF CRAIOVA
DEPARTMENT: AUTOMATION, ELECTRONICS AND
MECHATRONICS
BACHELOR: AUTOMATICS AND APPLIED
INFORMATICS

4-TH YEAR

1-ST YEAR

1. Mathematical analysis D28AIAL101
2. Linear algebra, analytic and differential geometry D28AIAL102
3. Physics D28AIAL103
4. Materials chemistry D28AIAL104
5. Computer programming and programming languages D28AIAL105
6. Computer programming and programming languages - project D28AIAL106
7. Culture and civilization D28AIAL107
8. English 1 D28AIAL108
9. Numerical calculus and mathematical statistics D28AIAL201
10. Special mathematics D28AIAL202
11. Bases of electrotechnics D28AIAL203
12. Systems programs engineering D28AIAL204
13. Mechanics D28AIAL205
14. Computer-aided graphics D28AIAL206
15. English 2 D28AIAL207
16. Physical education 1 D28AIAL209

2-ND YEAR

1. Linear electronic circuits D28AIAL301
2. Numeric devices analysis and synthesis D28AIAL302
3. Signals and systems D28AIAL303
4. Data bases D28AIAL304
5. Data bases - project D28AIAL305
6. Object-oriented programming D28AIAL306
7. Marketing D28AIAL307
8. English 3 D28AIAL308
9. Digital electronics D28AIAL401
10. Electrical machines and actuators D28AIAL402
11. Automated systems theory D28AIAL403
12. Robotics D28AIAL404
13. Computer architecture D28AIAL405
14. Cognitive psychology D28AIAL406
15. English 4 D28AIAL407
16. Internship D28AIAL408

3-RD YEAR

1. Modeling and simulation D28AIAL501
2. Automata and microprogramming D28AIAL502
3. Measurements and transducers D28AIAL503
4. Microprocessor systems D28AIAL504
5. Operating systems and languages in real time D28AIAL505
6. Project systems in real time D28AIAL506
7. Acquisition systems and process interfaces D28AIAL601
8. Automatic adjustment engineering D28AIAL602
9. Data transmission D28AIAL603
10. Digital signal processing D28AIAL604
11. Industrial software D28AIAL605
12. Project management D28AIAL606
13. Internship D28AIAL607

1. Digital control systems D28AIAL701
2. Systems identification D28AIAL702
3. Management of industrial processes D28AIAL703
4. Project adjustment engineering D28AIAL704
Package A
5. Human-machine interfaces D28AIAL705a
6. Embedded systems D28AIAL706a
7. Artificial intelligence D28AIAL707a
Package B
5. Hydraulic and pneumatic systems D28AIAL705b
6. Programmable automata PLC D28AIAL706b
7. Computer aided design of control systems D28AIAL707b
8. Optimizations D28AIAL801
9. Graduation project elaboration D28AIAL802
Package A
10. Distributed systems management D28AIAL803a
11. Information protection technology D28AIAL804t
12. Hybrid systems D28AIAL805a
13. JAVA applications D28AIAL806a
Package B
10. Computer networks D28AIAL803b
11. Diagnosis and decision techniques D28AIAL804b
12. Virtual instrumentation D28AIAL805b
13. Web technologies D28AIAL806b
14. Graduation exam D28AIAL807

1-ST YEAR

SUBJECT: MATHEMATICAL ANALYSIS

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: The course aims to introduce the fundamentals of differential and integral calculus. The tutorial is designed to improve the theoretical knowledge and to create computing skills through practical applications, exercises and problems.

COURSE CONTENT: Fundamental series; metric spaces; complete metric spaces; contraction principle; Numeric series; series of serial power developments; Limits and continuity for multivariable functions; Partial derivatives and differentiability; Local extremes for multivariable functions; Implicitly defined functions; Conditioned extremes; Introduction to integral calculus.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Predoi, M. , Balan, T. - Mathematical Analysis Vol I. Differential Calculus; Vol II. Integral Calculus

Predoi, M. - Analiza matematica, Ed. Universitaria, Craiova, 1994

Predoi, M. , Racilă, M. , Constantinescu, D. - Teme de calcul diferențial, Ed.Sitech, Craiova, 2003

Predoi, M. , Racilă, M. , Constantinescu, D. - Teme de calcul integral, Ed.Sitech, Craiova, 2003.

SUBJECT: LINEAR ALGEBRA, ANALYTIC AND DIFFERENTIAL GEOMETRY

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing the basic notions of linear algebra, analytic and differential geometry: vectorial spaces, linear applications, square shapes, Euclidean spaces, symmetrical operators, free vectors, straight lines and planes, conics and quadrics, plane and space curves, surfaces. The tutorial is designed to improve the theoretical knowledge and to create computing skills through practical applications, exercises and problems.

COURSE CONTENT: Vectorial spaces; linear applications; bilinear shapes; square shapes; partial derivatives and differentiability; Euclidian vectorial spaces. Introduction to integral calculus; Free (geometric) vectors; straight lines and planes; conics and quadrics; plane and space curves; Surfaces.

TEACHING LANGUAGE: Romanian

EVALUATION: written 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.

SUBJECT: PHYSICS

NUMBER OF CREDIT POINTS: 5

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing the basic notions in physics; elements of analytic mechanics, thermodynamics, optics and quantum physics. The tutorial and laboratory are designed to improve the theoretical knowledge and to create computing skills through practical applications, exercises and problems.

COURSE CONTENT: Elements of mathematical physics; elements of analytic mechanics, Elements of thermodynamics, Elements of optics, Elements of quantum physics.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

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

Gh. Ciobanu, O. Gherman, L. Saliu, Fizica moleculara, termodinamica si statistica, Ed.Did. si Pedagogica, Bucuresti, 1983;

Culegere de probleme pentru Facultatea de electrotehnica, Repogr.Univ.Craiova, 1991;

N. Pometescu, Fizica, Ed. Sitech, 2000;

Lucrari practice de fizica, Reprografia Universitatii din Craiova, 1990.

SUBJECT: MATERIALS CHEMISTRY

NUMBER OF CREDIT POINTS: 3

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: getting students acquainted with the basic notions about atoms, chemical connections, substance properties, solutions, notions of electrochemistry, material corrosion, electrical insulating materials.

COURSE CONTENT: Atomic structure; chemical connections, solutions, chemical balance; notions of electrochemistry; corrosion, metal and alloy protection against corrosion; Electrical insulating materials chemistry.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Lippard S.J. – Principles of bioinorganic chemistry. Universitz Science Books, 1994;

Atkins P.W., Beran J.A. – General chemistry (2rd edn.), Freeman &Co, New York, 1992;

Marcu Gh. – Chimia compușilor coordinativi, Ed. Academiei Române, București, 1984;

Brezeanu M & colab. – Chimia metalelor, Editura Academiei Române, București, 1990;

Spînu C. – Chimie bioanorganică, Editura Universitaria, Craiova, 2003.

SUBJECT: COMPUTER PROGRAMMING AND PROGRAMMING LANGUAGES

NUMBER OF CREDIT POINTS: 5

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing the notions referring to computer programming and programming languages such as C, Matlab, LabView. There are approached basic concepts of procedural programming languages based on data flow.

COURSE CONTENT: Introduction to calculus systems architecture; computer programing fundamentals;

programming languages; computer data representation; basic elements of C programming language; Operands and operators in C; Instructions; Structured data types; Pointers; Functions; Preprocessing; Ins/ outs; Elements of advanced programming; MATLAB matrix language; LabVIEW dataflow language.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Plum T., Learning to program in C, Prentice Hall, 1983;
Auslander D.,Tham C., Real-time software for control: program examples in C, Prentice Hall, 1990;
Schild H., Using Turbo C, Borland, Osborne / McGraw Hill, 1988;
Holzner S., Borland C++ Programming, Brady Books, New York, 1992;
Somnea D., Turturea D., Introducere în C++, Programarea orientată pe obiecte, Ed. Tehnică, București, 1993.

SUBJECT: COMPUTER PROGRAMMING AND PROGRAMMING LANGUAGES - PROJECT

NUMBER OF CREDIT POINTS: 1

SEMESTER: I

COURSE TYPE: core course

OBJECTIVES: According to case.

CONTENT: According to case.

TEACHING LANGUAGE: Romanian

EVALUATION: project

BIBLIOGRAPHY:

Plum T., Learning to program in C, Prentice Hall, 1983;
Auslander D.,Tham C., Real-time software for control: program examples in C, Prentice Hall, 1990;
Schild H., Using Turbo C, Borland, Osborne / McGraw Hill, 1988;
Holzner S., Borland C++ Programming, Brady Books, New York, 1992;
Somnea D., Turturea D., Introducere în C++, Programarea orientată pe obiecte, Ed. Tehnică, București, 1993.

SUBJECT : CULTURE AND CIVILISATION

NUMBER OF CREDIT POINTS: 2

SEMESTER: I

COURSE TYPE: complementary

COURSE OBJECTIVES: ???

COURSE CONTENT: ???

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY: ???

SUBJECT : ENGLISH 1

NUMBER OF CREDIT POINTS: 2

SEMESTER: I

COURSE TYPE: complementary

COURSE OBJECTIVES: Practising the fundamental vocabulary and conversational structural paradigms which are specific to the domain of exact sciences. The tutorial also aims to develop skills necessary to achieve the necessary documentation for employment: covering letter, CV in English, letters of recommendation or a correctly completed application form.

COURSE CONTENT: The Inventor of the Modern Computer; Derivation; Vacuum Tubes; The Noun;Computer Architecture; The Article and Other Determiners;The Invention of the Internet; The Adjective. The Comparison

Degree;Internet Connection; The Cardinal and Ordinal Numeral;Floppy; The Pronoun; E-mail; The Adverb. Comparison Degrees;Browsing the Web; The Preposition;Downloading; The Verb. General Notions;Operating Systems; Present Tenses;Internet Ethics; Past Tenses;Robotics; Future Tenses;Robot Tasks; The Active Voice; The Passive Voice;The History of Robotics; IF Clauses;Domains of Use for Robots; Reported Speech;The Three Laws of Robotics; Word Order;Cybernetics; Artificial Intelligence;Computer Viruses; Letter of Intent;The Symptoms of Internet Addiction;Letter of Application (I);Letter of Application (II); Language register: Formal Style;National Aeronautics and Space Administration; Are You Cut Out To Be An Astronaut?;Man and Machine;A Menace to Humanity.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

Munteanu, S.C., Read Science! UTPress, Cluj- Napoca, 2004;
Munteanu, S.C., Students' English Grammar, UTPress, Cluj- Napoca, 2001;
Mercea, R., Application File, UTPres, Cluj-Napoca, 2003;
Thomson, A.J. & Martinet, A.V., A Practical English Grammar, Exercises 1&2, OUP, Oxford, 1995;
Vizental, Adriana - Strategies of Teaching and Testing English as a Foreign Language, Editura Polirom, 2008.

SUBJECT : NUMERICAL CALCULUS AND MATHEMATICAL STATISTICS

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: To present the students the main numerical methods and algorithms used in: linear and nonlinear algebra, function approximation, differential and integral calculus, numerical solutions for differential equations with partial derivatives, elements of mathematical statistics. The course aims to develop students' ability to analyze various mathematical models appearing in the research, design, engineering, and using numerical techniques to solve specific problems using programming languages transposition of numerical methods studied.

COURSE CONTENT: Numerical methods in algebra; Function approximation; Numerical methods for integral evaluation; Numerical methods used to solve differential equations and equations with partial derivatives; Elements of probability calculus and mathematical statistics

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Burden R. L., Faires J. D., Numerical Analysis, Brooks Cole Ed., 2004;
C de Boor, A practical guide to splines, 2nd ed. Springer, NewYork, 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.

SUBJECT : SPECIAL MATHEMATICS

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing basic notions concerning: complex analysis, ordinary differential equations, differential equations with partial derivatives, Fourier analysis, Laplace transformations, vectorial fields. The course aims at defining the notions clearly, presenting the basic results, domains of application, solving algorithms, connections with other domains.

COURSE CONTENT: Complex analysis; ordinary differential equations; Fourier analysis – Fourier series; Laplace transformation and Laplace discrete transformation; Fourier transformation; Linear differential equations with partial second order derivatives; vectorial fields, scalar potential, vectorial potential.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

T. Balan, Matematici Speciale - curs, 1998;
C. Niculescu, Matematici Speciale - curs, 1988;
B. Crstici, Matematici Speciale - curs, 1981;
George Popescu, Matematici Speciale (curs în format electronic); Probleme rezolvate, exemple (în format electronic).

SUBJECT : BASES OF ELECTROTECHNICS

NUMBER OF CREDIT POINTS: 6

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: Introducing the basic concepts concerning electric circuits, presenting the main theorems and calculus methods which are applicable in linear and nonlinear circuits analysis.

COURSE CONTENT: Electric circuits and circuit elements; direct current linear circuits; Nonlinear direct current circuits; The sinusoidal regime of electric circuits; Monophased sinusoidal regime circuits; Triphased electric circuits; Quadrupoles and electrical filters; Non-sinusoidal periodic regime of electric circuits; The transitory regime of electric circuits; Distributed parametres circuits. **TEACHING LANGUAGE:** Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

D. Topan, Circuits electriques, Editura Universitaria, 1996;
D. Topan, L.Mandache, Metode de analiză în circuite electrice complexe, Ed. Universitaria, 2002;
D. Topan, L.Mandache, Chestiuni speciale de analiza circuitelor electrice, Ed. Universitaria, 2007;
M. Iordache, L. Dumitriu, Teoria circuitelor electrice, Ed. Matrix Rom, 2007;
M. Preda, P.Cristea, Bazele electrotehnicii, vol.2, EDP, 1980.

SUBJECT : SYSTEMS PROGRAMS ENGINEERING

NUMBER OF CREDIT POINTS: 5

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: The course aims to introduce the basic concepts of software engineering problems and the features and concepts introduced by C + + in this area. The details regarding the description and optimization algorithms used in software engineering methods and special algorithms: lists, stacks, queues, trees, sorting algorithms, search and selection, Backtracking search techniques, dynamic programming, etc.

COURSE CONTENT: Techniques using files, organizing complex data structures, algorithms, data sorting algorithms, search and selection; Backtraching search techniques, dynamic programming, Greedy method in optimization

algorithms, Generating combinations, arrangements and permutations.

LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Buricea Mihail, Gestiuinea fişierelor în Turbo Pascal, Reprografia Universitatii din Craiova, 1994;
Buricea Mihail, Programarea în Limbajul C/C++ de la teorie la practica, Editura SITECH, 2003;
Buricea Mihail - Programarea Orientata pe Obiecte în C++, Editura SITECH, 2006;
Burdescu Dan Dumitru - Analiza Complexităţii Algoritmilor, Editura Albatros, 1998;
Knuth Donald, Arta Programării Calculatoarelor : Algoritmi Fundamentali, Teora, 1999.

DENUMIREA DISCIPLINEI : MECHANICS

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: Introducing the basic concepts concerning the methods of making mathematical models describing the movement of mechanic systems with constant mass and a finite number of freedom degrees. Their analysis is accompanied by calculus examples and applications which illustrate the studied methods.

COURSE CONTENT: Sliding vectors theory; Geometry of masses; Material point kinematics; The kinematics of rigid solids and rigid systems; Dynamics.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

Bagnaru, D., Cataneanu, A., Mecanică-Mecanisme, Editura Sitech, Craiova, 1997;
Buculei, M., Mecanică, vol. I, II, Reprografia Universitatii din Craiova, 1980;
Cătăneanu, A., Mecanică, vol. I,II, Editura Universitaria, Craiova, 2000, 2001;
Cătăneanu, A., Mecanică –Culegere de probleme Ed. Universitaria, Craiova, 2002;
Ceauşu, V, Enescu, N., Ceauşu, F., Culegere de probleme, Mecanică, vol. I. Statică şi cinematică, Ed. Printech, Bucureşti, 1997.

SUBJECT : COMPUTER AIDED GRAPHICS

NUMBER OF CREDIT POINTS: 3

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing the basic notions of computer-aided graphics: theoretical notions of technical graphics, general aspects of computer graphics, bidimensional and tridimensional AutoCAD.

COURSE CONTENT: General notions of technical drawing and computer graphics; bidimensional and tridimensional modeling.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Gherghina, G., Popa D., Calbureanu M., Tudor M., Grafică asistată de calculator, Reprografia Universităţii din Craiova, 1999;
Gherghina, G., Popa, D., Calbureanu, M., Tudor, M., Grafică asistată de calculator. Două modalităţi de abordare, Reprografia Universităţii din Craiova, 2000.;

Popa, Grafică asistată de calculator, Ed. Sitech, 2003, 154 pag., ISBN 973-657-444-X;

Popa, D., Sass, L., Gherghina, G., Duta, A., Stănescu, G., Grafică asistată de calculator - de la 2D la 3D, 247 pag., Ed. Sitech, 2007;

Sass, L., Desen geometric, 280 pag., Ed. Tehnica-Info, Chişinău, 2002.

SUBJECT : ENGLISH 2

NUMBER OF CREDIT POINTS: 2

SEMESTER: II

COURSE TYPE: complementary

COURSE OBJECTIVES: Practising the fundamental vocabulary and conversational structural paradigms which are specific to the domain of exact sciences. The tutorial also aims to develop skills necessary to achieve the necessary documentation for employment: covering letter, CV in English, letters of recommendation or a correctly completed application form.

COURSE CONTENT: The Inventor of the Modern Computer; Derivation; Vacuum Tubes; The Noun; Computer Architecture; The Article and Other Determiners; The Invention of the Internet; The Adjective. The Comparison Degree; Internet Connection; The Cardinal and Ordinal Numeral; Floppy; The Pronoun; E-mail; The Adverb. Comparison Degrees; Browsing the Web; The Preposition; Downloading; The Verb. General Notions; Operating Systems; Present Tenses; Internet Ethics; Past Tenses; Robotics; Future Tenses; Robot Tasks; The Active Voice; The Passive Voice; The History of Robotics; IF Clauses; Domains of Use for Robots; Reported Speech; The Three Laws of Robotics; Word Order; Cybernetics; Artificial Intelligence; Computer Viruses; Letter of Intent; The Symptoms of Internet Addiction; Letter of Application (I); Letter of Application (II); Language register: Formal Style; National Aeronautics and Space Administration; Are You Cut Out To Be An Astronaut?; Man and Machine; A Menace to Humanity.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

Munteanu, S.C., Read Science! UTPress, Cluj- Napoca, 2004; Munteanu, S.C., Students' English Grammar, UTPress, Cluj- Napoca, 2001;

Mercea, R., Application File, UTPres, Cluj-Napoca, 2003;

Thomson, A.J. & Martinet, A.V., A Practical English Grammar, Exercises 1&2, OUP, Oxford, 1995;

Vizental, Adriana - Strategies of Teaching and Testing English as a Foreign Language, Editura Polirom, 2008.

SUBJECT : PHYSICAL EDUCATION 1

NUMBER OF CREDIT POINTS: 2

SEMESTER: II

COURSE TYPE: complementary

COURSE OBJECTIVES: ???

COURSE CONTENT: ???

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY: ???

2-ND YEAR

SUBJECT : LINEAR ELECTRONIC CIRCUITS

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: Providing the basic knowledge about the most important electronic devices and linear electronic circuits and offering the basics of analog electronic systems design and analysis.

COURSE CONTENT: Semiconductor diodes; bipolar transistors; unipolar transistors; amplifiers; active filters; linear stabilisers of constant tension; harmonic oscillators.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Niculescu E., Purcaru D.M., Dispozitive și circuite electronice. Vol. I. Ed. Universitaria, 2002;

Niculescu E., Purcaru D.M., Maria, M., Electronică. Simulări, analize și experimente, Ed. Reprograph, Craiova, 2006;

Spânulescu, I., Dispozitive semiconductoare și circuite integrate analogice, Ed. Victor, București, 1998;

Gray, P.E., Meyer, C.R., Circuite integrate analogice. Analiză și proiectare, Ed. Tehnică, București, 1997;

P. Allen, D. Holberg, CMOS Analog Circuit Design, 2nd Ed., Oxford 2002.

SUBJECT : NUMERIC DEVICES ANALYSIS AND SYNTHESIS

NUMBER OF CREDIT POINTS: 5

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: Introducing the basic concepts concerning: numeration systems, commutation algebra, MSI and LSI integrated circuits, bistables, counting and registers, the analysis and synthesis of synchronous and asynchronous sequential circuits.

COURSE CONTENT: Numeration systems; binary arithmetics, the geometrical representation of binary numbers; commutation algebra; the analysis and synthesis of commutation functions; special properties of commutation functions; commutation circuits hazard; integrated circuits families; MSI integrated circuits; LSI integrated circuits; integrated bistables; counting; serial and parallel registers; synchronous sequential circuits analysis; the synthesis of sequential circuits with ROM memories; the synthesis of synchronous sequential circuits with bistable D and JK.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Blakeslee, Th., Proiectarea cu circuite logice MSI și LSI standard, Ed. Tehnică, București, 1988;

Huțanu, C., Circuite logice și comenzi secvențiale, Ed. Junimea, Iași, 1983;

Maican, S., Sisteme numerice cu circuite integrate, Culegere de probleme, Ed. Tehnică, București 1980.

SUBJECT : SIGNALS AND SYSTEMS

NUMBER OF CREDIT POINTS: 5

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course aims to introduce basic systemic concepts (theory input / output and theory based

on the notion of state) and their description by specific. Cursul features creates the necessary openness to dynamic approach, and the ability of using tools for automation and mechatronics working, being a first step towards an interdisciplinary approach to engineering problems.

COURSE CONTENT: Signals and systems with continuous time (analog) Introduction to signals and systems. Various examples. Periodic signals, non-periodic impulse, linear systems and properties. Transfer function. Responding to signals (free and forced). Systems of order 1 and 2, internal stability and output input linear systems, Frequency characteristics. Stability frequencial criteria; connection with feedback. Stability and the Nyquist criterion; Connections elementary systems, series and parallel connections, properties and stability, quality of response systems, for systems of order 1 and 2, signals and discrete-time systems, structural properties, equation of state of continuous time systems (analog).

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- V. Ionescu, Conducerea structurală a sistemelor liniare (Cap.1,2), Editura Tehnică, București, 1987;
- VI. Răsvan, Teoria stabilității (Cap. 2), Editura științifică și enciclopedică, București, 1987;
- M. Voicu, Introducere în automată, Editura Polirom, Iași, 2002;
- J.R. Leigh, Applied control theory, Peter Peregrinus IEE, London, 1987;
- J.L. Shearer, B.T.Kulakowski, J.F. Gardner, Dynamic modeling and control of engineering systems, Prentice Hall, 1997.

SUBJECT : DATA BASES

NUMBER OF CREDIT POINTS: 3

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: Introducing the basic concepts and techniques referring to the methodology of data bases design and assimilating the theoretical knowledge about using a system of managing data bases (SGBD).

COURSE CONTENT: Introduction to data bases aspects. The relational model. Relational data bases design (the analysis of imposed specifications, design methods, normalising and denormalising data bases). SQL. Management systems for relational data bases-SGBDR. DB management elements (types of users, creating a DB, administering instances, stock structure and DB objects schema, DB memory and resources, presenting the concepts of Backup, Database Recovery Manager etc.) Data base and user security. Multiple access to data and keeping their consistency. Distributed data bases.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Connolly, T., Begg, C., Strachan, A., "Database Systems – A Practical Aproach to Design, Implementation and Management", 1041 pp., Addison Wesley Longman Limited, London, UK, 2003;
- Ipate, F.E. s. a., "Dezvoltarea aplicatiilor de BD in Oracle si Forms", Editura ALL, Bucuresti, 2000;
- Hernandez, M.J., "Database Design: a Hands-on Guide to Relational Database Design", 402 pag., Pearson Education, Inc. Publishing Adisson Wesley Professional, 0201752840, New York, USA, 2003;

Lowers, T., Atwood, T., Gennick, J., "PL/SQL", 715 pp., Pearson Education, Inc. – Sams Publishing, New York, USA, 2001;

Welling, L., "Thomson, L., PHP and MYSQL web Development", 813 pp., Pearson Education, Inc. – Sams Publishing, 067232525X, New York, USA, 2004.

SUBJECT : DATA BASES - PROJECT

NUMBER OF CREDIT POINTS: 1

SEMESTER: I

COURSE TYPE: specialty

OBJECTIVES: According to case.

CONTENT: According to case.

TEACHING LANGUAGE: Romanian

EVALUATION: project

BIBLIOGRAPHY:

- Connolly, T., Begg, C., Strachan, A., "Database Systems – A Practical Aproach to Design, Implementation and Management", 1041 pp., Addison Wesley Longman Limited, London, UK, 2003;
- Ipate, F.E. s. a., "Dezvoltarea aplicatiilor de BD in Oracle si Forms", Editura ALL, Bucuresti, 2000;
- Hernandez, M.J., "Database Design: a Hands-on Guide to Relational Database Design", 402 pag., Pearson Education, Inc. Publishing Adisson Wesley Professional, 0201752840, New York, USA, 2003;
- Lowers, T., Atwood, T., Gennick, J., "PL/SQL", 715 pp., Pearson Education, Inc. – Sams Publishing, New York, USA, 2001;
- Welling, L., "Thomson, L., PHP and MYSQL web Development", 813 pp., Pearson Education, Inc. – Sams Publishing, 067232525X, New York, USA, 2004.

SUBJECT : OBJECT-ORIENTED PROGRAMMING

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: This course studies the basic concepts concerning the object oriented programming using as examples the main features and the concepts of C++ language. Following are presented and analysed the syntactic details of C++ language.

COURSE CONTENT: Programming paradigms and methods of program design, C + + and object-oriented programming, defining and using classes in C + +, use pointers and references. Preliminary Elements Function, type constructor and destructor functions, composition of objects, the inheritance mechanism. Constructing class hierarchies, functions and friend classes. Nested classes, operator overloading, virtual functions, The "stream" I / O in C + +.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Holzner, S., Borland C++ Programming, Brady Books, New York, 1992;
- Ionita, A. D., Modelarea UML in ingineria sistemelor de programe, Ed. ALL, 2002;
- Ionita, A. D., Saru.D., Sisteme de programe orientate pe obiecte, 328 pag. Ed. ALL, 2000;
- Jamsa, K., Klander, L., Totul despre C si C++, Ed. Teora, 2000;
- Oprea, M., Programare orientata pe obiecte. Exemple in limbajul C++, Ed. Matrixrom, 2004.

SUBJECT : MARKETING**NUMBER OF CREDIT POINTS: 2****SEMESTER: I****COURSE TYPE:** complementary**COURSE OBJECTIVES:** The course aims to introduce the basic concepts on the issue of the marketing process so that, following training activities, students acquire useful knowledge about market evolution, product policies, promotional activities, price setting, product distribution (emphasizing the IT).**COURSE CONTENT:** The concept of Marketing - organization and its external environment; market research and market strategy; product policy; promotional and advertising policy; price policy; distribution policy.**TEACHING LANGUAGE:** Romanian**EVALUATION:** oral examination**BIBLIOGRAPHY:**

- Belch, G.E., Belch, M.A., "Introduction to Advertising & Promotion: An Integrated Marketing Communications Perspective", Richard Irwin, 1993;
- Berkowitz, E., Kerin R., Rudelius W., "Marketing", 2nd Edition, Homewood, Illinois: Richard D. Irwin, 1989;
- Berndt, R., Hermanns, A., "Handbuch Marketing-Kommunikation", Wiesbaden, 1993;
- Kotler, P., Armstrong, G., "Principles of marketing", 650 pp., Pearson Education, Inc., Upper Saddle River, New Jersey, Prentice Hall, ISBN: 0-13-041814-5, 2004;
- Kotler, P., Armstrong, G., Saunders, J., Wong, V., "Principiile marketingului" – ediție europeană, 1136 pag., Editura Teora, București, ISBN: 973-601-399-5, 1999.

SUBJECT : ENGLISH 3**NUMBER OF CREDIT POINTS: 2****SEMESTER: I****COURSE TYPE:** complementary**COURSE OBJECTIVES:** Practising the fundamental vocabulary and conversational structural paradigms which are specific to the domain of exact sciences. The tutorial also aims to develop skills necessary to achieve the necessary documentation for employment: covering letter, CV in English, letters of recommendation or a correctly completed application form.**COURSE CONTENT:** The Inventor of the Modern Computer; Derivation; Vacuum Tubes; The Noun; Computer Architecture; The Article and Other Determiners; The Invention of the Internet; The Adjective. The Comparison Degree; Internet Connection; The Cardinal and Ordinal Numeral; Floppy; The Pronoun; E-mail; The Adverb. Comparison Degrees; Browsing the Web; The Preposition; Downloading; The Verb. General Notions; Operating Systems; Present Tenses; Internet Ethics; Past Tenses; Robotics; Future Tenses; Robot Tasks; The Active Voice; The Passive Voice; The History of Robotics; IF Clauses; Domains of Use for Robots; Reported Speech; The Three Laws of Robotics; Word Order; Cybernetics; Artificial Intelligence; Computer Viruses; Letter of Intent; The Symptoms of Internet Addiction; Letter of Application (I); Letter of Application (II); Language register: Formal Style; National Aeronautics and Space Administration; Are You Cut Out To Be An Astronaut?; Man and Machine; A Menace to Humanity.**TEACHING LANGUAGE:** Romanian**EVALUATION:** oral examination**BIBLIOGRAPHY:**

- Munteanu, S.C., Read Science! UTPress, Cluj- Napoca, 2004;
- Munteanu, S.C., Students' English Grammar, UTPress, Cluj- Napoca, 2001;

- Mercea, R., Application File, UTPres, Cluj-Napoca, 2003;
- Thomson, A.J. & Martinet, A.V., A Practical English Grammar, Exercises 1&2, OUP, Oxford, 1995;
- Vizental, Adriana - Strategies of Teaching and Testing English as a Foreign Language, Editura Polirom, 2008

SUBJECT : DIGITAL ELECTRONICS**NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty**COURSE OBJECTIVES:** presenting, analysing and using numeric integrated systems. It offers support in orders to completely and correctly design a numeric system concerning the electric interface, static and transitory regime parameters, the use of high speed circuits and the electromagnetic compatibility of numeric systems.**COURSE CONTENT:** Introductory notions; families of numeric integrated circuits made using bipolar technology; numeric integrated circuits made using unipolar technology ; Interface circuits; bistable basculating circuits; semiconductor memory and programmable logic areas; electromagnetic compatibility in design using numeric integrated circuits; transmission lines and interconnecting high speed numeric integrated circuits.**TEACHING LANGUAGE:** Romanian**EVALUATION:** written examination**BIBLIOGRAPHY:**

- Nicola, S., Circuite Integrate Numerice, partea I , Reprografia Universității din Craiova, 2000;
- Nicola, S., Circuite Integrate Numerice. Aplicații în mecatronică, Ed.Universitaria , Craiova, 2005;
- Wakerly, J. F., Circuite digitale; Principiile și practicile folosite în proiectare, Editura Teora, 2002;
- Rabaey, J.M., Digital Integrated Circuits - A Design Perspective, Prentice Hall, 1996;
- Hodges, D., Jackson, H.G., Analysis and Design of Digital Integrated Circuits, McGraw Hill, 2nd ed., 1988.

SUBJECT : ELECTRICAL MACHINES AND ACTUATORS**NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty**COURSE OBJECTIVES:** The course aims to present theoretical and computational foundations, the main phenomena and operating characteristics of electric machines.**COURSE CONTENT:** Electrical transformers, asynchronous machines, synchronous machines, DC machines.**TEACHING LANGUAGE:** Romanian**EVALUATION:** written examination**BIBLIOGRAPHY:**

- Enache, S., Elemente de execuție electrice, Reprografia Universității din Craiova, 2000;
- Câmpeanu, A., Vlad, I., Mașini electrice. Teorie, încercări și simulări, Editura Universitaria, 2008.

SUBJECT : AUTOMATED SYSTEMS THEORY**NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty**COURSE OBJECTIVES:** acquiring theoretical skills and first practical skills of automatic calculation of linear and nonlinear systems on analytical way and using the appropriate MATLAB software packages.

COURSE CONTENT: Elements of automated non-linear systems; structure of an automatic feedback. Statics of automated systems. The role of amplification and limiting by stability, Roots place. Marking rules and applications, Compensators design. Cascade compensation, Feedback by state, State estimation and dynamic compensation, The basic problem of adjustment and applications, Nonlinear systems and automated systems; Generalities. Nonlinear elements and their description. Automated nonlinear models; Classes of nonlinear systems. Autonomous systems and their significance, Autonomous first order systems. Thermostat; Second order systems. Plan state variables and motion picture quality; Limit cycles and self oscillation, Stability of nonlinear systems, Absolute stability, Absolute stability criterion of VM Popov.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- C. Belea, Automatica neliniară, Editura Tehnică, București, 1983;
- Vi. Răsvan, Teoria stabilității (Cap. 2), Editura științifică și enciclopedică, București, 1987;
- M. Voicu, Introducere în automatică, Editura Polirom, Iași, 2002;
- Vi. Răsvan, Systemes nonlineaires, Printech, București, 2004;
- A.A. Pervozvanski, Curs de Teoria Sistemelor (I. rusă), Nauka, Leningrad, 1986.

SUBJECT : ROBOTICS

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts about the robot as a system (structure, operating systems, sensory systems, elements of movement transmission), kinematic and dynamic modeling, operating space analysis, mobile robots, conventional systems of control.

COURSE CONTENT:Introducing the issues of control systems in robotics; geometric and kinematic models; robots within the operating space; particular problems in operating robots; movement trajectory of the robot; dynamic models; mobile robots; operating systems and sensory systems in robotics; control systems using state variables; transducers.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Dwivedi, N.S., Robotics and Factories of the Future, Proc. Of an International Conf., Charlotte, U.S.A., December 1948, Springer Verlagm 1948;
- Renaud, M., Geometric and Kinematic Modeless of a Robot Manipulator, The 11th I.S.I.R., Tokyo, Japan, October 7-9, 1981;
- x x x, Inteligență artificială și robotică, Ed. Academiei R.S.R., București, 1983;
- Lamineur, P., Cornille, O., Industrial Robots, Pergamin Press, 1984;
- Coiffet, Ph., Modeling and Control, Robot Technology, Hermes Publishing, 1983.

SUBJECT: COMPUTER ARCHITECTURE

NUMBER OF CREDIT POINTS: 5

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: Understanding the way a computer works as a system, beyond programme operating,

peripherals use and the software and hardware technology. Understanding the way data and programmes are encoded and manipulated within a calculus system, and also the main ways of programme execution.

COURSE CONTENT: Data Storage: Storage of bits. Bistable logic gates and circuits, data storage: other storage techniques. Hexadecimal notation, the main memory. Bits. Main memory organization. Byte ordered, encryption used to store information. Representing symbols. Representation of numerical values. Other forms of data representation, Binary numeral system: Assembly in binary. Representing fractions in the binary system. Storing integers: excess notation, notation two's complement Add numbers represented in two's complement. Overcoming higher; storage fractional numbers. Floating point notation. Rounding errors, communication errors: parity bits. Error-correcting codes; Errors in communication: Aspects of practical application, handling data: central processing unit. Register. Interface CPU / Memory. Instructions into machine code; storage programs. Instructions as strings of bits. A typical machine language. Implementation of programs, other architectures. CISC and RISC architectures. Principles of modern computer design, parallel processing: the instruction parallelism, parallel processing: process-level parallelism, arithmetic and logical instructions. Logic operations. Rotation operations and bitwise shift. Arithmetic operations, communication between computers and peripheral devices. Controllers. Communication between the central unit and controllers. Serial and parallel communication; process. CPU organization. Execution of instructions, cache, shift registers. Combiners. Arithmetic logic units; Synchronous mains/highways, Asynchronous mains; Mains arbitration, the mains operations, an example of microarchitecture. Data path. The sequencing by time of the data path. Memory operations; microinstruction. Microinstruction control. The sequencer control. Microinstruction address determination to be made; Example ISA: IJVM. Stacks. The IJVM memory, instructions set IJVM.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- J. Glen Brookshear - Introducere în informatică, Ed. Teora, 1998;
- Andrew S. Tanenbaum - Structured Computer Organization, Prentice Hall, 1999;
- Richard Y. Kain - Advanced Computer Architecture, Prentice Hall, 1996;
- Sajjan G. Shiva - Computer Design and Architecture, Third Edition, 2000;
- William Stallings - Computer Organization and Architecture, Prentice Hall, 2000.

SUBJECT : COGNITIVE PSYCHOLOGY

NUMBER OF CREDIT POINTS: 2

SEMESTER: II

COURSE TYPE: complementary

COURSE OBJECTIVES: Introducing knowledge about cognitive psychology understood as a detailed study of human cognitive system and of its subsystems, of the specific language and methodology, about the cognitive approach of one's personality correlated to one's psychosocial environment. The latter refers to a broader way of rethinking the new concepts and of integrating some already known psychological theories by the students.

COURSE CONTENT: Cognitive sciences and cognitive psychology; human psychic as an informational system; primary and secondary processing of information; attention;

learning and memory neurobiology; language mechanisms; categorization as an operation of integrating information conceptually; human cognitive system architecture; personality and its neuro-physiological bases; the operational structure of behaviour.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- Arseni, G., Golu, M., Dănăilă, L., 1983, Psihoneurologie, București, Ed. Academiei;
- Anderson, J.R., 1983, The Architecture of Cognition, Cambridge, M.A.;
- Botez, M.I., (red). 1986, Neurologie clinică și neurologia comportamentului, București, Editura Medicală;
- Delacour, J., 2001, Introducere în neuroștiințele cognitive, Iași, Ed. Polirom;
- Gazzaniga, M. S., (ed.), 1995, The cognitive neurosciences, Cambridge, MA: MIT Press.

SUBJECT : ENGLISH 4

NUMBER OF CREDIT POINTS: 2

SEMESTER: II

COURSE TYPE: complementary

COURSE OBJECTIVES: Practising the fundamental vocabulary and conversational structural paradigms which are specific to the domain of exact sciences. The tutorial also aims to develop skills necessary to achieve the necessary documentation for employment: covering letter, CV in English, letters of recommendation or a correctly completed application form.

COURSE CONTENT: The Inventor of the Modern Computer; Derivation; Vacuum Tubes; The Noun; Computer Architecture; The Article and Other Determiners; The Invention of the Internet; The Adjective. The Comparison Degree; Internet Connection; The Cardinal and Ordinal Numeral; Floppy; The Pronoun; E-mail; The Adverb. Comparison Degrees; Browsing the Web; The Preposition; Downloading; The Verb. General Notions; Operating Systems; Present Tenses; Internet Ethics; Past Tenses; Robotics; Future Tenses; Robot Tasks; The Active Voice; The Passive Voice; The History of Robotics; IF Clauses; Domains of Use for Robots; Reported Speech; The Three Laws of Robotics; Word Order; Cybernetics; Artificial Intelligence; Computer Viruses; Letter of Intent; The Symptoms of Internet Addiction; Letter of Application (I); Letter of Application (II); Language register: Formal Style; National Aeronautics and Space Administration; Are You Cut Out To Be An Astronaut?; Man and Machine; A Menace to Humanity.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- Munteanu, S.C., Read Science! UTPress, Cluj- Napoca, 2004;
- Munteanu, S.C., Students' English Grammar, UTPress, Cluj- Napoca, 2001;
- Mercea, R., Application File, UTPres, Cluj-Napoca, 2003;
- Thomson, A.J. & Martinet, A.V., A Practical English Grammar, Exercises 1&2, OUP, Oxford, 1995;
- Vizental, Adriana - Strategies of Teaching and Testing English as a Foreign Language, Editura Polirom, 2008.

SUBJECT : INTERNSHIP 1

NUMBER OF CREDIT POINTS: 5

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: supports future automation engineers, developing their programming skills. The course deals with basic concepts used in programming. The practice is to fix the theoretical knowledge and to enable the understanding of phenomena by practical applications.

COURSE CONTENT: The user interface in MATLAB. Applications. Programming in MATLAB. Applications. MATLAB data types. Applications. Mathematics in MATLAB. Applications. (Matrices and linear algebra, polynomials and interpolation, Mathematical Functions, Differential Equations). Graphics in MATLAB. Applications. (Two-dimensional graphics, three-dimensional graphics, examples of graphs in MATLAB). Defining dynamic systems in MATLAB. Applications. (Definition of linear systems, nonlinear systems definition, specializing in systems analysis functions). LabVIEW user interface. Applications. (Virtual instrument, front panel window, window diagram). Programming in MATLAB. Applications. (Data flow oriented programming, creating graphical user interface, creating a chart (LabVIEW software). LabVIEW data types. Applications. (Numerical data, logical data, character data / string; structural panels; Clusters.). Mathematics in LabVIEW. Applications. (Examples of implementation of computer programs). graphics in MATLAB. Applications. (two-dimensional graphics: graphs and charts).

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- Selișteanu, D., Ionete, C., Petre, E., Popescu, D., Șendrescu, D., Ghid de programare în LabVIEW. Aplicații pentru prelucrarea semnalelor, Tipografia Universității din Craiova, 2003.
- Selișteanu, D., Ionete C., Petre E., Popescu D., Șendrescu D., Aplicații LabVIEW pentru achiziția și generarea datelor, Editura SITECH, Craiova, 2004.
- *** LabVIEW User Guide, National Instruments, SUA, 1996.
- *** MATLAB User Guide.
- Cottet, F., Ciobanu, O., Bazele Programării în LabVIEW, MATRIX ROM, București, 1998.

3-RD YEAR

SUBJECT : MODELING AND SIMULATION

NUMBER OF CREDIT POINTS: 5

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course contributes to the development of future automation engineers, computer specialists and technical management processes by providing basic and applied knowledge on the methods and techniques by which processes, installation are modeled (mathematically represented) and then analyzed indirectly (simulated) using computer systems. Conceptelele are discussed and methods for modeling and simulation systems used.

COURSE CONTENT: Systems and processes modeling. General considerations, Physical processes modeling, Physical systems modeling with links graphics method, Systems with two time scales, Sensitivity analysis systems.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- N. Racoveanu, Gh. Dodescu, I. Mincu, Metode numerice pentru ecuatii cu derivate parțiale de tip hiperbolic, Ed. Tehnica, Buc. 1976;

- Nicolae D., Vinătoru M., Cauți I.- Tehnici de modelare și identificare , curs - Reprografia Universității din Craiova, 1981;
- N. Racoveanu, Gh. Dodescu, I. Mincu, Metode numerice pentru ecuații cu derivate parțiale de tip parabolic, Edit. Tehnică, Buc. 1977;
- S. Ungureanu, Sensibilitatea sistemelor dinamice, Ed. Tehnica, Buc. 1988;
- D. S. Naidu, Singular perturbation methology in control systems, Peter Peregrinus, 1988;
- E. Bobasu, I. Cautil, Modelare si simulare. Teorie si aplicatii, curs - Reprografia Universitatii din Craiova, 2000.

SUBJECT : AUTOMATA AND MICROPROGRAMMING

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts concerning programmable automata and microprogramming systems. There are presented modern methods of design and the newest systems used in industrial implementation.

COURSE CONTENT: Automata. Definitions. Variables. Stable and unstable equations. Critical racing, Synchronous automata analysis and synthesis. Huffman method. Girard method, Automata design using cabled logic and flexible logic; Architectures ROMs fixed and variable format, microprogrammed structures. Principles. Automatic microprogrammed architecture, PLC. Scalar and vector microprogrammable automata. Programming languages, Industrial applications of PLCs, programmable logic controllers. Architectures. Design methods. Grafset sites and graphs of states, industrial robots with CLP's.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Givone, D.D., Roesse, R.O., Microprocessors/Microcomputers: An Introduction, Mc Graw-Hill Book Company, 1980;
- Popescu, D., Automate programabile, Ed. Sitech, Craiova;
- Căpățână, O., Hașeagan, M.C., Pușcă, M., Proiectarea cu microprocesoare, Ed. Dacia, Cluj-Napoca, 1983;
- Klingman, B.E., Microprocessor Systems Design, Prentice Hall, 1977;
- Dollhoff, T., 16-Bit Microprocessor Architecture, Reston Publishing Co., 1979.

SUBJECT : MEASUREMENTS AND TRADUCTORS

NUMBER OF CREDIT POINTS: 5

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: Acquiring the basic knowledge about measurement systems (structure, specific electronic blocks, performance), the structure and functioning of electronic measurement and visualisation apparatus, general characteristics, functioning principles and sensors and traductors applications.

COURSE CONTENT: Introduction; electronic circuits specific to measurement systems; electronic apparatus for measurement and visualisation; sensors and traductors; multisensory systems.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Purcaru D., Măsurări electronice, Editura Universitaria, Craiova, 2004;
- Purcaru D.M., Senzori și traductoare. Vol. I, Editura Reprograph, Craiova, 2001;

- Purcaru D., Măsurări și traductoare. Suport electronic pentru curs, tutorial și laborator (electronics.ucv.ro/dpurcaru), 2007;
- Ionescu G., ș.a, Traductoare pentru automatizări industriale. Vol. I și II, Editura Tehnică, București, 1985, 1996;
- Țăulescu M., Instrumentație și tehnici electrice de măsurare, Reprografia Universității din Craiova, 1997.

SUBJECT : MICROPROCESSOR SYSTEMS

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing basic concepts on the issue of the analysis, design and use of microprocessor systems. Is desired skills and practical understanding of the use, design and programming of systems based on microprocessors or microcontrollers. It highlights ways of interfacing with memory devices I / O and interrupt handling.

COURSE CONTENT: Architecture microprocessor control systems, Microprocessors, Interfacing microprocessors, microcontrollers, systems interface with the process.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Singh A., Triebel W., 16-Bit and 32-Bit Microprocessors - Architecture, Software and Interfacing Techniques, Prentice Hall, 1991;
- Valvano J.W., Embedded Microcomputers Systems – Real Time Interfacing, Brooks/Cole Thomson Learning, 2000;
- Yeung B.C. , 8086/8088 Assembly Language, Wiley, 1988;
- Warnock, I.G., Programmable controllers - Operation and Application, Prentice Hall, 1988;
- Houpis C.H., Digital Control Systems, Mc Graw-Hill, 1992.

SUBJECT : OPERATING SYSTEMS AND LANGUAGES IN REAL TIME

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts of real-time issues management processes in the following areas: programming in assembly language for real-time applications, opportunities for achieving and implementing a real-time executive, organizing applications for driving under an executive order for real-time.

COURSE CONTENT: Microprocessor system architecture for industrial processes, Programming languages for applications in real-time; Real time operating systems; Competing tasks interaction; Organizing an executive management for real-time industrial processes, Organizing control applications under the command of a real-time executive.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Yeung B.C., 8086/8088 Assembly Language Programming, John Wiley & Sons, 1988;
- Buhr R.J.A., Baileley D.L., An Introduction to Real-Time Systems, Prentice Hall, 1998;
- Musca Gh., Programare in limbaj de asamblare, Ed. Teora, 1998;
- Munteanu F., Muscă Gh., Programarea calculatoarelor de proces, Reprografia I.P., Bucuresti, 1989;

Lungu V., Procesoare Intel. Programarea in limbaje de asamblare, Ed. Teora, 2000.

SUBJECT : PROJECT SYSTEMS IN REAL TIME

NUMBER OF CREDIT POINTS: 2

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The project aims to deepen the fundamental concepts of real-time systems design, evaluation, testing and implementation of real-time systems in general and real-time applications in particular. The aim of the project during the practical implementation and simulation using software tools of control algorithms in real time.

CONTENT: Specific issues overview regarding the design and implementation of software for real-time applications; Implementation of the algorithms for synchronizing two tasks on an external event using the "mailboxes"; Implementation of algorithms for mutual exclusion of two tasks using the "mailboxes"; Implementation algorithms for communication between tasks using the "mailboxes"; Implementation of algorithms for mutual exclusion tasks using binary semaphores; Implementing algorithms on a external event synchronization using binary semaphores, Implementing algorithms for mutual exclusion tasks using event-type variables, implementation of algorithms to synchronize the external event using event-type variables; Implementation of algorithms for synchronizing tasks on a time condition, Implementation of algorithms for synchronizing tasks using the monitor concept, Implementation in C++ or assembly language primitives a core of real-time; Results presentation.

TEACHING LANGUAGE: Romanian

EVALUATION: project

BIBLIOGRAPHY:

- A. Davidovicu, B. Barbat, Limbaje de programare pentru aplicatii in timp real, Editura Tehnica, Bucuresti, 1986;
- P. Eles, H. Ciocarlie, Programarea concurenta in limbaje de nivel inalt, Ed. Stiintifica, 1991;
- I. Kaufmann, s.a., Programarea in limbajul ADA, Ed. Facla, Timisoara, 1982;
- T. Ionescu, Daniela Saru, J. Floroiu, Sisteme de operare. Principii si functionare, Editura Tehnica, Bucuresti, 1997;
- A. Tanenbaum, Operating Systems. Design and Implementation, Prentice Hall Inc., 1987 (sau o editie ulterioara).

SUBJECT : ACQUISITION SYSTEMS AND PROCESS INTERFACES

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing fundamental concepts relating to: - training knowledge on instruments acquisition, generation, processing and presentation of measurement data - to familiarize students with the process and process computers interfaces.

COURSE CONTENT: Architecture process interfaces, Process functions interfaces. Signal conditioning, Digital-to-analog conversions, and analog to digital, Expansion cards. Highways and ports, Systems acquisition and management.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Asch, G., Acquisition de données du capteur à l'ordinateur, Dunod, Paris, 1999;

Asch, G., Les capteurs en instrumentation industrielle, Dunod, Paris, 1999;

Cottet, F., Ciobanu, O., Bazele Programării în LabVIEW, MATRIX ROM, București, 1998;

Iancu, E., Transmisia Datelor, Ed. Reduta, Craiova, 1998;

Ionete, C., Selișteanu, D., Echipamente de Automatizare și Protecție, Reprografia Universității din Craiova, 2000.

SUBJECT : ADJUSTMENT ENGINEERING

NUMBER OF CREDIT POINTS: 5

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: presenting the fundamental problems of continual and discrete automated adjustment systems. There are presented theoretical and practical methods concerning the analysis, design and implementation of adjustment systems.

COURSE CONTENT: The general structure of a control system; conventional adjustment systems; automated control systems symbolising; typicalised laws of continual linear adjustment; analysis example starting from an automation schema: the adjustment system of a fluid flow; quality indexes and performance imposed on automated adjustment systems; unconventional structures of automated adjustment; automation equipment functions; classification of automation equipment; unified signals with automation equipment; Structures of making an industrial regulator; general aspects on adjustment laws making; making continual linear adjustment laws by means of operational amplifiers; automation problem formulation; the analysis of adjustment systems in stationary regime; the synthesis of continual automated adjustment systems; the synthesis of discrete automated adjustment systems in time; stochastic systems of automated adjustment; adaptive systems of automated adjustment; fuzzy systems.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Marin, C., Structuri și legi de reglare automată, Editura Universitaria Craiova, ISBN: 973-8043-96-8, 2000, Craiova, 2000;
- Marin, C., Sisteme neconvenționale de reglare automată, Editura SITECH Craiova, 2004, ISBN 973-657-793-7, Craiova, 2004;
- Marin, C., Ingineria reglării automate-Elemente de analiză și sinteză, Editura SITECH Craiova, 2004, ISBN 973-657-765-1, Craiova, 2004;
- Marin, C., Petre, E., Popescu, D., C. Ionete, D. Selișteanu, Sisteme de reglare automată, Lucrări practice II, ISBN:973-9346-09-4, Editura SITECH Craiova, 1998, Craiova, 1998;
- Marin, C., Petre, E., Popescu, D., Ionete, C., Selișteanu, D., Sisteme de reglare automată, Lucrări practice I, ISBN: 973-9346-09-4, Editura SITECH Craiova, 1997, Craiova, 1997.

SUBJECT : DATA TRANSMISSION

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: preparing the future engineers by ensuring their knowledge about information transmission theory, and the design and realization of data transmission systems.

COURSE CONTENT: Introduction to information transmission; communication channels; signals used in data transmission; data transmission using a sinusoidal carrier; numeric data transmission; error control in data transmission; data compression; data transmission systems in process control.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Held G., Data Compression. Techniques and Applications. Hardware and software, Ed. John Wiley&Sons 1985;
Held G., Comunicații de date, Editura Teora, București, 1998;
Iancu E., Teoria transmisiei datelor, Editura Universitaria, Craiova, 2004;
Iancu E., Transmisii de date , îndrumar de laborator 1995, Reprografia Universității din Craiova;
Proakis J., Communication Systems Engineering, Prentice Hall International Editions, 1994.

SUBJECT : DIGITAL SIGNAL PROCESSING

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts of digital signal processing problems. It hopes to create skills for the design and analysis of digital filters properties, how to implement digital filters and signal spectral estimation. It details the problems of truncation and finite word length.

COURSE CONTENT: Problems of signal processing, digital filters, discrete systems and Z transformation, design digital filters, spectral estimation signal, digital signal processors.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Oppenheim A.V., Shafer R.W., Buck J.R., Discrete-Time Signal Processing (Second Edition), Prentice-Hall, 1999;
Lathi B.P., Signal Processing and Linear Systems, Berkeley Cambridge Press, 1998;
Haddad, R.A., Parsons T.W., Digital Signal Processing – Theory, Applications and Hardware, Computer Science Press, 1991;
Marin, C., Sisteme discrete in timp, Ed. Universitaria, Craiova, 2005;
Marin C., Popescu D., Teoria sistemelor si reglare automata, Ed. Sitech, Craiova, 2007.

SUBJECT : INDUSTRIAL SOFTWARE

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic notions of real-time management of industrial processes, and getting the students acquainted with the main specialised languages for industrial applications MATLAB/Simulink/RTW and LabVIEW and also the microcontroller embedded software.

COURSE CONTENT: Notions of continuous systems discretisation; simulating hybrid systems by using Simulink; Fourier analysis in real time; signal analysis in real time; applications to audio signals; developing applications in real time; creating executives directly from MATLAB; Real Time Workshop (RTW). General presentation; implementing Quanser real time experiments; implementing simple embedded applications in KEIL development system.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Ionete, C., Selișteanu, D., Echipamente de Automatizare și Protecție, Reprografia Universității din Craiova, 2000;
Marin, C., Popescu, D., Petre, E., Selișteanu, D., Ionete, C., Sisteme de Reglare Automată. Lucrări Practice I, Ed. Sitech, Craiova, 1997;
Nachtigal, Chester L. (ed.), Instrumentation and Control. Fundamentals and Applications, John Wiley & Sons, Inc., New York, 1990;
Selișteanu, D., Ionete, C., Petre, E., Popescu, D., Șendrescu, D., Ghid de programare în LabVIEW. Aplicații pentru prelucrarea semnalelor, Tipografia Univ. din Craiova, 2003;
Selișteanu, D., Ionete, C., Petre, E., Popescu, D., Șendrescu, D., Aplicații LabVIEW pentru achiziția și generarea datelor, Ed. Sitech, Craiova, 2004.

SUBJECT : PROJECT MANAGEMENT

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: getting the students familiar with the aspects linked to the management and control of project-organised activities.

COURSE CONTENT: Introduction; the project life cycle; the project proposal; organisational alternatives in project management; the working environment of the project manager; his/ her role and responsibilities; project proposals analysis; conflict management; project team gathering; planning diagram network; software for project management.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

Maican C., Vinatoru M., Canureci G. "Managementul Proiectelor-Îndrumar de laborator", EUC, 2006;
Carl S. Chatfield, PMP, Tim D. Johnson, MCP, "Microsoft Project 2000";
Jack R. Meredith, Samuel J. Mantel. "Project Management : A Managerial Approach", 5th ed., Wiley, 2002;
Johnson, James. "The Chaos Report." West Yarmouth, MA: The Standish Group, 2000;
Kan, Stephen H. "Metrics and Models in Software Quality Engineering" . 2nd ed. Boston, MA: Addison-Wesley Professional, 2002.

SUBJECT : INTERNSHIP 2

NUMBER OF CREDIT POINTS: 5

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: specialising the future engineers in automatics, improving their technological knowledge. Internship is necessary to understand theoretical knowledge and to apply it.

COURSE CONTENT: The study of technological processes in food industry, energy industry, automotive industry, construction industry, etc. (Ford, Elpreco, Termo Ișalnița, Termo Rovinari, Termo Turceni, Fabrica de bere Craiova, Regia Autonomă Apele Române); Software and hardware systems use din automobile industry – real-time embedded control systems (Ford, Dacia-Renault Pitești, Hella, Continental Sibiu, Siemens etc); industrial processes management (Dacia-Renault, Elpreco, Ford); automated adjustment systems for temperature, pressure, flow capacity, etc (Termo Ișalnița, Termo Rovinari, Termo Turceni); flexible

manufacturing lines; construction and operating (Ford, Elpreco, Fabrica de bere Craiova); programmable automata. Programming, operating, industrial implementation (Fabrica de bere Craiova, Elpreco, Ford, Siemens, Continental Sibiu); Industrial robots: operating, programming, maintenance (Ford, Dacia-Renault); distributed systems of industrial processes control (Termo Işalniţa, Termo Rovinari, Termo Turceni, Ford); graphic interfaces, virtual instrumentation and acquisition systems use in process control (Procontrol, Labview etc). (Termo Işalniţa, Termo Rovinari, Termo Turceni, Dacia-Renault); networks of industrial computers (Ford, Dacia-Renault, Termo Işalniţa, Termo Rovinari, Termo Turceni etc.).

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

- Ionete, C., Selişteanu, D., Echipamente de Automatizare și Protecție, Reprografia Universității din Craiova, 2000;
- Jurca, T., Stoiciu, D., Instrumentație de măsurare. Structuri și circuite, Ed. de Vest, Timișoara, 1996;
- McGhee, J., Kulesza, W., Henderson, I.A., Korczynski, M.J., Measurement Data Handling Theoretical Technique, Technical University of Lodz, ACGM. Lodart, Lodz, Polonia, 2001.
- Selişteanu, D., Ionete C., Petre E., Popescu D., Şendrescu D., Aplicații LabVIEW pentru achiziția și generarea datelor, Editura SITECH, Craiova, 2004;
- Selişteanu, D., Ionete, C., Petre, E., Popescu, D., Şendrescu, D., Ghid de programare în LabVIEW. Aplicații pentru prelucrarea semnalelor, Tipografia Universității din Craiova, 2003.

SUBJECT : DIGITAL CONTROL SYSTEMS

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course deals with the fundamental problems of numerical control mainframe systems and numerical control algorithms. Among the specific goals of the course include: control systems theory concepts and discrete sampling, integrating theory of discrete systems and sampling by practical aspects of implementation; deepening design methods leading to numerical algorithms for structured systems: the conventional sampling, stochastic, fuzzy, using programs computer aided analysis and synthesis of discrete control systems, analysis by simulation or by experimental for performance control for various numerical algorithms.

COURSE CONTENT: Representation of numerical automatic control systems; Automatic numerical control systems structure, Calculators structure process. Process Interfaces: A-N and N-A conversion; Methods of implementing numerical algorithms, Mathematical description of systems and discrete-time signals. The process of sampling, Simple and modified z transformation, Sampling systems. Response to signals sampled systems. Discretization of continuous systems
Time domain analysis of discrete systems; Numerical control algorithms, Time domain and complex design, "Deadbeat" algorithm; State space design methods. Discrete linear quadratic regulator. Implementation of numerical algorithms. Control software, Implementation of adaptive and extreme systems; Fuzzy systems. Fuzzy controllers, Stochastic systems. Numerical control algorithms design for systems with stochastic input processes, State estimation for discrete systems, Discrete Kalman filter.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Marin, C., Sisteme neconvenționale de reglare automată, Editura SITECH Craiova, 2004, ISBN 973-657-793-7, Craiova, 2004;
- Marin C., Analiza în domeniul timp a sistemelor discrete, Editura SITECH Craiova, 2004, ISBN 973-657-794-5, Craiova, 2004;
- Marin C., Algoritmi de conducere a roboților mobili în medii incerte, Editura SITECH Craiova, 2005, ISBN 973-746-096-0;
- Marin C., Sisteme numerice cu durată finită a regimului tranzitoriu, Editura SITECH Craiova, 2005, ISBN 973-657-899-2;
- Marin, C., Sisteme discrete în timp, Editura Universitaria Craiova, ISBN 973-8043-61-1, Craiova, 2005.

SUBJECT : SYSTEMS IDENTIFICATION

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course contributes to the development of future automation engineers, computer specialists and technical management processes, ensuring their knowledge of systems identification. They deal with basic concepts and methods used in identification systems.

COURSE CONTENT: Systems identification. General, Modeling random perturbations, Input signals, Experimental determination of weighting function and indices, Changes of representation; sistemelor. Parameter estimation of dynamic system models. Robots modeling.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Eykhoff P. - Identificarea sistemelor. Estimarea parametrilor și stărilor pentru sisteme tehnice, economice, biologice, Ed. Tehnică, Buc. 1977;

Penescu C., sa ., Identificarea experimentală a proceselor automatizate, Ed. Tehnică, Buc. 1971;

Tertișco M., Stoica P. Identificarea și estimarea parametrilor sistemelor, Ed. Academiei, Buc. 1980;

Nicolae D., Vînătoru M., Cauți I.- Tehnici de modelare și identificare, curs - Reprografia Universității din Craiova, 1981;

Proștean O., Mureșan I.- Tehnici de identificare și modelare, curs - Inst. Polit. Traian Vuia, Timișoara 1985.

SUBJECT : MANAGEMENT OF INDUSTRIAL PROCESSES

NUMBER OF CREDIT POINTS: 6

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course aims to familiarize students with the systematic analysis of industrial plants and processing for industrial processes with continuous operation in time, strengthening knowledge of industrial process control problems, computer programs for control of industrial processes, analysis of equipment and methods for chemical processes leading to thermal power and hydropower, the interpretation of specific practical performance continuous processes in terms of theoretical requirements.

COURSE CONTENT: Continuous industrial processes features, Systems and equipment management; Automatic adjustment of key parameters process, Automatic adjustment of processes and operations in the chemical industry, Energy automation, Power plants automation, Hydroelectric automation; Automation in nuclear power plants.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Vînătoru M., Conducerea automată a proceselor industriale, vol I, Ed. Universitaria, Craiova 2001;

Vînătoru M., Conducerea automată a proceselor industriale, vol II, Ed. Universitaria, Craiova 2007;

Houpis, C. H., Lamont, G. B., Digital control systems -Theory, Hardware, Software, Mc. Graw- Hill, 1992;

Vînătoru M., Teoria sistemelor, Reprografia Universității din Craiova, 1993;

Sângeorzan D., Echipamente de reglare numerică , Ed. militară , București , 1990.

SUBJECT : PROJECT ADJUSTMENT ENGINEERING

NUMBER OF CREDIT POINTS: 2

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: practical implementation of laboratory experimental facilities of control algorithms and techniques for designing automatic control systems based on knowledge gained from a range of disciplines from previous semesters. It also aims to develop students' skills in solving technological problems that may occur in practice in industry.

COURSE CONTENT: Mathematical modeling of laboratory equipment; Setting and achieving data acquisition system,

System parameters identification, design of the PID control laws using practical methods of grant: Ziegler-Nichols, Hokushin, numerical algorithms control design using the working environment MATLAB/SIMULINK, control system performance analysis using graphical tools in MATLAB/SIMULINK.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Călin S., Regulatele automate, Ed. Didactică și Pedagogică, București, 1976;

Kuo B.C., Automatic control systems, Prentice Hall, 1991;

Marin C., Petre E., Popescu D., Selisteanu D., Ionete C., Sisteme de reglare automată. Lucrări practice., Ed. SITECH, Craiova, 1997;

Marin C., Ingineria reglării automate. Elemente de analiză și sinteză, Ed. Sitech, Craiova, 2004;

Marin C., Regulatele automate, Îndrumar de proiectare, Reprografia universității din Craiova, 1983.

PACKAGE A

SUBJECT : HUMAN-MACHINE INTERFACES

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: The course aims at clarifying concepts on the usefulness and adaptability of software user requirements. The project required this course is designed to train students to use the instrument of open programming, while exploring user requirements.

COURSE CONTENT: The utility and adaptability of software products to the user's requirements; User oriented design; User interfaces; Software architectures. User imposed particularities; Output models; Conceptual models; Input models; Design principles; Prototypical frame; Constraints and layers; Graphic design; User-type prototyping at calculus system level; Instruments; Heuristic evaluation; Product testing by the user; The design of product experimenting and checking systems; Experiment analysis; Research: Predictive evolution. Visual information. Touch type user interfaces. Enlarging capacity interfaces and transparent interfaces

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Norman, D. A. The Design of Everyday Things. New York, NY: Doubleday, 1990. ISBN: 0385267746;

Nielsen, J. Usability Engineering. Burlington, MA: Academic Press, 1994. ISBN: 0125184069;

Mullet, K., and D. Sano. Designing Visual Interfaces: Communication oriented techniques. Upper Saddle River, NJ: Prentice Hall, 1994. ISBN: 0133033899;

Baecker, R. M., et al. Readings in Human-Computer Interaction: Toward the Year 2000. San Francisco, CA: Morgan Kaufmann, 1995. ISBN: 1558602461;

Shneiderman, B. Designing the User Interface: Strategies for Effective Human-Computer Interaction. 4th ed. Reading, MA: Addison-Wesley, 2004. ISBN: 0321197860.

SUBJECT : EMBEDDED SYSTEMS

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing fundamental concepts on the principles of integrated systems; systems with limited

computing and communication resources - to familiarize students with real-time industrial systems, distributed control network-based microcontrollers.

COURSE CONTENT: Embedded systems architecture; Overall architecture microcontroller, Real-time operating systems for embedded systems, Interfacing embedded systems with external processes, Communication with the outside.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Iancu, E., Transmisia Datelor, Ed. Reduta, Craiova, 1998;
Ionete, C., Selișteanu, D., Echipamente de Automatizare și Protecție, Reprografia Universității din Craiova, 2000;
Marin, C., Popescu, D., Petre, E., Selișteanu, D., Ionete, C., Sisteme de Reglare Automată. Lucrări Practice I, Ed. Sitech, Craiova, 1997;
Selișteanu, D., Ionete, C., Petre, E., Popescu, D., Șendrescu, D., Ghid de programare în LabVIEW. Aplicații pentru prelucrarea semnalelor, Tipografia Univ. din Craiova, 2003;
Selișteanu, D., Ionete, C., Petre, E., Popescu, D., Șendrescu, D., Aplicații LabVIEW pentru achiziția și generarea datelor, Ed. Sitech, Craiova, 2004.

SUBJECT : ARTIFICIAL INTELLIGENCE

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts in the field of artificial intelligence, knowledge representation and use. The students are trained to use the programming languages which are most frequently used in artificial intelligence domain: LISP and PROLOG.

COURSE CONTENT: Define artificial intelligence, Problem solving methods, Knowledge representation and reasoning modeling, Mapping, generation of action plans, Expert systems, Introduction to PROLOG.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Limbajul Prolog: noțiuni introductive, comenzi, fapte, relații, consultare / interogare, tipuri de răspuns, reguli, predicate, cuantificatori, forma clauzală, clauze Horn;
Limbajul Prolog: motorul de inferență, demonstrația teoremelor, urmărirea execuției programului pas cu pas;
Limbajul Prolog: prelucrarea listelor, generarea permutărilor, derivarea simbolică a funcțiilor, baze de date - creare, consultare, modificare, adăugare, aplicații;
Limbajul Prolog: accesarea clauzelor unui program în timpul execuției, modificarea / ștergerea clauzelor unui program în timpul execuției;
Limbajul Prolog: analiza sintactică, realizarea programelor interactive.

PACKAGE B

SUBJECT: HYDRAULIC AND PNEUMATIC SYSTEMS

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: contribute to future automation engineers development, computer specialists and technical management processes, ensuring their knowledge of management processes. Are given basic knowledge of the

hydraulic and pneumatic automation equipment and management techniques fluidic systems.

COURSE CONTENT: General. Fluid properties, Basic laws of fluid. Fluid flow, Control elements of hydraulic and electro-hydraulic systems composition, Hydraulic actuators, Pneumatic automation elements.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

S. Scavarda, Les asservissements électropneumatiques de position, Hermes - Paris, 1989;
J. Faisandier, Mecanismes oleo - hidrauliques, Dunod - Paris, 1987;
J. Prokes, Hydraulic Mecanisms in automation, Praque, 1974;
E. Bobașu, Ehipamente fluidice pentru sisteme automate, curs, Reprografia universității din Craiova, 1997;
E. Bobașu, Conducerea sistemelor electrohidraulice, Ed. Avrămeanca, Craiova, 1997.

SUBJECT: PROGRAMMABLE AUTOMATA

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts concerning programmable automata programming and management issues with automata programming processes.

COURSE CONTENT: Introduction to control systems; Programmable automata structures; Principles in creating PA system/ process control programmes; PA special functions; PA manipulators and robots control; Interfacing PA with the controlled process; PA interconnecting; Choosing, installing and operating a PA.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Popescu Dorin, Automate Programabile, Ed. Sitech, Craiova, 2001;
Borangiu Th., Dobrescu R., Automate Programabile, Ed. Academiei, 1986;
Ivănescu M., Roboți industriali, Ed. Universitaria, 1994;
Webb J.W., Reis A., Programmable Logic Controllers – Principles and Applications, Prentice Hall, 1999;
Popescu Dorin, s.a., Automate Programabile, Reprografia Universității din Craiova, 1996.

SUBJECT: COMPUTER AIDED DESIGN OF CONTROL SYSTEMS

NUMBER OF CREDIT POINTS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: contribute to future automation engineer development, ensuring their knowledge of computer-aided design of control systems. The basic concept is the use of specialized software packages for analysis and synthesis of systems, procedures and design standards process management systems.

COURSE CONTENT: Software packages used in computer-aided design of control systems, Creating and manipulating models of dynamic systems, Methods of computer aided design of control systems, Problems of implementation of numerical algorithms management, Computer aided control systems - Case studies.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- Åström, K.J., Wittenmark, B., Computer-Controlled Systems: Theory and Design, Prentice-Hall, 1990;
- Ionete, C., Selișteanu D., Petrișor A., Proiectarea sistemică asistată de calculator în MATLAB, Reprografia Universității din Craiova, 1995;
- Leonard, N.E., Levine, W.S., Using MATLAB to analyze and design Control Systems, Addison-Wesley Publ., SUA, 1995;
- Marchand, P., Graphics and GUIs with MATLAB, CRC Press, SUA, 1999;
- Marin, C., Popescu, D., Petre, E., Ionete, C., Selișteanu, D., Sisteme de Reglare Automată. Lucrări Practice II, Ed. Sitech, Craiova, 1998.

SUBJECT : OPTIMIZATION**NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty

COURSE OBJECTIVES: introducing basic concepts on systems formulation optimization problems, the general conditions necessary for optimality, and methods of synthesis of optimal controls for both discrete systems and continuous systems. It also presented a stationary optimization problem in mathematical programming.

COURSE CONTENT: Optimization problems, Methods for unconstrained optimization, Optimization methods stationary linear restrictions; Methods stationary optimization problem with linear constraints, Linear automatic optimization of dynamic systems, Optimal management of discrete nonlinear systems, Optimal management of continuous nonlinear systems.

TEACHING LANGUAGE: Romanian**EVALUATION:** written examination**BIBLIOGRAPHY:**

- Ionescu, Vl., C. Popeea, Optimizarea sistemelor, E.D.P., Bucuresti, 1981;
- Calin, S., Belea, C., Sisteme automate adaptive și optimale, E.T. Bucuresti, 1971;
- Calin, S., Tertisco, M., s.a., Optimizari în automatizări industriale, E.T., Bucuresti, 1979;
- Bellman, R., Dynamic Programming, Univ. Press Princeton, 1957;
- Polak, E., Computational Methods in Optimization, Academic Press N.Y. and London 1971.

SUBJECT : GRADUATION PAPER ELABORATION**NUMBER OF CREDIT POINTS: 10****SEMESTER: II****COURSE TYPE:** specialty**COURSE OBJECTIVES:** as the case may be**COURSE CONTENT:** as the case may be**TEACHING LANGUAGE:** Romanian**EVALUATION:** oral examination**BIBLIOGRAPHY:** as the case may be**PACKAGE A****SUBJECT: DISTRIBUTED SYSTEMS MANAGEMENT****NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty

COURSE OBJECTIVES: familiarize students with the requirements for distributed industrial process control, knowledge of computer programming structures and process, methods of control, optimization and management

for industrial processes, architecture and management structure for distributed SCADA systems, SCADA systems for proper applications of thermal and hydroelectric power plants distribution and transportation of energy.

COURSE CONTENT: Parallel processing in distributed systems, organization and distributed computing to parallel computing, parallel processing in automated systems, SCADA equipment selection, iPower SCADA system for power distribution, communications in distributed systems, distributed management systems in power plants, hydroelectric SCADA Systems , SCADA systems in nuclear power plants.

TEACHING LANGUAGE: Romanian**EVALUATION:** written examination**BIBLIOGRAPHY:**

- Vînătoru M., Conducerea automată a proceselor industriale, vol I, Ed. Universitaria, Craiova 2001;
- Vînătoru M., Conducerea automată a proceselor industriale, vol II, Ed. Universitaria, Craiova 2007;
- Houpis, C. H., Lamont, G. B., Digital control systems -Theory, Hardware, Software, Mc. Graw- Hill, 1992;
- Sângeorzan D., Echipamente de reglare numerică , Ed. militară , București , 1990;
- Călin S., ș.a., Optimizări în automatizări industriale , Editura tehnică , București 1979.

SUBJECT: INFORMATION PROTECTION TECHNOLOGIES**NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty

COURSE OBJECTIVES: introducing fundamental concepts relating to: general issues knowledge protection and data security concepts and arithmetic-logic models used in cryptographic techniques, secret key cryptography, public key cryptography, hash functions used in cryptography, digital signatures, authentication protocols.

COURSE CONTENT: General notions, Concepts and arithmetic-logic models used cryptographic techniques, Secret key cryptography. Detailing symmetric cryptography techniques, Public key cryptography, Hash functions used in cryptography, Digital signature; Authentication protocols, Security in TCP / IP, Application-level protocols and applications improve, Viruses, Conclusions.

TEACHING LANGUAGE: Romanian**EVALUATION:** oral examination**BIBLIOGRAPHY:**

- W Stallings, Cryptography and Network Security, second ed., Prentice-Hall, 1999;
- Cormen T. Leiserson C. Rivest R introducere în algoritmi. Computer press Agora, 1999;
- Jursic A. Menezes A. Elliptic curves and Cryptography <http://www.certicom.com/research/weccrypt.html> WhitePaper;
- Patriciu V.V. Criptografie și securitatea rețelelor de calculatoare. Ed. Tehnică, 1994;
- *** Resurse Web plecând de la <http://WilliamStallings.com/Security2e.html>.

SUBJECT: HYBRID SYSTEMS**NUMBER OF CREDIT POINTS: 4****SEMESTER: II****COURSE TYPE:** specialty

COURSE OBJECTIVES: introducing the most important concepts in the theory of hybrid systems with a focus on modeling, analysis and control design. An understanding of

the interaction between continuous and discrete dynamics is crucial.

COURSE CONTENT: Dynamic systems, Hybrid automatic and executions, Executions existence, Stability of hybrid systems, Simulation of hybrid systems, Hybrid systems design.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Lygeros, J., Sastry, S., Tomlin, C., The Art of Hybrid Systems, 2001;

Lygeros, J., Lecture Notes on Hybrid Systems, ENSIETA, 2004;

Tomlin, C. J., Hybrid Systems: Modeling, Analysis, and Control, Stanford University, 2005;

Antsaklis, P. J., Koutsoukos, X. D., Hybrid Systems Control Lecture Notes for the course), Notre Dame, 2002;

Johansson, L. H., Lecture Notes on Hybrid Systems, Berkeley University, 2002.

SUBJECT : JAVA APLICATIONS

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES The course aims to introduce the fundamentals of object-oriented programming using Java.

COURSE CONTENT: Introduction to Java, Java syntax, Objects in Java, Relationships between Java classes; Threads in Java; Text processing in Java, Tools I/O in Java, Programming network services; Servlet and Web Programming; Swing programmer interface, Using Swing components; JavaBeans concept, Java Applet concept; Using XML in the context of Java.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

J. Knudsen, P. Nielsen, "Learning Java", O'Reilly, second edition, 2002, ISBN : 0-596-00285-8;

I. Darwin, "Java Cookbook", O'Reilly, second edition, 2004, ISBN: 0-596-00701-9;

D. Flanagan, "Java in a Nutshell", O'Reilly, fourth edition, 2002, ISBN: 0-596-00283-1.

PACKAGE B

SUBJECT : COMPUTER NETWORKS

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES The course helps to train future engineers, providing them with knowledge of computer networks. They deal with basic concepts used in the design and building of the networks.

COURSE CONTENT: Computer architecture. General. Local area networks (LAN) Network transmission in local networks; Interconnection of local networks; Access methods to the physical environment; Ethernet network, Addressing and routing algorithms for network, Internet and Intranet networks.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Held G., Data Compression. Techniques and Applications. Hardware and software, Ed. John Wiley&Sons 1985;

Held G., Comunicații de date, Editura Teora, București, 1998;

Iancu E., Teoria transmisiei datelor, Editura Universitaria, Craiova, 2004;

Iancu E., Transmisii de date , îndrumar de laborator 1995, Reprograma Universității din Craiova;

Odom Wendell, Primii pasi in retele de calculatoare, Ed. Corint, Bucuresti 2004.

SUBJECT : DIAGNOSIS AND DECISION TECHNIQUES

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES The course focuses mainly on knowledge representation and uncertainty reasoning to modeling decision and diagnosis process. Contribute to future engineers development, providing them knowledge in the detection and localization of defects (DLD). They deal with basic concepts used in the design and implementation DLD filters.

COURSE CONTENT: Defects detection in automated systems, Analytical methods to detect and locate defects, Introduction to decision issue, Decision modeling techniques under uncertainty conditions; Descriptive techniques modeling uncertain reasoning.

TEACHING LANGUAGE: Romanian

EVALUATION: oral examination

BIBLIOGRAPHY:

Drăgan, V., A. Halanay (1994) Stabilizarea sistemelor liniare, Editura ALL, București;

Frank, P. M. (1990) Fault Diagnosis in Dynamic System Using Analytical and Knowledge Based Redundancy - A survey and some new results, Automatica, vol.26, no.3, pag.459 - 474;

Iancu, E., M. Vinatoru (1999) - Detectia și localizarea defectelor în sistemele dinamice, Editura Sitech Craiova;

Iancu, E., M. Vinatoru (2003) Metode analitice pentru detectia și localizarea defectelor. Studii de caz, Editura Universitaria, Craiova, 2003, I.S.B.N. 973-8043-407-6;

Ionescu, V., A. Varga (1994) Teoria sistemelor. Sinteza robustă. Metode numerice de calcul, Editura ALL, București.

SUBJECT : VIRTUAL INSTRUMENTATION

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: contribute to future automation engineer development, ensuring their knowledge of virtual instrumentation. The basic concept is the design of virtual instruments for analysis and synthesis of signals, signal filtering, management processes.

COURSE CONTENT: Analysis and synthesis of periodic signals in time, Periodic signals synthesis, Signal analysis, Meshing continuous systems, The frequency response of discretized systems, Digital filters. Finite impulse response filters - FIR; Digital filters. Infinite impulse response filters - IIR, Making and implementing standardized control laws in LabVIEW, Development and implementation of common fixed parts in LabVIEW; Implementing a virtual SRA using acquisition board AT-MIO-16H9 National Instruments.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

Iancu, E., Teoria transmisiei datelor, Ed. Universitaria, Craiova, 2004;

- Marin, C., Popescu, D., Petre, E., Selișteanu, D., Ionete, C.,
Sisteme de Reglare Automată. Lucrări Practice I,
Ed. Sitech, Craiova, 1997;
- Marin C., Ingineria reglării automate. Elemente de analiză și
sinteză, Ed. SITECH, Craiova, 2004;
- Oppenheim, A.V., Schafer, R.W., Discrete-Time Signal
Processing, Second Edition, Prentice Hall
International, 1999;
- Selișteanu, D., Ionete, C., Petre, E., Popescu, D.,
Șendrescu, D., Ghid de programare în LabVIEW.
Aplicații pentru prelucrarea semnalelor, Tipografia
Univ. din Craiova, 2003.

SUBJECT : WEB TECHNOLOGIES

NUMBER OF CREDIT POINTS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES introducing fundamental notions of
web programming using various technologies (HTML,
JavaScript, PHP, Perl).

COURSE CONTENT: Introduction to Web programming,
HTML language, Introduction to CSS templates, PHP
language, Using XML in the context of Web, Perl language,
Javascript language, XML language, Dynamic web and
sending data to a web server.

TEACHING LANGUAGE: Romanian

EVALUATION: written examination

BIBLIOGRAPHY:

- E. Hall, "Internet Core Protocols: The Definitive Guide",
O'Reilly, 2000, ISBN : 1-56592-572-6;
- D. Flanagan, "JavaScript: The Definitive Guide", O'Reilly, 4th
edition, 2004, ISBN: 0-596-00048-0;
- B. Kennedy, C. Musciano, "HTML & XHTML: The Definitive
Guide", O'Reilly, 5th edition, 2002, ISBN: 0-596-
00382-X;
- R. Schwartz, T. Phoenix, B De Foy, "Learning Perl", O'Reilly,
5th edition, 2008, ISBN: 0-596-52010-7;
- P. Hudson, "PHP in a nutshell", O'Reilly, 2005, ISBN: 0-596-
10067-1.

SUBJECT : GRADUATION EXAM

NUMBER OF CREDIT POINTS: 10

SEMESTER: II

COURSE TYPE: specialty

EVALUATION: written exam