

UNIVERSITY OF CRAIOVA
DEPARTMENTUL: AUTOMATION, ELECTRONICS AND
MECHATRONICS
SPECIALIZATION: ROBOTICS

1-ST YEAR

1. Mathematical analysis
2. Linear algebra, analytic and differential geometry
3. Physics
4. Materials chemistry
5. Computer programming and programming languages
6. Culture and civilization
7. English
8. Numerical calculus and mathematical statistics
9. Special mathematics
10. Bases of electrotechnics
11. Operating systems
12. Mechanics
13. Computer-aided graphics

2-ND YEAR

1. Linear electronic circuits
2. Numeric devices analysis and synthesis
3. Systems theory
4. Data bases
5. Object-oriented programming
6. Marketing
7. English 3
8. Digital electronics
9. JAVA applications
10. The basics of mechatronic systems
11. The basics of robotics
12. Computer architecture
13. Cognitive psychology
14. English 4
15. Internship 1

3-RD YEAR

1. Operating mechanisms and microsystems
2. Automata and microprogramming
3. Intelligent materials and structures
4. Robot control systems
5. Measurements and transducers
6. Microcontrollers and microprocessors
7. Fluids mechanics
8. Mechatronics
9. Applications of robotic systems
10. Adjustment engineering
11. Data transmission
12. Computer-aided design
13. Industrial software
14. Project management
15. Internship *2

4-TH YEAR

1. Integrated systems
 2. Programmable automata
 3. Mechatronic systems dynamics
 4. Artificial intelligence
- Pachetul A
5. Image processing and recognition
 6. Information protection technology
 7. Flexible manufacturing systems
 8. Acquisition systems and interfaces
 9. Mobile robots and microrobots
 10. Mechatronic systems testing and reliability
 11. Graduation project elaboration
- Pachetul A
12. Robot structures modeling and identification
 13. Numeric control
 14. Programming languages for robots
 15. **Virtual manufacturing**
 16. **Man-machine intelligent systems**

1-ST YEAR

SUBJECT NAME: MATHEMATICAL ANALYSIS

NUMBER OF CREDITS: 6

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing the basic notions of differential and integral calculus.

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 exam

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 NAME: LINEAR ALGEBRA, ANALYTIC AND DIFFERENTIAL GEOMETRY

NUMBER OF CREDITS: 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.

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 exam

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 inginerești, 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, 2001;

Murărescu, Gh., Curs de algebră liniară și geometrie

analitică, Repr. Univ. Craiova, 1991;

Vraciu, G., Elemente de algebră liniară cu aplicații, Ed. Radical, Craiova, 2000;

Belage, A. et autres, Exercices resolués d'algebre lineaire, Masson, Paris, 1983;

Berger, M., Geometry I, II, Springer Verlag, Berlin-Heidelberg, 1987;

Silov, G.E., Mathematical analysis. Finite dimensional spaces, Ed. St. Encicl., București, 1983 ;

Brânzănescu, V., Stănășilă, O., Matematici Speciale, Ed. ALL, București 1994.

SUBJECT NAME: PHYSICS

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: introducing the basic notions in physics; elements of analytic mechanics, thermodynamics, optics and quantum physics.

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 exam

BIBLIOGRAPHY:

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

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

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

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

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

M. Negrea, I. Petrisor, Culegere de probleme de mecanica mediilor deformabile, Reprografia universitatii, 2005.

SUBJECT NAME: MATERIALS CHEMISTRY

NUMBER OF CREDITS: 3

SEMESTER: II

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 exam

BIBLIOGRAPHY:

Negoiu D. – Tratat de chimie anorganică, Ed. Did. și Ped., București, 1998;

Nenișescu C.D. – Chimie generală, Ed. Did. și Ped., București, 1984;

Murgulescu I.G. – Introducere în chimia fizică, Ed. Academiei Române, București, 1976;

Pauling L. – The nature of the chemical bond, J. Chem. Ed., 1991;

Roșu T., Negoiu M. – Bazele chimiei anorganice, Ed. ars Doceni, București, 1999;

Lippard S.J. – Principles of bioinorganic chemistry. University Science Books, 1994;
Atkins P.W., Beran J.A. – General chemistry (2nd edn.), Freeman & Co, New York, 1992;
Marcu Gh. – Chimia compușilor coordinați, Ed. Academiei Române, București, 1984;
Brezeanu M & colab. – Chimia metalelor, Editura Academiei Române, București, 1990;
Spinu C. – Chimie bioanorganică, Editura Universitaria, Craiova, 2003.

SUBJECT NAME: COMPUTER PROGRAMMING AND PROGRAMMING LANGUAGES

NUMBER OF CREDITS: 6

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 programming 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 exam

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;
Marian Gh., Bădică C., Pădeanu L., Limbajul PASCAL, Indrumar de laborator, Reprografia Universității din Craiova, 1993;
Negrescu L., Introducere în limbajul C, Editura Microinformatica, Cluj Napoca, 1993;
Petrovici V., Goicea F., Programarea în limbajul C, Editura Tehnică, București, 1993;
Marian Gh., Mușatescu C., Lașcu M., Iordache Șt., Limbajul C, Editura ROM TPT, Craiova, 1999;
Mocanu M., Ghid de programare în limbajele C/C++, Editura SITECH, Craiova, 2001;
Zaharia, M.D., Structuri de date și algoritmi. Exemple în limbajele C și C++, Ed. Albastră, Cluj Napoca, 2002;
Kernighan, B.W., Ritchie, D.M., The C programming languages, Englewood. Cliffs, N.J. Prentice-Hall, 1978;
Bulac, C., Inițiere în Turbo C++ și Borland C, Editura Teora, București, 1995.

SUBJECT NAME: CULTURE AND CIVILISATION

NUMĂR DE CREDITE: 2

SEMESTER: I

COURSE TYPE: complementary

COURSE OBJECTIVES: Informație lipsă.

COURSE CONTENT: Informație lipsă.

TEACHING LANGUAGE: Romanian

EVALUARE: colloquium

BIBLIOGRAPHY: Informație lipsă.

SUBJECT NAME: ENGLISH

NUMBER OF CREDITS: 2

SEMESTER: I și II

COURSE TYPE: complementary

COURSE OBJECTIVES: practising the fundamental vocabulary and conversational structural paradigms which are specific to the domain of exact sciences.

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

EVALUARE: colloquium

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;
Rivers, Wilga M., Teaching Foreign Language Skills, The University of Chicago Press, Chicago, 1986.

SUBJECT NAME: NUMERICAL CALCULUS AND MATHEMATICAL STATISTICS

NUMĂR DE CREDITE: 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.

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 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, 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;
- 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 NAME: SPECIAL MATHEMATICS

NUMBER OF CREDITS: 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 exam

BIBLIOGRAPHY:

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

SUBJECT NAME: BASES OF ELECTROTECHNICS

NUMĂR DE CREDITE: 6

SEMESTER: II

COURSE TYPE: core course

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 parameters circuits.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- D.Topan, Circuits électriques, 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;
- M. Iordache, L. Dumitriu, Teoria moderna a circuitelor electrice, vol.1 și vol. 2, Ed. ALL, 2000.

SUBJECT NAME: OPERATING SYSTEMS

NUMBER OF CREDITS: 5

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: Establishing the component elements of an electrically operated system; the analysis of its functioning; Correlating a working machine with the adequate operating system; the interaction between a static converter and an electric motor part of an operating system.

COURSE CONTENT: The structure of an electric operating system; Static power converters (SPC); Operating systems with direct current motors; operating systems with three phase asynchronous motors (TASM); robot operating system.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Bitoleanu, Alex, Conversoare statice - Aplicații: Sisteme de acționare electrică, Ed. Universitaria, Craiova;
- Bitoleanu, Alex.; Ivanov, S.; Popescu Mihaela, Conversoare statice Ed. Infomed, Craiova, 1997;
- Manolea, Ghe.; Degeratu, Pr; Bitoleanu, Alex.; Mihai, Dan, Actionari electromecanice, Reprografia Univ. Craiova, 1991;
- Manolea, Ghe.; Sisteme automate de acționare electromecanica, Ed. Universitaria, Craiova, 2004;
- Subtirelu, E., Sisteme de acționare – Notite de curs, anul II, Facultatea de Automatica, Calculatoare și Electronica, 2008-2009

SUBJECT NAME: MECHANICS

NUMBER OF CREDITS: 4

SEMESTER: II

COURSE TYPE: core course

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: written exam

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;

- Ceaușu, V, Enescu, N., Ceaușu, F., Culegere de probleme, Mecanică, vol. I. Statică și cinematică, Ed. Printech, București, 1997;
- Darabont, A., Vaiteanu, D., Munteanu, M., Mecanică tehnică. Culegere de probleme, Ed. Scrisul Românesc, Craiova, 1983;
- Ispas, V., Aplicațiile cinematiei în construcția manipuletoarelor și roboților industriali, Ed. Academiei Romane, București 1990;
- Mangeron, D., Irimiciuc, N., Mecanica rigidelor cu aplicații în inginerie, Vol. I, II, III, Ed. Tehnica, București, 1978, 1980, 1981;
- Merches, I., Burlacu, L., Applied Analytical Mechanics, The Voice of Bucovina Press, Iasi, 1995;
- Staicu, St., s.a, Probleme de mecanică teoretică. Mecanică analitică, Universitatea Politehnică București, 1996;
- Voinea, R., Voiculescu, D., Simion, F. P., Introducere în mecanica solidului rigid cu aplicații în inginerie, Ed. Academiei, București, 1989.

SUBJECT NAME: COMPUTER AIDED GRAPHICS
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NUMBER OF CREDITS: 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

EVALUARE: colloquium

BIBLIOGRAPHY:

- Gherghina, G., Popa D., Calbureanu M., Tudor M., Grafică asistată de calculator, Reprografia Universității din Craiova, 1999;
- Gherghina, G., Popa, D., Calbureanu, M., Tudor, M., Grafică asistată de calculator. Două modalități de abordare, Reprografia Universității 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, Chișinău, 2002;
- Popa, L. Sass, Grafică asistată de calculator, Ed. Sitech, pp. 269, ISBN 978-973-746-800-0, Craiova 2008.

2-ND YEAR

SUBJECT NAME: LINEAR ELECTRONIC CIRCUITS

NUMBER OF CREDITS: 6

SEMESTER: I

COURSE TYPE: core course

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 exam

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;
- D. Dascalu s.a., Dispozitive și circuite electronice. Probleme. Ed. Didactică și Pedagogică, Bucuresti, 1982;
- Manolesu, A. Manolescu, Circuite integrate liniare. Culegere de probleme. Ed. Științifică și Enciclopedica, Bucuresti, 1987.

SUBJECT NAME: NUMERIC DEVICES ANALYSIS AND SYNTHESIS

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: core course

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 synchronous sequential circuits with bistable D and JK; the synthesis of sequential circuits with ROM memories.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

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 NAME: SYSTEMS THEORY

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: acquiring the theoretical competence and practical abilities of analytical calculus in the domain of linear and nonlinear automated systems using the adequate MATLAB software.

COURSE CONTENT: Elements of nonlinear automated systems; automated systems with reverse reaction structure. Automated systems statistics. Amplification role and limiting through stability. Root role. Drawing rules and applications. Compensators design. Cascade compensation. State-dependent reversed reaction. State estimation and dynamic compensation. The basic issue of adjustment and applications; Nonlinear and automated systems. General aspects. Nonlinear elements and their description. Nonlinear automated systems models. Nonlinearities classes and systems. Autonomous systems and their signification. First order autonomous systems. Thermostats. Second order systems. State variables plane and movement quality table. Limit cycles and self-oscillations. Nonlinear systems stability. Absolute stability. V.M. Popov's absolute stability criterion.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

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 NAME: DATA BASES

NUMBER OF CREDITS: 3

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: Introducing the basic concepts and techniques referring to the methodology of data bases design and assimilating the 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 exam

BIBLIOGRAPHY

- Connolly, T., Begg, C., Strachan, A., "Database Systems – A Practical Approach 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 Addison 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.

***, "Database Design and Programming with SQL", Instructor Guide, Oracle Education, 2008

***, "Database Programming with PL/SQL", Instructor Guide, Oracle Education, 2008

***, "Oracle Data Base Administration -11g", Release 2, 2012.

***, "SQL Language Reference-11g", Release 2, 2012.

SUBJECT NAME: OBJECT-ORIENTED PROGRAMMING

NUMBER OF CREDITS: 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: the declaration and implementation of the classes, the using of the pointers and the references, the study of the constructor and the destructor functions, the overloading of the operators and of the functions, the inheritance mechanism and derivations of the classes, the design of the hierarchies of classes, virtual functions and the polymorphism, the stream system for the input-output operations in C++.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

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;

Prata, S., Manual de programare in C++, Ed. Teora, 2001;

Popa, I., Inginerie software pentru conducerea proceselor industriale, Ed. ALL, 2001;

Schild, H., Using Turbo C, Borland, Osborne / McGraw Hill, 1988;

Schild, H., Manual complet C++, Ed. Teora, 2003;

Somnea, D., Turturea, D., Introducere in C++, Programarea orientata pe obiecte, Ed. Tehnica, Bucuresti, 1993.

SUBJECT NAME: MARKETING

NUMBER OF CREDITS: 2

SEMESTER: I

COURSE TYPE: complementary

COURSE OBJECTIVES: introducing the basic notions of marketing (market evolution, product policies, promotional activities, price setting, product distribution (emphasizing the IT).

COURSE CONTENT: The concept of Marketing; market research and market strategy; product policy; promotional policy; price policy; distribution policy.

TEACHING LANGUAGE: Romanian

EVALUATION: colloquium

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 pag., 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;

Kotler, P., "Managementul marketingului", 1112 pag., Editura Teora, București, ISBN: 973-20-0579-3, 2003;

Leih, H., "Marketing", Wirtschaftsförderungsinstitut der Wirtschaftskammer, Wien, 1993;

Lendrevie J., Lindon D., "Mercator théorie et pratique du marketing", 4 ed., Dalloz, Paris, 1993;

McCarthy, J., Perreault, W.D., "Basic Marketing: A Managerial Approach", Ninth Edition, Homewood, Illinois: Richard D. Irwin, 1987;

Stanton, W. J., Etzel, M.J., Walker, B.J., "Fundamentals of marketing", 9th ed., New York (St. Louis, San Francisco) McGraw-Hill Book Company, 1991;

Wells, W., Burnett, J., "Advertising: principles and practice", Englewood Cliffs, NJ: Prentice Hall, 1995;

Colectia "Journal of Marketing", 2000-2007, Publication Group of American Marketing Association, ISSN: 0022-2429, 2008;

Colectia revistei "Enterprise Europa", 2003-2007, Getty images and the European Communities, ISSN: 1680-0516, 2007;

Colectia revistei "Marketing News", 2006, Thomson Business Intelligence Services, 2006;

Colectia revistei "The Marketier", 2006, FRANKLIN business management Frontier Advertising, ISSN: 1842-0443, 2007.

SUBJECT NAME: ENGLISH

NUMBER OF CREDITS: 2

SEMESTER: I, II

COURSE TYPE: complementary

COURSE OBJECTIVES: Informație lipsă

COURSE CONTENT: Informație lipsă

TEACHING LANGUAGE: English

EVALUARE: colloquium

BIBLIOGRAPHY: Informație lipsă

SUBJECT NAME: DIGITAL ELECTRONICS

NUMBER OF CREDITS: 3

SEMESTER: II

COURSE TYPE: core course

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 parametres, 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 exam

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 NAME: JAVA PROGRAMMING

NUMBER OF CREDITS: 3

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES : This course will introduce students to fundamental concepts in developing JAVA computer application.

COURSE CONTENT: Students will learn the object-oriented paradigm, programming concepts, the basics of the Java computer language, and how to use the Eclipse integrated development environment. Each student will independently develop increasingly complex applications using the Java language. Students will learn how to create and use objects, and how objects communicate with each other (by sending messages) to accomplish business processes. Students will study and apply concepts that relate to program quality including: program readability, style, testing, and documentation. Java si Web. Applets; Java Software Development Kit (SDK) and applications; Classes, interfaces, Java packages; Individual and parallel executions; 2D graphics and graphic processing; interfaces GUI user- concept and design.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Thinking in Java, ed.3 rev.4 – Bruce Eckel – ISBN 9780131872486, Editura: Prentice Hall PTR
- JAVA : 1001 secrete pentru programatori / Mark C. Chan, Steven W. Griffith, Anthony F., Editura Teora, ISBN 973-20-0169-0
- JAVA, ghid practic pentru programatori avansati - Joshua Bloch, Editura Teora, ISBN: 973-20-0406-1
- Servicii WEB cu Java. XML, SOAP, WSDL si UDDI - Steve Graham, Editura Teora, ISBN 973-20-0470-3
- The JAVATM Tutorial, A Practical Guide for Programmers, www.java.sun.com
- Jaworski J., - JAVA 1.2 Unleashed, Macmillan Computer Publishng, ISBN: 1-57521-389-3, 1998,
- Jaworski J., - JAVA Developer's Guide, Sams.net Publishing, ISBN: 1-5721-069-x, 1996

SUBJECT NAME: MECHATRONIC SYSTEMS BASES

NUMBER OF CREDITS: 5

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: creating a set of competences absolutely necessary to approach the domain of

mechatronics, establishing the connections with the other subject matters belonging to the domain.

COURSE CONTENT: Introductory aspects; the general structure of mechatronic systems; mechatronic systems – components, functional, constructive and technological aspects. The representation of mechatronic systems functioning.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Nițulescu, M., Bazele sistemelor mecatronice, Note de curs, 2008.
- Histand M., Alciatore, D., Handbook of industrial robotics, McGraw-Hill, 1999.
- Bishop, IR, The mechatronics handbook, CRC Press LLC, 2002.
- Sandler, B., Robotics, designing the mechanisms for automated machinery, Prentice Hall Int. Inc., 1991.
- Klafter, R., Chmielewski, T., Robotic engineering, an integrated approach, Prentice Hall, 1989.
- David, R., Alla, H., Du Grafctet aux Reseau de Petri, HERMES Paris, 1989.
- Bouteille, N., Le Grafctet, Cepadues Edition, 1992
- ***, AUTOMGEN și AUTOSIM, Materiale de firmă.

SUBJECT NAME: ROBOTICS BASES

NUMBER OF CREDITS: 5

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: introducing the basic concepts about the robot as a system (structure, operating systems, sensory systems, elemnts 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; dynamic moels; mobile robots; operating systems and sensory systems in robotics; mmovement adjustment systems; control systems using state variables.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Dwivedi, N.S., Robotics and Factories of the Future, Proc. Of an International Conf., Charlotte, U.S.A., December 1948, Springer Velag, 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;
- Ispas, V., Pop, I., Bocu, M., Roboți industriali, Ed. Dacia, Cluj-Napoca, 1985.

SUBJECT NAME: COMPUTER ARCHITECTURE

NUMBER OF CREDITS: 5

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: Understanding the way a computer works as a system, beyond programme operating, peripherics 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; codes used to store information; communication errors; data manipulation; calculus architecture; communication computer - peripheric devices; programme execution; an example of assembly language; communication mains in calculus systems; microarchitectures.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

J. Glen Brookshear - Introducere în informatică;
Andrew S. Tanenbaum - Structured Computer Organization;
Richard Y. Kain - Advanced Computer Architecture;
Sajjan G. Shiva - Computer Design and Architecture;
William Stallings - Computer Organization and Architecture;
Barry Wilkinson - Computer Architecture;
William Buchanan - Advanced PC Architecture.

SUBJECT NAME: COGNITIVE PSYCHOLOGY

NUMBER OF CREDITS: 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 psycho-social 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: colloquium

BIBLIOGRAPHY:

Arseni, G., Golu, M., Dănăilă, L., 1983, Psihoneurologie, București, Ed. Academiei;
Anderson, J.R., 1983, The Arhitecture 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;
Golu, M., 2000, Fundamentele psihologiei, vol. I-II, București, Editura Fundația "România de mâine";
Miclea M., 1999, Psihologie cognitivă. Modele teoretico-experimentale, Iași, Ed. Polirom;
Novac, C., 2006, Caracteristici tipologice ale personalității pe fondul asimetriei funcționale cerebrale, Craiova, Editura Universitaria;
Solso, R. L., (ed.), 1997, Mind and brain sciences in the 21st century, Cambridge, MA: MIT Press;
Zlate, M.,(coord.), 1999, Psihologia mecanismelor cognitive, Iași, Ed. Polirom.

SUBJECT NAME: INTERNSHIP I

NUMBER OF CREDITS: 5

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: preparing the future engineers specialise din Mechatronics and Robotics. There are envisaged notions concerning mechatronic systems as a whole, rapid scale prototype making, configurable systems, notions of mechanisms and robotics, electronics, sensors and actuators, programming, control and rapid prototyping of control. Each of these concepts is exemplified in one or more applications. The practical support is ensured by LEGO Mindstorms NXT teaching set.

COURSE CONTENT: Making a robot using Lego components and following the next three steps: robot building: building a mobile mechatronic platform with wheels; building a biped mobile mechatronic platform; robot programming using NXT-G graphic programming medium; testing the programme. Because of the flexibility of Lego pieces, a large number of structures can be built.

TEACHING LANGUAGE: Romanian

EVALUATION: colloquium

BIBLIOGRAPHY:

Kit-uleducațional LEGO Mindstorms NXT

3-RD YEAR

SUBJECT NAME: OPERATING MECHANISMS AND MICROSYSTEMS

NUMBER OF CREDITS: 4

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: developing an application focused on an overall view on intelligent materials and structures.

COURSE CONTENT: Mechanisms structure; kinematic coupling; kinematic chain; mechanism; plane kinematic groups; defining intelligent materials; Bingham's plastic model for fluids flow; the macroscopic modeling of ERF behaviour; ERF types; adaptive structures with E.R. materials; ER valves actuators; ER. Cilindric valves; SMA operating principle; SMA modeling; aspects regarding the optimal design of SMA actuators for microgrippers.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Cretu N. Simona-Mariana, Applications of TRIZ to Mechanisms & Bionics, Ed. Academica, Greifswald, 2007;

Cretu N. Simona-Mariana, Mecanisme plane si spatiale, Ed. Sitech, Craiova, 2000.

SUBJECT NAME: AUTOMATA AND MICROPROGRAMMING

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: core course

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: synchronous automata analysis and synthesis; automata design using cabled logic and flexible logic; microprogrammed structures; principles; microprogrammed automata architectures; scalar and vectorial microprogrammable automata; programmable logic controllers; industrial robots control using CLP-uri.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Implementarea organigramelor de stări utilizând automatele programabile cu memorii ROM în configurația I, II, III și IV

Givone, D.D., Roesse, R.O., Microprocessors / Microcomputers: An Introduction, Me Graw-Hill Book Company, 1980

Popescu, D., Automate programabile, Ed. Sitech, Craiova
Căpățână, O., Hășeagan, 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

Borangiu, Th., Dobrescu, R., Automate programabile, Ed. Academiei R.S.R., București, 1986

7. Lupu, C., Țepelea, V., Purice, E., Microprocesoare – aplicații, Ed. Militară, București, 1982

Davis, W., Experimentation with microprocessor applications, Reston Publishing Co., 1981

Sprînceană, N., Dobrescu, R., Borangiu, Th., Automatizări discrete în industrie. Culegere de probleme, Ed. Tehnică, București, 1978

SUBJECT NAME: INTELLIGENT MATERIALS AND STRUCTURES

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: introducing the basic concepts referring to intelligent materials and structures and applying them in engineering, art and medicine. Theoretical aspects are accompanied by case study for the most important applications of intelligent fluids and materials having shape memory.

COURSE CONTENT: Introduction. Intelligent materials and structures; electrorheological and magnetorheological liquids; materials with shape memory.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Budau V., Crăciunescu C. M., Un material în pragul secolului XXI. Aliajele cu memorie a formei, Editura Orizonturi, Timișoara, 1994.

Gilbertson Roger G., Muscle wires, Mondotronics, USA, 1994

Gillet H., Patoor E., Berveiller M., Mechanical engineering for shape memory alloys, ICOMAT 92, Monterey Ca, Juillet 1992.

Stoeckel D., Shape Memory Actuators for Automotive Application, p. 283 in "Engineering Aspects of Shape Memory Alloys", Edited by T. W. Duerig et al, Butterworth-Heinemann Ltd., England, 1990.

Furuya Y., Simada H., Shape Memory Actuators for Robotic Applications, p. 338 in "Engineering Aspects of Shape Memory Alloys", Edited by T. W. Duerig et al, Butterworth-Heinemann Ltd., England, 1990.

Waram T. C., Actuator Design Using Shape Memory Alloys, Ontario, Canada, 1993

Bîzdoacă N., I. Diaconu - Magnetorheological (MR) Fluids. Basic Mathematical Models For MR Applications – 39 Week of the Syrian Science – 6-11 Nov.1999-Damascus

Brooks, D.A., - Electro-Rheological Device, CME September, pp. 91-93,1982

Rabinow J. - The Magnetic Fluid Clutch, AIEE Transaction, 67(1948), 1308-1315

Duclas T.G. - An Externally Tunable Hydraulic Mount Which Uses Electrorheological Fluid, Soc. Automotive Engineers, SAE Paper #870963 (1987)

Dyke, S.J., Spencer, B.F.jr., Sain, M.K. and Carson, J.D. – An experimental study of MR dampers for seismic protection, Smart Mater. Struct., 7, 1998, 693-703

MSC Software Documentation – Adams, <http://www.mssoftware.com>.

SUBJECT NAME: ROBOT CONTROL SYSTEMS

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: The course presents theoretical and practical aspects concerning the control systems design for robotic structures, and also the structure and operating of evaluated robotic systems meant for industry.

COURSE CONTENT: The synthesis of control shema for manipulators and robots; ABB IRB 1400: the general aspects, basic operations, robot trajectory control.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Mair, M. G., Industrial robotics, Prentice Hall International Inc. 1988
- Nof, Y. S., Handbook of industrial robotics, Krieger Publishing Company, 1992
- Warnock, I., Programmable controllers, operation and application, Prentice Hall International Inc., 1988
- Sandler, B., Robotics, designing the mechanisms for automated machinery, Prentice Hall International Inc., 1991
- Klafter, R., Chmielewski, T., Robotic engineering, an integrated approach, Prentice Hall, 1989
- Ivănescu, M., Roboți industriali, Ed. Universitaria Craiova, 1994
- Ivănescu, M. – Sisteme avansate de conducere în robotică, Ed. Scrisul Romanesc, 2003
- Ivănescu, M., Nițulescu M., s.a., Sisteme neconvenționale pentru conducerea roboților, Ed. Universitaria Craiova, 2003
- Nițulescu M., Automatul programabil FA 1J; Funcționare, instrucțiuni și aplicații, Reprografia Universității din Craiova, 1993
- Nițulescu, M., Sisteme robotice educationale, Sitech, 1999
- Ivănescu, M., Nițulescu, M., Robotica I, Indrumar de laborator, Reprografia Universității din Craiova, 1993
- ***, Materiale de firmă pentru roboții existenți în dotare

SUBJECT NAME: MEASUREMENTS AND TRANSDUCERS**NUMBER OF CREDITS:** 4**SEMESTER:** I**COURSE TYPE:** core course**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 transducers applications.**COURSE CONTENT:** Introduction; electronic circuits specific to measurement systems; electronic apparatus for measurement and visualisation; sensors and transducers; multisensory systems.**TEACHING LANGUAGE:** Romanian**EVALUATION:** colloquium**BIBLIOGRAPHY:**

- Purcaru D., Măsurări electronice, Editura Universitaria, Craiova, 2004;
- Purcaru D.M., Senzori și transductoare. Vol. I, Editura Reprograph, Craiova, 2001;
- Purcaru D., Măsurări și transductoare. Suport electronic pentru curs, seminar și laborator (electronics.ucv.ro/dpurcaru), 2007;
- Ionescu G., ș.a, Transductoare 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;
- Hesse, J, Garden, J. W., Sensors in Manufacturing, vol. I, II, Ed. Willy – VCH, Verlag GmbH, 2001;
- Vremera E., Masurari electrice si electronice, vol I si II, Ed. MATRIX ROM, Bucuresti, 2002;
- Sinclair, I., Sensors and Transducers. Third edition, Newness, 2001;
- Jurcă T., Stoiciu D., Instrumentație de măsurare. Structuri și circuite, Editura de Vest, Timișoara, 1996;
- Foile de catalog ale senzorilor, transductoarelor, circuitelor sau modulelor electronice și aparatelor prezentate la curs, seminar și laborator.

SUBJECT NAME: MICROCONTROLLERS AND MICROPROCESSORS**NUMBER OF CREDITS:** 3**SEMESTER:** I**COURSE TYPE:** core course**COURSE OBJECTIVES:** Knowing the architecture and functioning of some 16/32 bit processors, focusing on Intel 80x86 family. Knowing a modern PC/controller architecture, the system mains PC-104/ISA and PC-104+/PCI and the interfaces for those. Knowing the architecture and specific peripheral resources for representative families of 8 and 16 bit microcontrollers, their software and hardware used to develop a microcontroller application. It is important to develop the capacity of choosing a microcontroller for a specific application (calculus power, resources, etc).**COURSE CONTENT:** Introduction to Intel 80x86 architecture; Execution of instructions 80x86; System architectures; System mains: PC-104 and ISA; PC-104+ and PCI; AVR (Atmel) family; 16LX (Fujitsu Microelectronics) family.**TEACHING LANGUAGE:** Romanian**EVALUATION:** written exam**BIBLIOGRAPHY:**

- Nicola, S. Microcontrolere. Aplicații in mecatronica, Ed. Universitaria Craiova, 2005;
- Popa, M. Microprocesoare si microcontrolere, Editura Politehnica Timișoara, 1997;
- Athanasiu, I, A. Panoiu, A. Microprocesoarele 8086, 286, 386, Editura Teora, București 1993;
- Kuhnel, K., AVR RISC Microcontroller Handbook, Butterworth-Heinemann, 1998;
- Barnett., Cox., O'Cull, Embedded C Programming and the Atmel AVR, Thomson Delmar Learning, 2001.

SUBJECT NAME: FLUIDS SYSTEMS IN ROBOTICS**NUMBER OF CREDITS:** 2**SEMESTER:** I**COURSE TYPE:** core course**COURSE OBJECTIVES:** preparing the future specialists in the domain of process control and technical informatics. There are presented the basic knowledge in the domain of hydraulic and pneumatic automation equipment, and also the techniques of fluids systems control.**COURSE CONTENT:** General considerations. Fluids properties. Basic laws of fluids. Fluids flowing. Hydraulic operating. Pneumatic and electropneumatic automation elements.**TEACHING LANGUAGE:** Romanian**EVALUATION:** colloquium**BIBLIOGRAPHY:**

- E. Lewis, H. Stern, Sisteme automate hidraulice, Ed. Tehnică, București 1968.
- A. Oprean, V. Marin, Acționări hidraulice, Ed. Tehnică, București 1976.
- V. Marin, R. Moscovici, D. Teneslav, Sisteme hidraulice de acționare și reglare automată. Ed. Tehnică, București 1981.
- V. Oprean, Fl. Ionescu, Al. Dorin, Acționări hidraulice. Elemente și sisteme, Ed. Tehnică, București 1982.
- Julieta Florea, I. Seteanu, Gh. Zidaru, V. Panaitescu, Mecanica fluidelor și mașini hidropneumatice. Probleme, Ed. D.P., București 1982.
- D. Ionescu, P. Matei, V. Ancuța, M. Buculei, Mecanica fluidelor și mașini hidraulice, Ed. D. P., București 1983.

- D. Nicolae, R. Lungu, E. Bobașu, Echipamente hidraulice și pneumatice. Îndrumar de laborator, Reprografia Universității din Craiova 1984.
- V. Ispas, I. Pop, M. Bocu, Roboți industriali, Ed. Dacia, Cluj - Napoca 1985.
- V. Marin, A. Marin, Sisteme hidraulice automate. Construcție, reglare, exploatare, Ed. Tehnică, București 1989.
- M. Guillon, L'asservissement hydraulique et électrohydraulique, Dunod - Paris, 1972.
- S. Scavarda, Les asservissements électropneumatiques de position, Hermes - Paris, 1989.
- E. Bobașu, Echipamente fluidice pentru sisteme automate, curs, Reprografia universității din Craiova, 1997.

SUBJECT NAME: MECHATRONICS

NUMBER OF CREDITS: 2

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: introducing the basic concepts concerning the problems of robotic structures design and control.

COURSE CONTENT: Introduction to robotics; robotic structures; principles of designing and manufacturing manipulators and robots; special functions of manipulators and robots; manipulators and robots control by means of programmable automata; interfacing robots in industry; interconnecting robots; their choice, installing and operating.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Mair, M. G., Industrial robotics, Prentice Hall International Inc. 1998.
- Nof, Y. S., Handbook of industrial robotics, Krieger Publishing Company, 2002.
- Warnock, I., Programmable controllers, operation and application, Prentice Hall International Inc., 1998.
- Sandler, B., Robotics, designing the mechanisms for automated machinery, Prentice Hall International Inc., 1999.
- Klafter, R., Chmielewski, T., Robotic engineering, an integrated approach, Prentice Hall, 1999.
- Ivănescu, M., Industrial Robots, Ed. Universitaria Craiova, 1994.
- Ivănescu, M., Advanced Control Systems for Robots, Ed. Scrisul Romanesc, 2003.
- Ivănescu, M., Nițulescu M., s.a., Unconventional Systems for Robots Control, Ed. Universitaria Craiova, 2003.
- Popescu D., Programmable logic controllers, Ed. Universitaria Craiova, 2010.
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- Hackworth J.R., Hackworth F.D. Jr., Programmable logic controllers, Ed. Pearson Education, 2004.
- Morgan S., Programming Microsoft Robotics Studio, Microsoft Press, 2008.
- Alciatore D., Histan M., Introduction to Mechatronics and Measurement Systems, Ed. McGraw-Hill, 2007.

- McComb G., Predko M., Robot Buiders Bonanza, Ed. McGraw-Hill, 2006.
- Festo – Manual for the electronics nad mechatronics industry, Theory and Practice, 2008.
- Pashkov E., osinskiy Y., Chetviorkin A., Electropneumatics in Manufacturing Processes, 2004.
- Clarence W. De Silva, Mechatronics – An Integrated Approach, CRC Press, 2005.

SUBJECT NAME: APPLICATIONS OF ROBOTIC SYSTEMS

NUMBER OF CREDITS:2

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: Acquiring the knowledge about the industrial and non-industrial applications of robots within automated processes, focusing on the physical structure and architecture of the installations, on models and control systems.

COURSE CONTENT: Industrial applications. Processes and technologies, physical structures, models, control systems. Non-industrial applications, specific problems, physical structures, models, control systems.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Ivănescu, M., "Sisteme Avansate de Conducere in Robotica", Ed. Scrisul Romanesc, Craiova, 2003, ISBN: 973-38-0389-8;
- Ivănescu M., Nițulescu, M., Stoian, V., Bîzdoacă, N., "Sisteme neconvenționale pentru conducerea roboților", Ed. Universitaria, Craiova, 2002, ISBN: 973-8043-147-X;
- Jazar, R.N., "Theory of Applied Robotics: Kinematics, Dynamics, and Control", Springer Science, LLC, New York, NY 10013, USA, 2007, ISBN: 978-0-387-32475-3;
- Kawamura Sadao, Svinin Mikhail (Eds.), Advances in Robot Control, Ed.: Springer, New York, USA, 2006, ISBN: 978-3-540-37346-9;
- Klafter, R.D., "Robotic engineering: An Integrated Approach", Prentice-Hall, New Jersey, USA, 1989;
- Kozlowski, K., (Ed.), "Robot Motion and Control", Series: Lecture Notes in Control and Information Sciences, Vol. 335, 2006, ISBN: 978-1-84628-404-5;
- Schilling, J.R., "Fundamentals of Robotics: Analysis and Control", Prentice Hall, 1990;
- Sponghttp://www.amazon.com/Robot-Modeling-Control-Mark-Spong/dp/0471649902/ref=pd_bxgy_b_text_c-#, M.W., Hutchinson, S., Vidyasagar, M., "Robot Modeling and Control", Ed.: Wiley, New York, USA, 2005, ISBN: 978-0471649908;
- Stoian, V., "Roboți industriali. Aplicații-vol I", Ed. Universitaria, Craiova, 2003, ISBN:973-8043-158-8;
- Stoian, V., "Roboți industriali. Aplicații-vol II", Ed. Universitaria, Craiova, 2006, ISBN:973-8043-497-7;
- ***, Welding Design & Fabrication, USA, dec.1995, pp. 14-15;
- ***, IEEE Robotics & Automation Magazine, vol. 15, No. 1, March 2008, ISSN: 1070-9932.

SUBJECT NAME: ADJUSTMENT ENGINEERING

NUMBER OF CREDITS: 4

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 exam

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 NAME: DATA TRANSMISSION

NUMBER OF CREDITS: 5

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 exam

BIBLIOGRAPHY:

- Carbon M., Exercices résolus de mathématiques du signal, Ed. Dunod Paris 1992;
- Cullman G., Coduri detectoare și corectoare de erori, Ed. Tehnica București 1972;
- Dobrescu R., Transmiterea datelor, Editura Academiei Române, București, 2005;
- Duvant P., Traitement du signal, Ed. Hermes - 1990;

Feher K., Comunicatii digitale avansate, vol. I, Ed. Tehnica Bucuresti 1993;

Feher K., Comunicatii digitale avansate, vol. II, Ed. Tehnica Bucuresti 1994;

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;

Reinhard H., Cours de mathématiques du signal, Ed. Dunod Paris - 1992;

Spataru Al., Fondements de la théorie de la transmission de l'information, Presses Polytechniques Romandes, 1987;

Tugal D., Data Transmission. Analysis, Design, Application consideration , McGraw-Hill Book Company 1982.

SUBJECT NAME: COMPUTER AIDED DESIGN

NUMBER OF CREDITS: 3

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: Understanding the environment specific to computer-aided design, beyond programme operating and peripherics use. The students will be able to program a parametrized application to be operated by a non-specialist beneficiary in using a computer-assisted design system.

COURSE CONTENT: Reviewing elements of AutoCAD design; elements of AutoLISP in AutoCAD environment; access to AutoCAD entities using AutoLISP; programming applications with parametres settled in computer aided design environment.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- Proiectare asistată - curs, Dorian Cojocaru, Cristian Vladu;
- Proiectare asisatată de calculator, Dorian Cojocaru, Cristian Vladu – îndrumar de laborator;
- Documentație de firmă AutoDESK, AutoCAD (Inventor, Electrical).

SUBJECT NAME: INDUSTRIAL SOFTWARE

NUMBER OF CREDITS: 3

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: colloquium

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;

Nachtingal, 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;

*** MATLAB/Simulink/RTW. User Guide;

*** LabVIEW User Guide;

Ionete C. Software Industrial. Note de curs;

***dSpace/TargetLink. User Guide.

SUBJECT NAME: PROJECT MANAGEMENT

NUMBER OF CREDITS: 4

SEMESTER: II

COURSE TYPE: core course

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: colloquium

BIBLIOGRAPHY:

Timothy. J. Havranec, "Modern Project Management Tehnique", St. Lucie Press, N.Y., 1999;

James S., Pennypacker, "Principles of Project Management", PMI-NC, 1999;

*** PMBOK-PMI-NC, 1998;

*** PMBOK-PMI-NC, 2000;

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;

Lewis, James. " Fundamentals of Project Management", 2nd ed., American Management Association, 2002;

Radice, Ronald A. "High Quality, Low Cost Software Inspections" . Andover, MA: Paradoxicon Publishing, 2002;

Richard H. Thayer, Edward Yourdon. "Software Engineering Project Management", 2nd Ed., Wiley-IEEE Computer Society Press, 2000;

Rothman, Johanna. "Hiring Technical People". New York: Dorset House, 2003;

Scott Berkun. "Art of Project Management". Cambridge, MA: O'Reilly Media, 2005.

SUBJECT NAME: INTERNSHIP 2

NUMBER OF CREDITS: 5

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: specialising the future engineers in robotics and mechatronics, 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, industria implementation (Fabrica de bere Craiova, Elpreco, Ford, Siemens, Continental Sibiu); Industrial robots: operating, programming, maintenance (Ford, Dacia-Renault); distributed systems of industria processes control (Termo Ișalnița, Termo Rovinari, Termo Turceni, Ford); graphic interfaces, virtula instrumentation and acquisition systems use din process control (Procontrol, Labview etc). (Termo Ișalnița, Termo Rovinari, Termo Turceni, Dacia-Renault); networks of industrial computers (Ford, Dacia-Renault, Termo Ișalnița, Termo Rovinari, Termo Turceni etc.).

TEACHING LANGUAGE: Romanian

EVALUATION: colloquium

BIBLIOGRAPHY:

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

Bentley, J.P., Principles of Measurements Systems, Longman Scientific & Technical, United Kingdom, 1988;

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

Golovanov, C., Albu, M. (coordonatori), Probleme moderne de măsurare în electroenergetică, Ed. Tehnică, București, 2001;

Ionete, C., Selișteanu, 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;

Nachtingal, Chester L. (ed.), Instrumentation and Control. Fundamentals and Applications, John Wiley & Sons, Inc., New York, 1990;

Oppenheim, A.V., Schaffer, R.W., Discrete-Time Signal Processing, Second Edition, Prentice Hall International, 1999;

Porat, B., A Course in Digital Signal Processings, John Wiley & Sons, Inc., New York, 1997;

Selișteanu, D., Ionete C., Petre E., Popescu D., Șendrescu D., Aplicații LabVIEW pentru achiziția și generarea datelor, Editura SITECH, Craiova, 2004;

Selișteanu, D., Ionete, C., Petre, E., Popescu, D., Șendrescu, D., Ghid de programare în LabVIEW.

- Aplicații pentru prelucrarea semnalelor, Tipografia Universității din Craiova, 2003;
- Ștefănescu, S., Filtre, Ed. Tehnică, București, 1987;
- Tompkins, W.J., Webster, J.G.W. (editori), Interfacing Sensors to the IBM PC, Prentice Hall, SUA, 1988;
- Țățulescu, M., Instrumentație și tehnici electrice de măsurare, Reprografia Universității din Craiova, 1997;
- *** AT-MIO-16 User Manual, National Instruments, SUA, 1995;
- *** LabVIEW Data Acquisition Course Manual, National Instruments, SUA, 2001;
- *** LabVIEW Measurements Manual, National Instruments, SUA, 2000;
- *** LabVIEW User Guide, National Instruments, SUA, 1996;
- *** NI-DAQ User Manual, National Instruments, SUA, 2001;
- *** Product Data: Sensors – Thermocouples, Connectors and Platinum Resistance Thermometers, Eurotherm Controls Limited, Marea Britanie, 1994.

4-TH YEAR

SUBJECT NAME: INTEGRATED SYSTEMS

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing basic notions concerning integrated systems principles, the systems with limited calculus and communication resources; getting the students familiar with real-time industrial systems which are control network distributed and microcontroller-based.

COURSE CONTENT: Integrated systems architecture; the general architecture of microcontrollers; real-time operating systems for integrated systems; the interfacing between integrated systems and external processes; communication with the exterior.

TEACHING LANGUAGE: Romanian

EVALUARE: colloquium

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;
Documentatie tehnica Keil;
Documentatie tehnica Atmel 80C251G2D.

SUBJECT NAME: PROGRAMMABLE AUTOMATA

NUMBER OF CREDITS: 4

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: introducing the basic concepts concerning programmable automata programming and the control of robotic systems/ processes by means of programmable automata. Lab classes are meant to develop students' competences in the field of production systems/ processes automation by using programmable automata.

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 exam

BIBLIOGRAPHY:

- Warnock I., Programmable controllers, operation and application, Prentice Hall International Inc., 1998.
Borangiu Th., Dobrescu R., Programmable Logic Controllers, Ed. Academiei, 1986.
Webb J.W., Reis A., Programmable Logic Controllers – Principles and Applications, Prentice Hall, 1999.
*** Festo – Automation with pneumatics.
*** GE Fanuc Automation – Programmable Controllers.
*** Mitsubishi – MELSEC A-Series, Programmable Controllers – Reference Manual.
*** Siemens S7-200 Micro System.

Clarence W. de Silva, Mechatronics - An Integrated Approach, CRC Press 2005.

Alciatore, D.G., Hstand M.B., Introduction to Mechatronics and Measurement Systems, McGraw-Hill International Ed., 2007.

Pashkov E., Osinskiy Y., Chetviorkin A., Electropneumatics in Manufacturing Processes, Isdatelstvo SevNTU, 2005.

Popescu D., Programmable logic controllers, Ed. Universitaria Craiova, 2010.

Warnock, I., Programmable controllers, operation and application, Prentice Hall International Inc., 1998.

Klafter, R., Chmielewski, T., Robotic engineering, an integrated approach, Prentice Hall, 1999.

Ivănescu, M. – Advanced Control Systems for Robots, Ed. Scrisul Romanesc, 2003.

Hackworth J.R., Hackworth F.D., Programmable Logic Controllers, Pearson Ed., 2004.

Bogdanov I., Robots Control, Ed. Orizonturi Universitare, 2009.

Mair, M. G., Industrial robotics, Prentice Hall International Inc. 1998.

Festo – Manual for the electronics nad mechatronics industry, Theory and Practice, 2008.

SUBJECT NAME: MAN-MACHINE INTELLIGENT SYSTEMS

NUMBER OF CREDITS: 4

SEMESTER: I

COURSE TYPE: core course

COURSE OBJECTIVES: clarifying the concepts concerning the utility and adaptability of software products to the user's 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 strata; 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 exam

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.
Dix, A., et al. Human-Computer Interaction. 2nd ed. Upper Saddle River, NJ: Prentice-Hall, 1998. ISBN: 0132398648.
Olsen, D. R. Developing User Interfaces. San Francisco, CA: Morgan Kaufmann, 1998. ISBN: 1558604189.

Tufte, E. R. The Visual Display of Quantitative Information. Cheshire, CT: Graphics Press, 1983. ISBN: 0318029928.

Raskin, J. The Humane Interface: New Directions for Designing Interactive Systems. New York, NY: ACM Press, 2000. ISBN: 0201379376.

Johnson, J. GUI Bloopers: Don'ts and Do's for Software Developers and Web Designers. San Francisco, CA: Morgan Kaufman, 2000. ISBN: 1558605827.

Card, S. K., T. Moran, and A. Newell. The Psychology of Human-Computer Interaction. Hillsdale, NJ: Lawrence Erlbaum, 1983. ISBN: 0898598591.

Books about Statistics and Experiment Design

Gonick, L. Cartoon Guide to Statistics. New York, NY: Harper, 1994. ISBN: 0062731025.

Box, G. E. P., W. G. Hunter, and S. J. Hunter. Statistics for Experimenters: An Introduction to Design, Data Analysis, and Model Building. New York, NY: Wiley, 1978. ISBN: 0471093157.

Miller, R. G. Beyond Anova: Basics of Applied Statistics. New York, NY: Wiley, 1986. ISBN: 0471819220.,

George F. Luger & William A. Stubblefield – Artificial Intelligence Structures and Strategies for Complex Problem Solving;

Pierre Gaspart - Intelligence Artificielle, Syllabus du cours, Fac. des Sc. Appl., Bruxelles;

George F. Luger - Artificial Intelligence;

Ileana Streinu - Limbajul de programare al inteligenței artificiale;

<http://www.freeprogrammingresources.com/prologbook.html>

http://en.wikibooks.org/wiki/Programming:_Prolog

SUBJECT NAME: INFORMATION PROTECTION TECHNOLOGIES
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NUMBER OF CREDITS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic notions to understand the necessity of a legal frame for both users and information technology designers. This legal frame and its implications are presented to students.

COURSE CONTENT: Legal reports and civil law documents; notions of contract law; intellectual property laws, copyright and connected rights; multimedia domain references; trade mark, trade mark law; software legal protection; electronic circuits protection; audio-visual law; copyright system; using audio/video record as evidence in court.

TEACHING LANGUAGE: Romanian

EVALUARE: colloquium

BIBLIOGRAPHY:

Gazette du Palais- Recueil septmbre-octobre 2000, paginile 2135,2141,2187, 2188-2190 ;

Lege asupra presei, 1 aprilie 1862 ;

Legea brevetului de invenție (64/1991) ;

Legea desenelor și modelelor industriale (129/1992) ;

Legea protecției topografiilor de circuite integrate (16/1995) ;

Legea mărcii de fabricație, de comerț și de serviciu (28/1967) ;

Legea privind drepturile de auto și drepturile conexe (8/1996);

Legea audiovizualului (48/1992)

SUBJECT NAME: IMAGE PROCESSING AND RECOGNITION

NUMBER OF CREDITS: 4

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts and creating the necessary competences to integrate hardware and software components in order to apply artificial vision applications to robotics.

COURSE CONTENT: Characteristics of human sight. Image sensors technologies. Camera characteristics. The characteristics of image acquisition and processing systems. Geometric transformations. Camera calibration. Contour extraction. Areas extraction and labeling. Characteristics extraction. Characteristics normalization. Shape recognition. Artificial vision applications in robotics.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Computer Imaging: Digital Image Analysis and Processing, Scott E Umbaugh;

Machine Vision: Theory, Algorithms, Practicalities, E. R. Davies;

Achizitia, prelucrarea si recunoasterea imaginilor, Dorian Cojocaru D

SUBJECT NAME: FLEXIBLE MANUFACTURING SYSTEMS

NUMBER OF CREDITS: 5

SEMESTER: I

COURSE TYPE: specialty

COURSE OBJECTIVES: training the students in the domain of flexible manufacturing systems design, building, functional analysis and operating.

COURSE CONTENT: Introduction; concepts regarding production organisation and mathematical models; economic aspects in FMS design, investment and operating; automated manufacturing systems; the analysis of automated manufacturing systems; assembly systems and manufacturing process division; FMS automated methods of marking and identification.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Groover, M., Automation, Production systems and Computer Integrated Manufacturing, Ed. Prentice-Hall, 1987.

Mair, M. G., Industrial robotics, Ed. Prentice Hall International Inc., 1988.

Nof , Y. S., Handbook of industrial robotics, Ed. Krieger Publishing Company, 1992.

SUBJECT NAME: ARTIFICIAL INTELLIGENCE
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NUMBER OF CREDITS: 4

SEMESTER: I

COURSE TYPE: core course

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 use din artificial intelligence domain (PROLOG).

COURSE CONTENT: AI domains. Methods of solving problems. Applications in robotics. Knowledge representation and reasoning modeling. Generating action plans. Fuzzy logic basics. Expert systems. Artificial neuronal networks. Genetic algorithms.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Warnock, I., Programmable controllers, operation and application, Ed. Prentice Hall International Inc., 1988.

Sandler, B., Robotics, designing the mechanisms for automated machinery, Ed. Prentice Hall, 1991.

Klafter, R., Chmielewski, T., Robotic engineering, an integrated approach, Ed. Prentice Hall, 1989.

Nițulescu, M., Sisteme flexibile de fabricație, Note de curs, Reprografia Universității din Craiova, 1997.

Nițulescu, M., Sisteme flexibile de fabricație, Ed. Sitech, 1997.

Nițulescu, M., Sisteme robotice educaționale, Ed. Sitech, 1999.

Nițulescu, M., Sisteme robotice cu capacitate de navigație, Ed. Universitaria, 2002.

***, Documentații și materiale de firmă pentru echipamentele didactice din laborator.

SUBJECT NAME: ACQUISITION SYSTEMS AND INTERFACES

NUMBER OF CREDITS: 4

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: Informație lipsa

COURSE CONTENT: Informație lipsa

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY: Informație lipsa

SUBJECT NAME: MOBILE ROBOTS AND MICROROBOTS

NUMBER OF CREDITS: 4

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: Providing knowledge in the domain of mobile robots design, construction and operating.

COURSE CONTENT: Specific characteristics of mobile robotics; building and dimensioning wheel-sustained mobile robots; mathematical models for wheel-sustained mobile robots; locating mobile robots position in their operating spaces; planning mobile robots trajectories; connecting the segments of global trajectories; navigation systems with cabled trajectories; navigation systems with memorised trajectories.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

Nițulescu, M., Roboți mobili, Ed. Sitech Craiova, 1999.

Mair, M. G., Industrial robotics, Prentice Hall International Inc. 1988.

Nof, Y. S., Handbook of industrial robotics, Krieger Publishing Company, 1992.

Warnock I., Programmable controllers, operation and application, Prentice Hall International Inc., 1988.

Sandler B., Robotics, designing the mechanisms for automated machinery, Prentice Hall International Inc., 1991.

Klafter, R., Chmielewski, T., Robotic engineering, an integrated approach, Prentice Hall, 1989

Nițulescu, M., Sisteme robotice cu capacitate de navigație, Ed. Universitaria Craiova, 2002.

Ivănescu, M., Nițulescu, M., Robotica I, Indrumar de laborator, Reprografia Universității din Craiova, 1993.

***, Materiale de firmă pentru roboții existenți în dotare.

SUBJECT NAME: VIRTUAL MANUFACTURING

NUMBER OF CREDITS: 3

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: introducing the basic concepts concerning virtual manufacturing and reality.

COURSE CONTENT: Introductory aspects of manufacturing process. Virtual manufacturing: definitions, elements and features. Examples of virtual studies visualised by means of GUI graphic interfaces. Virtual reality. Virtual reality applications. Virtual production. Collaborative engineering. Production systems modeling.

TEACHING LANGUAGE: Romanian

EVALUARE: colloquium

BIBLIOGRAPHY:

Bartolo, P., Virtual Modelling and Rapid Manufacturing: Advanced Research in Virtual and Rapid Prototyping, 2007.

***, RobotStudio, ABB Robotics, 2007.

Popescu, D., Sendrescu, D., Realitate virtuala, Ed. Universitaria, 2002.

Diehl S., Distributed Virtual Worlds, Ed. Springer Verlag, 2001.

Pesce, VRML and Java, ViewSource, Netscape Communications, 1999.

Morgan S., Programming Microsoft Robotics Studio, Microsoft Press, 2008.

SUBJECT NAME: GRADUATION PAPER ELABORATION

NUMBER OF CREDITS: 10

SEMESTER: II

COURSE TYPE: core course

COURSE OBJECTIVES: as the case may be

COURSE CONTENT: as the case may be

TEACHING LANGUAGE: Romanian

EVALUATION: colloquium

BIBLIOGRAPHY: as the case may be

SUBJECT NAME: ROBOT STRUCTURE MODELING AND IDENTIFICATION

NUMBER OF CREDITS: 3

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: Informație lipsa

COURSE CONTENT: Informație lipsa

TEACHING LANGUAGE: Romanian

EVALUATION: colloquium

BIBLIOGRAPHY: Informație lipsa

SUBJECT NAME: NUMERIC CONTROL MACHINE TOOLS

NUMBER OF CREDITS: 3

SEMESTER: II

COURSE TYPE: specialty

COURSE OBJECTIVES: The course presents the students the theoretical fundamentals of machine-tools numeric control programming. It gets the students familiar with the various types of numeric control machine-tools and with their functioning and programming methods.

COURSE CONTENT: General notions; manual programming; computer-aided programming; computer-controlled programming of machine-tools; industrial robots programming.

TEACHING LANGUAGE: Romanian

EVALUATION: written exam

BIBLIOGRAPHY:

- W. Simon- Conducerea numerică a mașinilor unelte;
E. Botez, Al. Dorin- Tehnologia programării numerice a mașinilor unelte;
Gh. Baștiurea,E.Dondon- Comanda numerică a mașinilor unelte ;
D.Zetu – Mașini unelte automate;
I. Diaconu, O. Onisifor- Comanda numerică a mașinilor unelte;
N. Bîzdoacă, I.Diaconu- Limbaje de programare a roboților industriali.

SUBJECT NAME: PROGRAMMING LANGUAGES FOR ROBOTS**NUMBER OF CREDITS:** 3**SEMESTER:** II**COURSE TYPE:** specialty**COURSE OBJECTIVES:** correlating the specific elements of the subject matter with the specificity of industrial robotic structures. The main robot programming environments are compared, evincing the individual features of each.**COURSE CONTENT:** The concept of language; elements specific to industrial robots; basic elements of industrial robots programming languages; data and data structures used in industrial robots programming languages; instructions; integrating the programming procedure into a programme through training.**TEACHING LANGUAGE:** Romanian**EVALUATION:** written exam**BIBLIOGRAPHY:**

- Bizdoaca NG, Limbaje de programare a robotilor industriali, Sitech, Craiova, 1999.
R.P. Paul, The theory and practice of robot manipulator– Programming and control, Mac Graw Hill. 2001
M. Vukobratovic, Scientific Fundamentals of Robotics, Springer- Verlag, Heidelberg, New Yorc, 1987
John J. Craig, Introduction to Robotics: Mechanics and Control (3rd Edition) , Hardcover, USA, 2003
Musca Gh., Programarea in limbaj de asamblare, Ed. Teora, 1997;
Sztonojov et al, De la poarta TTI la microprocesor, Ed. Tehnica Bucuresti, 1987;
Intel 8051 User manual & User guide

Dean,
Professor Eugen BOBAȘU, PhD