

Field of Study: Industrial Engineering

Programme of studies: Machines Building Technology

First year of study:

Subject of study: Mathematical Analysis, Code: D22TCML101

NUMBER OF CREDITS: 5

YEAR/SEMESTER: 1st year / 1st semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The course offers the students theoretical and practical concepts of the Mathematical Analysis.

CONTENT: Convergence: Sequences and series of real numbers, Power series, Fourier series. Continuity and Differentiability: Functions of several real variables, Implicit functions, The extreme values of a real function of several variables. Integral calculus: Definite integrals with parameters, Improper integrals, Line integrals of the first type, Multiple integrals, First type surface integrals. Elements of field theory.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Diamandescu, Aurel - Analiză Matematică, Vol. I, II, Editura Universitaria, Craiova, 2005

Diamandescu, Aurel - Îndrumar de Analiză Matematică, Editura Universitaria, Craiova, 2006

Diamandescu, Aurel - Culegere de Probleme de Analiză Matematică, Editura Universitaria, Craiova, 2007

Diamandescu, Aurel - Matematici Generale, Editura Universitaria, Craiova, 2009

Predoi Maria, Bălan Trandafir - Mathematical Analysis, Vol. I, II, Editura Universitaria, Craiova, 2005

BIBLIOGRAPHY (selective):

1. Bolcu D., Rizescu S., Mecanica vol I, Ed. Didactică și Pedagogică, București, 2001.

2. Bolcu D., Rizescu S., Mecanica vol II, Ed. Didactică și Pedagogică, București, 2001.

3. Bolcu D., Rizescu S., Mecanica vol III, Ed. Didactică și Pedagogică, București, 2004

4. 1. Bolcu D., Rizescu S., Mecanica vol I, Ed. Universitaria Craiova 2009

5. Băgnaru, D., Mecanică aplicată în științele ingineriei, Vol. 1 și 2, Editura SITECH, Craiova, 2010.

6. Băgnaru, D., Cătăneanu A, Dinamică cu aplicații în inginerie, Editura Universitaria Craiova, 2009

7. Băgnaru, D., Vintilă, D., Nanu, G., Cătăneanu, A., Grigorie, L., Mecanică. Teorie. Lucrări de laborator, Editura SITECH, Craiova, 2010

Subject of study: Descriptive geometry, Code: D22TCML104

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 1st year/1st semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The main aim of the course is to prepare students regard to acquiring the basic theoretical and practical concepts from descriptive geometry, to develop the creative skills to see „deep in space” and to prepare project designs. Terms used are under current standards and international standards.

CONTENT:

Projection systems. Line. A line of positions in relation to the planes of projection. The relative positions of two lines. The Plan. Line of a plan. The relative positions of the two planes. The position of a line in a plane. The intersection of plane figures. The projection transformation methods: the method of changing the projection planes, crop rotation method and rotation method of projection planes. Representation of geometric bodies. Sections in geometrical bodies. Development of geometric surfaces. Intersection of geometric bodies. The general method for the determination of the line of intersection

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Buțu, A.; Sass, L.- Grafică inginerescă. Vol. I. Geometrie descriptivă. Lucrări de laborator, Editura SITECH, Craiova, 1999;

Buțu, A.; Sass, L.- Grafică inginerescă. Geometrie descriptivă. Teste grilă, Editura Universitaria Craiova, 1999;

Ene, Al.I.; Buțu, A.; Neagoe, D.; Stănescu, G.- Geometrie descriptivă, vol. I și II, Editura SITECH, Craiova, 1998;

Enache, I.; Ivănescu, T.; Buzilă, V. - Geometrie descriptivă și desen tehnic. Probleme și aplicații, Editura didactică și pedagogică, București, 1982;

Noveanu, L.; Orban, M. - Geometrie descriptivă, Universitatea Tehnică din Cluj-Napoca, 1992;

Subject of study: Technical chemistry (Code D22TCML102)

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 1st year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Mechanics I (Code: D22TCML103+ II, CODE: D22TCML211)

NUMBER OF CREDITS: 4 in 1st semester, 6 in 2nd semester

YEAR/SEMESTER: 1st year/1st and 2nd semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The discipline aims to get students familiarized with its specific basics in order to enable them in approaching Mechanics System Design and to facilitate them a good understanding of any simple mechanical process that might occur while exploiting a machine of any kind.

CONTENT: Basics of vectorial algebra and operational calculus are introduced first. Then, in a modern but natural way, basics of mass geometry, kinematics and dynamics are presented. Statics is regarded as a special case of the dynamics.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Precupețu, P.; Dale, C.- Probleme de geometrie descriptivă cu aplicații în tehnică, Editura Tehnică, București, 1987;
 Moncea, J.-Geometrie descriptivă și desen tehnic, Editura didactică și pedagogică, București, 1982;
 Tănăsescu, A. -Probleme de geometrie descriptivă, Editura didactică și pedagogică, București, 1962;

Subject of study: Computer programming and programming languages I (Code: D22TCML105)+ II(Code: D22TCML213)

NUMBER OF CREDITS: 4 + 4

YEAR/SEMESTER: 1st year / 1st + 2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: To develop at students basic skills in the use of Windows operating systems, to familiarize students with development of fundamental algorithms and programming theory; learn students with programming in "C" language and development of Windows applications.

CONTENT: Architecture of a computer system, internal representation of information; Numeration bases, logic functions, elements of algorithms, Introduction to C language vocabulary - operators; Instructions and statements of C language, expressions, functions, I / O operations Elementary; Pointers and arrays, structures and unions in C, use of strings, dynamic memory allocation, library functions, simple chain lists, double chain lists, recursion, files in C, solving systems of linear equations structure Windows applications , Programming mouse related events, GDI functions; Use of type menu and dialog box in Windows,.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Knuth D.E. , Treaty of computer programming. fundamental algorithms, Ed. Tehnica, 1973
 Burdescu, D., - Algorithms and data structures, Ed. Mirton, Timișoara, 1992
 Petrovici, V., - Programming in C language, Ed. Tehnică 1993, București
 Kernighan B., Ritchie D. , The C Programming Language, Prentice Hall, 1988
 Pădeanu, L., O., Windiws programming in C language, Reprografia Univ. din Craiova, 1993
 Petzold Charles, Programming Windows, 6th edition, Microsoft Press, 2012.

Subject of study: Study of materials, Code: D22TCML106

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 1st year / 1st semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course offers students theoretical concepts of the correlation between microstructure, properties and processing of the metallic materials.

CONTENT: Crystal structures of metallic materials. Crystalline lattices and imperfections in crystalline solids. Plastic deformation of metallic materials (plastic deformation of single crystals and polycrystalline materials). Properties of metallic materials. Crystallization principles of metallic materials. Theory of binary alloy systems. Crystallization of iron-carbon alloys. Heat treatments and thermo-chemical treatments of ferrous

materials. Non-ferrous metals and alloys. Advanced materials developments.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

C. Teisanu – Metalurgie Fizica pentru Ingineri
 M. Radulescu – Studiul Materialelor, EDP
 H. Colan – Studiul Materialelor, EDP
 I. Trusculescu – Studiul Materialelor, EDP
 S. Gadea – Metalurgie Fizica si Studiul Metalelor, EDP, 1980
 R. Saban, D. Gheorghe s.a - Studiul si Ingineria Materialelor, Editura Didactica si Pedagogica, Bucuresti, 1995
 C. Baci, I. Alexandru, R. Popovici s.a - Stiinta Materialelor Metalice, Editura Didactica si Pedagogica, Bucuresti, 1996
 N. Popescu, R. Saban, I. Pencea s.a - Stiinta Materialelor pentru Inginerie Mecanica, Ed. Fair Partners, Bucuresti, 1999

Subject of study: Physical education I (Sport) (Code D22TCML107)

NUMBER OF CREDITS: "1"

YEAR/SEMESTER: 1st year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: -

Subject of study: Foreign language (English, Francaise, Deutsch I (Code D22TCML108)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 1st year/1st semester

TYPE OF COURSE: Optional

TEACHING LANGUAGE: Foreign language

EVALUATION: Written/oral examination

Subject of study: Linear Algebra, Analytical and Differential Geometry, Code:D22TCML209

NUMBER OF CREDITS: 5

YEAR/SEMESTER: 1st year / 2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course gives the possibility to analyze the physical and mechanical phenomena using the vector notion and his properties. Many mathematical models that describe the behavior of mechanical components, in static or dynamic regime, are obtained using geometric notions like curves and surfaces.

CONTENT: Vectorial spaces, examples, properties; Mathematical connections among vectorial spaces; Bilinear forms and quadratic forms, applications; Euclidean spaces - the notion of length of a vector and unoriented angle between two vectors; Orthogonality, orthogonal base; Tensors, properties; Free vectors, applications; Line and plane in space; Quadrics and Conics; Curves; Surfaces.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

G. Marinescu, Spații vectoriale topologice și pseudotopologice, Editura Academiei, București, 1959.
 M. Stoka, Geometrie diferențială, Editura Didactică și Pedagogică, București, 1964.

G.E. Șilov, Matematiceski analiz, Nauka, Moskva, 1969.

P. Stavre, Curs de geometrie diferențială, Litografia Universității din Craiova, 1970.

I. Creangă, C. Haimovici, Algebră liniară, Editura Didactică și Pedagogică, București, 1970.

R. Miron, Geometrie analitică, Editura Didactică și Pedagogică, București, 1976.

C. Iacob, Matematică aplicată în mecanică, Editura Academiei, București, 1989.

M.M. Stănescu, Curs de Algebră Liniară, Geometrie Analitică și Diferențială, Reprografia Universității din Craiova, 2000.

M.M. Stănescu, F. Munteanu, V. Slesar, Probleme de Algebră Liniară, Geometrie Analitică și Geometrie Diferențială, Editura Sitech Craiova, 2004.

M.M. Stănescu, Elemente de teorie a spațiilor vectoriale, Editura Universitaria, 2005.

M.M. Stănescu, O. Georgescu, C.M. Georgescu, Algebră Liniară. Aplicații. Editura Universitaria, 2006.

P. Stavre, M.M. Stănescu, Rezolvarea algoritmică a sistemelor de ecuații liniare. Aplicații, Ed. MatrixRom, București, 2007.

Subject of study: Numerical applications in engineering (Matlab, Simulink, Mathcad) (Code D22TCML210)

NUMBER OF CREDITS: 5

YEAR/SEMESTER: 1st year/2nd semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Technical drawing and infographics I, Code:D22TCML212

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 1st year/2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: The main aim of the course is to prepare students regard to acquiring the basic theoretical and practical concepts to represent industrial technical design, to develop the creative skills to prepare project designs. Terms used are under current standards and international standards.

CONTENT:

Representations used in technical drawing. Representation in ortogonal projection. Representation of views, sections and breakage. Representation of views in technical drawing. Dimensioning in technical drawing: classification of dimensions; rules of listing. Registration quotas on the drawing. Methods of dimensioning and special cases for dimensioning. Representation of the threads. Tolerances. Dimensional accuracy. Linear and angular dimensions tolerances. Accuracy of shape and position of geometrical elements. Surface condition. Specific and conventional representations. Representation and cylindrical and tapered holes dimensions. Drawing overviews. Rules of representation, positioning of the components and dimensioning design overall. From snap-on. Threaded assembly. Elastic assembly.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Ene Al.I.- "Desen tehnic industrial", Editura SITECH, Craiova, 1995;

Marin, D; Raicu, L.; Adir, V.; Dobre, D.- "Desen tehnic industrial. Teorie si aplicatii" Editura 57 BREN, Bucuresti, 1999;

Precupețu P.; ș.a.- "Desen tehnic industrial pentru construcția de mașini", Editura Tehnică, București, 1982;

Vasilescu, E.-"Desen tehnic. Teme. Elemente de introducere în proiectare", Litografiat, IPB, 1984;

Vasilescu, E.; ș.a.-"Desen tehnic. Elemente de proiectare", Editura Tehnică, București, 1994;

I.R.S. Catalogul Standardelor Române, Editura Tehnică, București

Subject of study: Physical education II (Sport) (Code D22TCML215)

NUMBER OF CREDITS: "1"

YEAR/SEMESTER: 1st year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: -

Subject of study: History of technics (Code D22TCML215)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 1st year/2nd semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Industrial sociology (Code D22TCML118)

NUMBER OF CREDITS: 2

YEAR/SEMESTER: 1st year/1st semester

TYPE OF COURSE: Optional

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Foreign language (English, Francaise, Deutsch) II (Code D22TCML219)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 1st year/2nd semester

TYPE OF COURSE: Optional

TEACHING LANGUAGE: Foreign language

EVALUATION: Written/oral examination

Second year of study:

Subject of study: Special mathematics
Code: D22 TCML323

NUMBER OF CREDITS: 3
YEAR/SEMESTER: 2nd year/1st semester
TYPE OF COURSE: Mandatory
TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination

Subject of study: Technical drawing and infographics

NUMBER OF CREDITS: 3
YEAR/SEMESTER: 2nd year/1st semester
TYPE OF COURSE: fundamental
OBJECTIVES: The main aim of the course is to prepare students regard to acquiring the basic theoretical and practical concepts to represent industrial technical design, to develop the creative skills to prepare project designs. Terms used are under current standards and international standards.

CONTENT:
Representing permanent joints. Riveted joints. Representing welded or soldered joints. Preparation of technical drawings for a welded components of an assembly. Technical representation for gears. Representing feathered joints and straight dovetail joints. Technical representation for shafts. Project theme: preparation of technical drawings for two cylindrical gears fixed on shafts. Representation of bearings and sealing gland. Preparation of project design for gearbox assembly

TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):
Ene Al.I.- "Desen tehnic industrial", Editura SITECH, Craiova, 1995;
Marin, D; Raicu, L.; Adir, V.; Dobre, D.- "Desen tehnic industrial. Teorie si aplicatii" Editura 57 BREN, Bucuresti, 1999;
Precupețu P.; ș.a.- "Desen tehnic industrial pentru construcția de mașini", Editura Tehnică, București, 1982;
Vasilescu, E.-"Desen tehnic. Teme. Elemente de introducere în proiectare", Litografiat, IPB, 1984;
Vasilescu, E.; ș.a.-"Desen tehnic. Elemente de proiectare", Editura Tehnică, București, 1994;
I.R.S. Catalogul Standardelor Române ,Editura Tehnică, București

Subject of study: Technical drawing and Infographics II, Code:D22TCML324

NUMBER OF CREDITS: 3
YEAR/SEMESTER: 2nd year/1st semester
TYPE OF COURSE: Mandatory
OBJECTIVES: The course offers to the students theoretical and practical concepts about the drawing of the technical documentation for manufacturing, assembling and repairing operations. Also, the course offers the basics for the graphical representation and correct reading of the technical ideas necessary for each engineer.
CONTENT: The objectives of the course, projecting and drawing systems. The general rules for the correct drawing of the views and sections. The

dimension operation in Technical drawing, dimension rules representation, dimension systems, scaled drawing. The drawing, notation and dimension operations for the threads. The material code notation. The roughness of the surfaces notation. Assembly drawing, the drawing rules, the bill of materials. The gears drawing operation.

General aspects about Computer Graphics. The evolution of Computer Graphics. A short history of the CAD (Computer Aided Design) concept. The classification of the CAD systems. The location of the CAD concept in the industrial company. New concepts in CAD. The concepts and software adjacent to the CAD concept. The CAM (Computer Aided Machining) concept. The FEA (Finite Element Analysis) concept. The dynamic and kinematic simulation software. Parameterization and bidirectionality. Modeling software modules. 2D sketches. Base and additional shapes. Reference geometrical elements. Complex shapes. Curves, surfaces. Assembly software module. Connections, geometrical constraints, equations, mechanical constraints. Software modules for the technical documentation. The 2D drawings. Elements of virtual testing. Animation and realist views.

TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):
Ene, A.I. Desen tehnic industrial Ed. Avrameanca, Craiova 1993;
Enache,I., Ivanescu, T.,Buzila, V. Geometrie descriptiva si desen tehnic-probleme si aplicatii, Ed. Didactica si Pedagogica, Bucuresti 1982;
Gherghina, G. s.a. Grafica tehnica - II- Desen tehnic, Ed. Egnatia, Craiova 1996;
Husein, Gh., Saveanu, I. Desen tehnic, Ed. Didactica si pedagogica, Bucuresti 1976;
Gherghina, G. s.a. Notiuni de grafica tehnica - II- Desen tehnic, Reprografia Universitatii din Craiova 2000.
Gherghina G., Popa D., Tudor M - Notiuni generale de desen tehnic industrial, Ed.Sitech, Craiova 2002,2004.
Nour I Crisan Notiuni fundamentale in desenul tehnic industrial, Ed. Risoprint, Cluj Napoca, 2001
Popa D., Gherghina G., Infografica, Ed. Sitech, ISBN 978-606-530-028-6, pp. 308, Craiova 2008;
*** National and international standards archive

Subject of study: The basis of Computer Aided Design, Code: D22TCML325

NUMBER OF CREDITS: 4
YEAR/SEMESTER: 2nd year/1st semester
TYPE OF COURSE: Mandatory
OBJECTIVES: The course offers the general informations and concepts of Computer Aided Design, and the capacity to operate cu AutoCad program and the capacity to perform design calculus using adequate programs.
CONTENT: AutoCad: 2D drawing and editing. 3d modelling and editing of solids. Design applications programming using AutoLisp. Design elements using AutoCad Mechanical. Design calculus basis with MathCad program.

TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

1. Negru Mihai., Bazele Proiectarii Asistate de Calculator, Editura Universitaria 2007;
2. Kris Jamsa., Totul despre Autocad 2008, Editura Teora, Bucuresti, 2008;
3. *** - Technical documentation AutoCad 2012
4. *** - Technical documentation MathCad
5. *** - Technical documentation AutoCad Mechanical

**Subject of study: Materials technology I (Code D22TCML 326)+ II (Code D22TCML438)
Code**

NUMBER OF CREDITS: 2 - 1st semester + 3 – 2nd semester

YEAR/SEMESTER: 2nd year / 1st semester and 2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course offers the students theoretical and practical concepts regarding the main technology of production and processing technical materials.

CONTENT: Classification of material properties; metal materials; obtaining metallic materials; metal casting; powder metallurgy; plastic deformation of metals; welding of metallic materials; technologies unconventional; NDT materials.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

- Gheorghe, St, Teisanu, C., Tehnologia materialelor, Editura Universitaria din Craiova, 2009.
Amza, Gh. ș.a., „Tehnologia materialelor”, Ed.Tehnică, București, 1999;
Butnariu, I ș.a. Procese și tehnologii în metalurgia extractivă, Editura Tehnică București, 1995.
Cheșa, I ș.a. Alegerea și utilizarea oțelurilor, Editura Tehnică, București 1084.
Gheorghe Șt, Aliaje sinterizate antifricțiune pe baza de cupru, Editura UNIVERSITARIA, 2002.
Mangra, M. ș.a, Tehnologii și aplicații în metalurgia pulberilor, Editura Universitaria Craiova, 2002

Subject of study: Mechanisms I (code: D22 TCML327) + II (Code D22 TCML437)

NUMBER OF CREDITS: 4 – 1st semester + 4 -2nd semester

YEAR/SEMESTER: 2nd year/1st and 2nd semester

TYPE OF COURSE: of the field

OBJECTIVES: The course provides students with specific notions for dimensional and geometric accuracy of mechanical engineering parts, correct prescription of economic tolerances when designing assembly fits of main types: cylindrical and conical, with bearings, thread, feathers and grooves gear. Laboratory work skills training needed to perform control operations aimed in manufacturing processes of parts and assembly listed above, by performing measurements with different methods and measuring devices.

CONTENT:

Structural analysis and synthesis of mechanisms.
Kinematics of flat mechanisms
Force analysis of mechanisms

Cam mechanisms (analysis and synthesis)
Gearings (kinematics, geometry, efficiency)
Dynamics of machines
Balancing of rotating masses

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAFIE SELECTIVĂ:

- Antonescu, P., Mecanisme, Ed. Printech, Bucuresti, 2003.
Antonescu, P., Mecanisme. Teme de proiect, Ed. Printech, Bucuresti, 2000.
Crețu, S.M., Mecanisme. Analiză structurală. Teorie și aplicații, Ed. Sitech, Craiova, 2012.
Crețu, S.M., Dumitru N., Lucrări de laborator la disciplina Mecanisme, Ed. Sitech, Craiova, 2011.
Handra-Luca, V., Stoica, I.A., Introducere in teoria mecanismelor, vol I/II, Ed. Dacia, Cluj-Napoca, 1982/1983.
Hartenberg, R. S., Denavit, J., Kinematic Synthesis of Linkages, McGraw-Hill, 1964.
Litvin, F. L., Fuentes, A., Gear Geometry and Applied Theory, Cambridge University Press, 2004.
Ionescu, T. G., Standardizarea terminologiei Stiintei Mecanismelor si a Masinilor, Mechanism and Machine Theory 38, 2003.
Popescu, I., Mecanisme, Vol. I, II, Reprog. Univ. Craiova, 1995.
Sauer, L., s.a., Angrenaje, Ed. Tehnica, 1970.
Wilson, C. E., Sadler, J.P., Kinematics and Dynamics of Machinery, Harper Collins College Publisher, 1991.
***** SR EN ISO 3952-1: 1994, SR EN ISO 3952-2: 2001, SR EN ISO 3952-3: 2001; STAS 734-82; STAS 915-81; STAS 6012-82; STAS 6055-82; STAS 822-82; STAS 6844-80; STAS 5013-82; STAS 6845-82

Subject of study: Mechanical vibrations, Code D22TCML328

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: fundamental (speciality of the academic domain)

OBJECTIVES: The course offers the students theoretical and practical concepts regarding the modelling process of vibrating mechanical systems , both discrete and continuous as well as different methods both analytical and numerical for solving these models.

CONTENT: General considerations, Elements for modeling the mechanical systems with one degree of freedom (1DOF) - (un)damping, Elements for modeling the mechanical systems 2DOF - (un)damping, Elements for modeling mechanical systems xDOF and numerical method for solving them, Mechanical vibrations of continuous systems (longitudinal, rotational and bending), Special problems of vibrational systems (biological systems, coupled problems etc.).

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

- Metode numerice, Rinderu, P.L., Gruionu, L., 2003, Editura Universitaria, Craiova

Vibrații mecanice – probleme rezolvate, Rinderu, PL, Bagnaru, D., Universitatea din Craiova, 1997
 Mechanics of Structures Variational and Computational Methods, Walter Wunderlich, Walter Pilkey, Taylor&Francis, 2007
 Teoria și practica vibrațiilor mecanice, I. Magheți, Ed. Did. Ped., 2007.

Subject of study: Strength of materials I (Code D22TCML329) + II (Code D22TCML438)

NUMBER OF CREDITS: 4-1st semester + 5-2nd semester

YEAR/SEMESTER: 2nd year/ 1st and 2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course offers the students theoretical and practical concepts regarding the strength analysis of structures (machine parts, constructions, strength structures and so on).

CONTENT: Mechanical structures schematization. Mechanical structures analysis(loadings, reaction forces, stresses, displacements and so on). The interpretation of mechanical loadings states for a construction; the design of mechanical structures; strength and stiffness calculus, structures strength checkings.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Ilincioiu, D, Rezistența Materialelor, Ed. ROM TPT, Craiova, 2002.

Ilincioiu, D, Rezistența Materialelor, Ed. ROM TPT, Craiova, 2003.

Ilincioiu, D, Rezistența Materialelor, ediția a II-a, Ed. ROM TPT, Craiova, 2007.

Ilincioiu, D, Miritoiu, C, Rezistența Materialelor, vol. și II, Ed. Universitaria, Craiova 2011.

Miritoiu, C, Ilincioiu, D, Rezistența Materialelor. Aplicații, vol.I, Ed. SITECH, Craiova 2012.

Subject of study: Tolerances and dimensional control I (Code:D22TCML330) + II (Code: D22TCML441)

NUMBER OF CREDITS: 3 - 1st semester + 3 – 2nd semester

YEAR/SEMESTER: year/1st and 2nd semester

TYPE OF COURSE: of the field

OBJECTIVES: The course provides students with specific notions for dimensional and geometric accuracy of mechanical engineering parts, correct prescription of economic tolerances when designing assembly fits of main types: cylindrical and conical, with bearings, thread, feathers and grooves gear. Laboratory work skills training needed to perform control operations aimed in manufacturing processes of parts and assembly listed above, by performing measurements with different methods and measuring devices.

CONTENT: Dimensional and geometric tolerances. Surface roughness. Tolerances, fits and control of smooth cylindrical assemblies. Chains of dimensions. Tolerances, fits and control of conical parts and assemblies. Bearing assembly tolerances and fits. Tolerances, fits and control threaded fasteners. Tolerances, fits and control parts and assemblies with wedges and grooves. Tolerances, fits and control gear wheels and gear cylinders. 3D

measurement with TESA MultiGage articulated arm.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

REFERENCES (picked):

CHERCIU, M. – Toleranțele și precizia mecanismelor, Editura Universitaria, Craiova, 2002

Dumitru N., Margine Al., CHERCIU Mirela, Ungureanu A., Catrina G.. – Organe de mașini. Arbori și lagăre. Proiectarea prin metode clasice și moderne, Editura Tehnică, București, 2008.

KRULIKOWSKI, A. - Fundamentals of Geometric Dimensioning and Tolerancing, second edition, Delmar CENGAGE Learning, N.Y. 2007

LĂZĂRESCU, I. și ȘTEȚIU, C.E. - Toleranțe, ajustaje, calcul cu toleranțe, calibre, Editura tehnică, București, 1984.

MEADOWS JAMES – Geometric Dimensioning and Tolerancing in 2007, Workbook and Answerbook, James Meadows & Associates, Inc., USA 2007

STANIMIR, A., BENGĂ, G., CHERCIU, M. - Toleranțe și control dimensional, îndrumar pentru lucrări practice, Reprografia Universității din Craiova, 1998.

VĂTAFU, M. și PASĂRE M. - Toleranțe și control dimensional, Editura Universitaria Craiova, 2002

Subject of study: Physical education III (Sport) (Code D22TCML331)

NUMBER OF CREDITS: “1”

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: -

Subject of study: Foreign language (English, Francaise, Deutsch III (Code D22TCML332)

NUMBER OF CREDITS: 2

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: optional

TEACHING LANGUAGE: -

EVALUATION: Written/oral examination

Subject of study: Basics of economy (Code D22TCML333)

NUMBER OF CREDITS: 2

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Technical physics (Code D22TCML435)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 2nd year/2nd semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Fluids mechanics and Hydraulic Machines, Code: D22TCML439

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 2nd year/2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course offers to the students the theoretical and practical concepts about the fluids flow with application in the mechanical engineering

CONTENT:

The main properties of fluids. The general methods of study used in the mechanics of fluids. The fundamental equations of the mechanics fluids. The kinematics of the fluid. The dynamics of the ideal fluids. The statics of fluids. The dynamics of the viscous fluids under the laminar and turbulent flow.

The applied of the mechanics of fluids.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Anton L., The mechanics of fluids and hydraulic machines, The Horizons University Publishing House, Timisoara, 1998,

M. Buculei, M. Radulescu, Talu M., Mihaela Buculei, The mechanics of fluids and the hydraulics machinery .Vol.I, The Universitaria Publishing House, Craiova, 2011.

Constantinescu VN, The dynamics of the viscous fluids under in the laminar regime, The Academy Publishing House, Bucharest, 1983;

Ghe. Dan Ionescu, Introduction into the mechanics of fluids, The Technical Publishing House, Bucharest, 2005

Rădulescu V., N. Vasiliu – The fluid of mechanics, Fundamentals and Applications. Collection of problems, The Printech Publishing House, Bucharest, 2004;

Talu M., The fluid of mechanics. Theory and applications solved computationally using the finite element method or by numerical simulation. The Universitaria Publishing House, Craiova, 2008

Ungureanu V., The fluid of mechanics and the hydraulic machines, The Transilvania University Publishing House, Brasov, 2008;

Subject of study: Cutting theory, Code D22TCML440

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 2nd year/2nd semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course offers the students theoretical and practical concepts of the surfaces generation, physical principles of the cutting process as well as a knowledge of the characteristics phenomena of the cutting processes

CONTENT: Kinematics of cutting process. Physical principles of cutting process (chips formation and types of chips, the importance of chips shape, built-up-edges etc.). Plastic deformations of workpiece material. Forces and power in cutting processes, thermal phenomena in cutting processes. Cutting fluids. Tool wear and tool life. Vibration in cutting process. The quality of machined surfaces.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Ciolacu, F.G., Mazilu D., Crăciunoiu N., Așchiere și procedee de prelucrare, Reprografia Universității din Craiova, 1999.

Ciolacu, F.G., Crăciunoiu, N., Benga, G.C, Așchiere și procedee de prelucrare, Editura Sitech, Craiova, 2008.

Cozmincă, M., Panait, S., Constantinescu, S., Bazele așchierii, Editura Instit. Politehnic, Gh. Asachi, Iași, 1995

DeGarmo, E.P., Black, J.T., Kohser, R., Materials and Process in Manufacturing, Eight Edition, Pretince Hall, Upper Saddle River, NJ, 1997.

Oprean, A., ș.a., Bazele așchierii și generării suprafețelor, Editura Didactică și Pedagogică, București, 1981;

Popescu I., Teoria așchierii, Universitatea din Craiova, Facultatea de Mecanică, 1994.

Subject of study: Physical education IV (Sport) (Code D22TCML442)

NUMBER OF CREDITS: "1"

YEAR/SEMESTER: 2nd year/2nd semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: -

Subject of study: Practice (Code D22TCML443)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Foreign language (English, Francaise, Deutsch IV (Code D22TCML444)

NUMBER OF CREDITS: 2

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: optional

TEACHING LANGUAGE: -

EVALUATION: Written/oral examination

Third year of study:

Subject of study: Thermotechnics and thermal equipments I (D22TCML550)+ II (D22TCML660)

Number of credits: 5 – 1st sem I; 4 – 2nd sem

Year/Semester: 3rd year, 1st and 2nd semester

Type of Course: Mandatory

Objectives: It presents the notions necessary for understanding thermal phenomena, use of heat and getting mechanical work from heat, the fundamental principles of design and operation of thermal machines and installation

Content: General notions about the laws of perfect gas, simple transformations and the perfect gas mixtures, the thermodynamic principles. There are presented the methods for thermodynamics analyses, there are studied the real gases putting into evidence the deviations from perfect gas properties used in technical applications. Are analyzed the theoretical principles of thermal machines through the presentation of the methods for the study.

Teaching Language: Romanian

Evaluation: written/ oral examination

Bibliography:

Bică, M., Cernăianu C.D., Bara, N., Termotehnică și masini termice, Ed. Universitaria, Craiova 2010.

Dănescu, Al.s.a. Termotehnică și masini termice, E.D.P. Bucuresti 1985.

Radenco Vsevolod, Marinescu Mircea, Băran Nicolae, Termodinamică Tehnică. Teorie și aplicații. Editura Tehnică, București, 1996.

Ungureanu, C., Pănoiu, Zubcu, V., Ionel, I., Combustibili, instalații de ardere, cazane, Editura Politehnică N., Timișoara, 1998

Kirilin, V.A., Sicev, V.V., Șeindlin, A.E., Termodinamica, Editura Științifică și Enciclopedică, București 1985.

Subject of study: Machine Elements I (Code D22TCML551) + II (Code D22TCML661)

NUMBER OF CREDITS: 5+5

YEAR/SEMESTER: 3th year/1+2nd semester

TYPE OF COURSE: Mandatory.

OBJECTIVES: Promoting and developing of some concepts, machine elements design procedures and techniques from mechanical and mechatronic systems structure, stimulating and forming the creativity students skills by elaborating original solutions and modern design through facilities brought by CAD/CAM/CAE.

This course addresses to students which follows the 4 years undergraduate studies at Faculty of Mechanics from Automotive Engineering (AR), Industrial Engineering (TCM), Transport Engineering (ITT), Engineering and Management (IEM).

CONTENT: Machine elements design basics; Screw fastening and power screw transmissions; Gears and gear transmissions; Chain drives; Friction wheels transmissions; Belt drives; Continuously variable transmissions; Shafts and axes; Rolling contact bearings; Sliding contact bearings; Couplings; Sealing elements; Threaded joints; Assemblies through sunk and tapered keys; Spline assemblies; Polygonal profiles assemblies;

Cotter and knuckle joints; Conical couplings; Assemblies through conical friction elements; Clamp couplings; Fretting and fatigue assemblies; Assemblies through elastic and dumping elements.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Catrina, Gh. s. a., Organe de mașini. Îndrumar de proiectarea pentru transmisii mecanice, Editura Universitaria. Craiova, 2012.

Catrina, Gh., Proiectarea transmisiilor prin cuple elicoidale, Facultatea de Mecanică Craiova, 1988.

Crudu, I., Atlas de reductoare, EDP, București, 1983.

Dieter Muhs, s.a, Roloff/ Matek Machinenelemente Viewegs Fachbucher der Technik, 2003.

Dumitru N., Margine A., Organe de mașini. Asamblări. Elemente elastice. Proiectare asistată de calculator. Editura Universitaria Craiova, 2002.

Dumitru N., Margine, A., Catrina, Gh., ș.a., Organe de mașini. Arbori și lagăre. Proiectare asistată de calculator, Editura Tehnica, București, 2008, ISBN 978-973-31-2332-3.

Dumitru, N., Nanu, Gh., Mecanisme și transmisii mecanice, Editura Didactică și Pedagogică, Craiova, 2008.

Dumitru, N., Organe de mașini. Angrenaje. Elemente de proiectare, R. Univ. Craiova, Craiova, 1996.

Dumitru, N., Organe de mașini. Transmisii mecanice, R. Univ. Craiova, Craiova, 1996.

Ivanov M. N., Organe de mașini, Editura Tehnică „Chișinău”, Universitatea Tehnică a Moldovei, 1997.

Robert L. MOTT, Machine Elements in mechanical Design, Prentice Hall, Columbus, Ohio, 1999.

Subject of study: Mechanical Systems Modelling Basics, Code: D22TCML552

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 3rd year/1st semester

TYPE OF COURSE: Mandatory.

OBJECTIVES: This course forms and guide the students assimilation capacity for modelling and simulating, through modern methods, of the behavior in static and dynamic mode structures and mobile mechanical systems, based on multi body systems theory and finite element method.

Another aim is the one that it can be develop and form, the students ability through applications by using important modelling and analysis software (ADAMS, ANSYS, etc.).

CONTENT: Elements of matrices and vectorial algebra. Computer kinematic and dynamic modelling through computational methods of mechanical mobile systems.

Kinematic modelling and simulations with ADAMS software. Linear elasticity elements. Finite element modelling basics. Finite element modelling in static and dynamic mode of mechanical structures (theory and applications). Modelling and simulations by using finite element method with ANSYS and COSMOS software.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Amirouche, F., Computational methods in multibody dynamics, Prentice-Hall, 1992.

Buculei M., Marin, M., Elemente de mecanică tehnică. Teorie și aplicații, Ed. Universitaria, Craiova, 1994.

Brătianu, C., Metode cu elemente finite în dinamica fluidelor, București, Ed.Academiei, 1983.

Corless, R.M., Essential in Maple, Springer-Verlag, 1995

Dumitru N., Margine A., Bazele modelării în ingineria mecanică. Editura Universitaria Craiova, 2002.

Dumitru N., Margine A., Organe de mașini. Asamblări. Elemente elastice. Proiectare asistată de calculator. Editura Universitaria Craiova, 2002.

Dumitru N., Margine, A., Catrina, Gh., ș.a., Organe de mașini. Arbori și lagăre. Proiectare asistată de calculator, Editura Tehnica, București, 2008, ISBN 978-973-31-2332-3.

Dumitru, N., Nanu, Gh., Mecanisme și transmisii mecanice, Editura Didactică și Pedagogică, Craiova, 2008.

Logan, Daryl, A First Course in the Finite Element Method, PWS Publishing Company, Boston, 1992.

Alexandru, P., Vișa, I. ș.a., Modelarea statico-dinamică a mecanismelor de ghidare ale roților automobilelor, Ed. LUX LIBRIS, Brașov, 2005.

Neagoe, D., Calculul și construcția autovehiculelor, vol.I, II, Ed.Universitaria, Craiova, 2000.

Oțăt, V., Bolcu, D., Thierheimer W., Simniceanu, L., Dinamica autovehiculelor, Ed.Universitaria, Craiova, 2005.

*** Ansys theory reference, 8th Edition SAS IP, Inc.

*** Adams flex guide Mechanical Dynamics rev. 10.0.

Subject of study: Surfaces generation processes on machine-tools – Basics, Code: D22TCML553

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 3rd year/1st semester

TYPE OF COURSE: fundamental

OBJECTIVES: The course offers the students theoretical and practical concepts of the surfaces generation using classical operations: turning, planning, shaping, broaching, drilling, milling, grinding.

CONTENT: Surfaces generation by planing and shaping. Surfaces generation by broaching, Surfaces generation by turning. Surfaces generation by drilling, counterboring and reaming. Surfaces generation by milling. Surfaces generation of gears with gear form cutting tools, gear cutting hob, gear shaper tools. Surface generation by grinding.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Ciolacu, F.G., Mazilu D., Crăciunoiu N., Așchiere și procedee de prelucrare, Reprografia Universității din Craiova, 1999.

Ciolacu, F.G., Crăciunoiu, N., Benga, G.C, Așchiere și procedee de prelucrare, Editura Sitech, Craiova, 2008.

Cozmincă, M., Panait, S., Constantinescu, S., Bazele așchierii, Editura Instit. Politehnic, Gh. Asachi, Iași, 1995

DeGarmo, E.P., Black, J.T., Kohser, R., Materials and Process in Manufacturing, Eight Edition, Pretince Hall, Upper Saddle River, NJ, 1997.

Oprean, A., ș.a., Bazele așchierii și generării suprafețelor, Editura Didactică și Pedagogică, București, 1981;

Popescu I., Teoria așchierii, Universitatea din Craiova, Facultatea de Mecanică, 1994.

Subject of study: Electrotehnics and electrical Machines , Code D22TCML554

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 3rd year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Electronics and basics of automation systems, Code D22TCML555

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 3rd year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Subject of study: Tribology, Code D22TCML556

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 3rd year/1st semester

TYPE OF COURSE: Mandatory

OBJECTIVES:

The course provides students with theoretical and practical concepts for the study of physical, mechanical, metallurgical and chemical interactions of elements in relative motion and lubrication issues.

CONTENT:

Definition and importance of tribology; Friction in joints; Tribotechnical systems; The deformable elastic body; Hertzian elastic contact; Elastic contact with friction; Lubricants; Friction regimes; State of lubrication and wear; Recommendations for friction joints materials selection.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Crețu S. Spiridon, Mecanica contactului, vol. I, Editura „Gh. Asachi” Iași, 2002.

Popinceanu Nicolae, ș. a., Probleme fundamentale ale contactului cu rostogolire, Editura tehnică, București, 1985.

Posea Nicolae, Rezistența materialelor, Editura Didactică și Pedagogică, București, 1979.

Gafițanu Mihai, ș. a., Rulmenți-proiectare și tehnologie, Editura tehnică, București, 1985.

Olaru, D. N., Tribologie. Elemente de bază asupra frecării, ungerii și uzării, Universitatea Tehnică "Gh. Asachi", Iași, 1985.

Catrina, Gh., Introducere in tribologie, Editura Universitaria, Craiova 2002.

Bercea, I., Olaru, D., N., Tribologia sistemelor mecanice, Universitatea tehnică „Gh. Asachi” Iași, 1998.

Subject of study: Computer Aided Design, Code: D22TCML557

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 3rd year/1st semester
TYPE OF COURSE: Mandatory
OBJECTIVES: The course offers the general informations and concepts of Advanced Computer Aided Design, and the capacity to operate cu Pro/Engineer - Creo program.
CONTENT: Pro/Engineer (Creo): 3d modelling and editing of parametric models. Drawing module - Graphical documentation used for fabrication of the designed models. Assembly module – virtual assembly of the designed 3d models.
TEACHING LANGUAGE: Romanian
EVALUATION: Written/practice examination
BIBLIOGRAPHY (selective):
 *** - Technical documentation ProEngineer-Creo
 Negru Mihai, Proiectarea constructiva si tehnologica asistata de calculator, CD, 2010.

Subject of study: Thermal treatment, Code: D22TCML658

NUMBER OF CREDITS: 3
YEAR/SEMESTER: 3rd year/2nd semester
TYPE OF COURSE: Mandatory
OBJECTIVES: The course aims building knowledge on practical technology to improve strength properties for mechanical parts submitted to high stress in use. The students will learn the physical processes which determine these transformations, types of treatment, specific technologies for steel and noniron parts , for machine parts, tools, welded parts, sintered parts.
CONTENT: Defining of the thermal treatment process, technological parameters. Preliminary thermal treatments (annealings). Final thermal treatments (quenching and tempering). Thermochemical treatments. Thermal treatments of nonferrous alloys, welding semi-finished product, sintered materials product. Thermal and thermochemical treatments of semi-finished product made by cast iron. Thermal and thermochemical treatments apply to machine parts and cutting tools.
TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination
BIBLIOGRAPHY (selective):
 Colan, N.- Studiul metalelor, EDP, București, 1983
 Dulămiță , T.- Tehnologia tratamentelor termice, EDP, București, 1983
 Geru, N. – Metalurgie fizică, EDP, București, 1981
 Trușculescu, M.- Studiul metalelor, EDP, București, 1977
 Tărăță, Daniela-Studiul materialelor, Edit.SITECH Craiova,
 Sontea S., Tarata D.,-Tratamente termice si termochimice, Edit. Spirit Romanesc, Craiova 2001
 Carțiș , Ioan Gh., Tratamente termice, Editura Facla, Timișoara, 1982.
 Dulămiță T., Tratamente termice si termochimice, EDP București, 1983

Subject of study: Machine Elements Project Code D22TCML662

NUMBER OF CREDITS: 2
YEAR/SEMESTER: 3th year/2nd semester
TYPE OF COURSE: Mandatory.
OBJECTIVES: Promoting and developing of some concepts, machine elements design procedures and techniques from mechanical and mechatronic

systems structure, stimulating and forming the creativity students skills by elaborating original solutions and modern design through facilities brought by CAD/CAM/CAE.

This course addresses to students which follows the 4 years undergraduate studies at Faculty of Mechanics Industrial Engineering (TCM).

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Catrina, Gh. s. a., Organe de mașini. Îndrumar de proiectarea pentru transmisii mecanice, Editura Universitaria. Craiova, 2012.

Catrina, Gh., Proiectarea transmisiilor prin cuple elicoidale, Facultatea de Mecanică Craiova, 1988.

Crudu, I., Atlas de reductoare, EDP, București, 1983.

Dieter Muhs, s.a, Roloff/ Matek Machinenelemente Viewegs Fachbucher der Technik, 2003.

Dumitru N., Margine A., Organe de mașini. Asamblări. Elemente elastice. Proiectare asistată de calculator. Editura Universitaria Craiova, 2002.

Dumitru N., Margine, A., Catrina, Gh., ș.a., Organe de mașini. Arbori și lagăre. Proiectare asistată de calculator, Editura Tehnica, București, 2008, ISBN 978-973-31-2332-3.

Dumitru, N., Nanu, Gh., Mecanisme și transmisii mecanice, Editura Didactică și Pedagogică, Craiova, 2008.

Dumitru, N., Organe de mașini. Angrenaje. Elemente de proiectare, R. Univ. Craiova, Craiova, 1996.

Dumitru, N., Organe de mașini. Transmisii mecanice, R. Univ. Craiova, Craiova, 1996.

Ivanov M. N., Organe de mașini, Editura Tehnică „Chișinău”, Universitatea Tehnică a Moldovei, 1997.

Robert L. MOTT, Machine Elements in mechanical Design, Prentice Hall, Columbus, Ohio, 1999

SUBJECT OF STUDY: Machine-tools, Code: D22TCML663

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 3rd year/2nd semester

TYPE OF COURSE: of speciaity, unavoidable

OBJECTIVES: The course present to students actuator and command mecanismes for machine-tools, the peific component elements, symbols, used in representing the skeleton, hydraulic and electrical diagram and the kinetics, construction, work adjusting and the possibilities of machinability for the for the most important types of machine-tools.

CONTENT: The linkages of machine-tools. Representing linkages. The principal linkages for obtaining linear mouvement. Specific mechanisms used for principal linkages. Lead linkages, clasification, structure. Specific mechanisms used for lead linkages Principal hydraulic system for machine-tools. Kinetik for usuale machine-tools.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Botez, E. s.a. Mașini-unelte Teoria Vol.I Editura tehnică, București, 1977;

Botez, E. s.a. Mașini-unelte Organologia si precizia mașinilor-unelte Vol.II Editura tehnică, București, 1978;

Gheghea, I. s.a. Mașini-unelte si agregate, Editura Didactică si Pedagogică București, 1983;
 Tauru, Gh., Mașini-unelte si agregate, vol.I+II, Editura PUNCT Targu-Jiu 1997,
 Tauru, Gh., Mașini-unelte si agregate, vol.I+II+IV+V+VI, Reprografia Universității din Craiova, 1997;
 Tauru, Gh., Didu M., s.a Mașini-unelte, Îndrumar de laborator, Reprografia Universității din Craiova 1996;
 Tauru, Gh., Mașini-unelte, vol.I+II, Editura Universitaria, Craiova, 1998;
 Tauru, Gh., Didu M., s.a Mașini-unelte si agregate, Editura Universitaria, Craiova, 2000;
 Voinea, A., Mașini-unelte, Scheme cinematice Reprografia Universității din Craiova 1983.

Subject of study: Cutting tools, Code: D22TCML664

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 3rd year/2nd semester

TYPE OF COURSE: Speciality

OBJECTIVES: The course offers the students theoretical and practical basis regarding the cutting tools design, and in the same time, both the knowledge of the dimensional and geometrical elements of the cutting tools. The course presentation is graduated, starting from the single point tool geometry and finishing with the very complex tools from point of view of geometry and dimensional elements.

CONTENT: Tools classification. Tool-in-hand system. Position system. Kinematic system. Tool geometry in tool-in-hand system (shape of tool faces, rake angle, relief angle, the wedge angle, tool cutting edge angle, the cutting edge inclination angle). Optimum values of geometric elements of tools. Tool materials. Fixing devices for tools. Tool strenght and rigidity calculations

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Stoian, A. Proiectarea sculelor așchietoare, Reprografia Universitatii din craiova, 1994.
 Stoian, A., Proiectarea broșelor, Editura Universitaria, Craiova, 2001
 Secara, Gh. Proiectarea sculelor așchietoare, Editura Didactică si Pedagogica, Bucuresti, 1974.
 Cozmincă, M., Panait, S., Constantinescu, S., Bazele așchierii, Editura Instit. Politehnic, Gh. Asachi, Iași, 1995
 Oprean, A., ș.a., Bazele așchierii și generării suprafețelor, Editura Didactică și Pedagogică, București, 1981;
 Popescu I., Teoria așchierii, Universitatea din Craiova, Facultatea de Mecanică, 1994.

Subject of study: Products Manufacturing Technology I (Code: D22TCML665)

NUMBER OF CREDITS: 4

YEAR/SEMESTER: 3rd year/2nd semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The students assimilation of: the concepts specific to products fabrication technology, the design methodology of tehnological fabrication processes in classical systems production and with

CNC and the typical technology for different groups of products. The forming of necessary aptitudes to determine the influence of different factors on the manufacturing precision and the surfaces quality made in the technological systems, but also their programming and setting.

CONTENT: The manufacturing precision. The basis of technological processes design for metal cutting. The technology for different types of surfaces machining. The fabrication technology of main products groups. General problems concerning the technologies development for manufacturing on semi-automatic and automatic machine. The basis of CNC products systems programming. Elements of the assembly technology.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Albu. A., ș.a. - Programarea asistată de calculator a mașinilor-unelte - Editura Tehnică, București, 1980;
 Ciocârdia. C., ș.a. - Bazele elaborării proceselor tehnologice în construcția de mașini, E.D.P., București, 1983;
 Drăghici. G., - Conceptia proceselor de prelucrare mecanica, Editura Politehnica, Timisoara, 2005;
 Picoș. C., ș.a. - Proiectarea tehnologiilor de prelucrare mecanică prin așchiere - Editura Universitas, Chișinău, 1992 ;
 Popescu. I., ș.a., - Tehnologia fabricării produselor mecanice Vol. 1, 2 Editura MATRIXROM, București, 2005;
 Stanimir. Al., - Tehnologia construcțiilor de mașini - Bazele proiectării proceselor tehnologice de prelucrare mecanică - curs - Reprografia Universității din Craiova, 1998;
 Stanimir. Al., - Tehnologii de prelucrare pe strunguri cu comandă numerică - Editura Universitaria, Craiova, 2002;
 Stanimir. Al., - Precizia de prelucrare si calitatea suprafețelor aschiate - Editura Universitaria, Craiova, 2005;
 Zamfirache, M., - Prelucrari mecanice - Editura Universitaria, Craiova, 2002.

Subject of study: Computer Aided Manufacturing, Code: D22TCML666

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 3rd year/2nd semester

TYPE OF COURSE: Speciality

OBJECTIVES: The course offers the students theoretical and practical basis regarding integrated CAD/CAM systems and knowledge about the using of simulation methods of the machining processes.

CONTENT: CAD/CAM/CAPP systems. Definition. Industrial activities integration. Life cycle. Structure and components of CAD/CAM system. Decisions type. Actions types. Computer aided design. Design systems evolution. Computer aided manufacturing. Manufacturing systems evolution. Computer aided processes and planning – CAPP. Variant method. Generative method. Manufacturing features. Group technology. Pieces codification. Design and manufacturing integration. CAD/CAM programs for design and simulation of the machining processes.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

- Ivan, N.V. Sisteme integrate CAD-CAM, Algoritmi și programe CAD-T, EDP, București, 2001
- Savii George, Milenco Luchin, Modelare și Simulare, Editura Eurostampa, Timișoara, 2000.
- Drăgoi, G., Guran, M., Sisteme integrate de producție asistate de calculator, Ed. Tehnică, București, 1997.
- Drăghici G., Ingineria integrată a produselor, Ed. Eurobit, Timișoara, 1999.
- Minciu, C., Predinca, N., Mașini-unelte cu comandă numerică, Editura Tehnică, București, 1985.
- Ungureanu G., Introducere în Computer Aided Design și Computer Aided Manufacturing, Editura Tehnopress, 2005.
- Stanimir, Al., Programarea mașinilor-unelte cu comandă numerică. Ed. Universitaria, Craiova, 2002
- Păunescu, T., Robotizarea proceselor tehnologice în construcția de mașini, Universitatea Transilvania Brașov, 1992.
- Zapciu, Miron, fabricatia asistata de calculator, Editura Politehnica Press, Bucuresti, 2003
- Ciocârdia. C., ș.a. - Bazele elaborării proceselor tehnologice în construcția de mașini, E.D.P., București, 1983.
- Stoll, H., W., Design for Manufacturing: An Overview. ASTM Applied Mechanics Reviews, 39 (9), pp. 1356-1364 (1986).

Subject of study: Practice (Code D22TCML667)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 2nd year/1st semester

TYPE OF COURSE: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

Fourth year of study:

Subject of study: Products Manufacturing Technology II (Code: D22TCML771)

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 4th year/1st semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The students assimilation of: the concepts specific to products fabrication technology, the design methodology of technological fabrication processes in classical systems production and with CNC and the typical technology for different groups of products. The forming of necessary aptitudes to determine the influence of different factors on the manufacturing precision and the surfaces quality made in the technological systems, but also their programming and setting.

CONTENT: The manufacturing precision. The basis of technological processes design for metal cutting. The technology for different types of surfaces machining. The fabrication technology of main products groups. General problems concerning the technologies development for manufacturing on semi-automatic and automatic machine. The basis of CNC products systems programming. Elements of the assembly technology.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Albu. A., ș.a. - Programarea asistată de calculator a mașinilor-unelte - Editura Tehnică, București, 1980;
Ciocârdia. C., ș.a. - Bazele elaborării proceselor tehnologice în construcția de mașini, E.D.P., București, 1983;
Drăghici. G., - Conceptia proceselor de prelucrare mecanica, Editura Politehnica, Timisoara, 2005;
Picoș. C., ș.a. - Proiectarea tehnologiilor de prelucrare mecanică prin așchiere - Editura Universitas, Chișinău, 1992 ;
Popescu. I., ș.a., - Tehnologia fabricării produselor mecanice Vol. 1, 2 Editura MATRIXROM, București, 2005;
Stanimir. Al., - Tehnologia construcțiilor de mașini - Bazele proiectării proceselor tehnologice de prelucrare mecanică - curs - Reprografia Universității din Craiova, 1998;
Stanimir. Al., - Tehnologii de prelucrare pe strunguri cu comandă numerică - Editura Universitaria, Craiova, 2002;
Stanimir. Al., - Precizia de prelucrare si calitatea suprafețelor aschiate - Editura Universitaria, Craiova, 2005;
Zamfirache, M., - Prelucrari mecanice - Editura Universitaria, Craiova, 2002.

Subject of study: Products Manufacturing Technology- Project (Code: D22TCML772)

NUMBER OF CREDITS: 2

YEAR/SEMESTER: 4th year/1st semester

TYPE OF Project: Mandatory

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Albu. A., ș.a. - Programarea asistată de calculator a mașinilor-unelte - Editura Tehnică, București, 1980;

Ciocârdia. C., ș.a. - Bazele elaborării proceselor tehnologice în construcția de mașini, E.D.P., București, 1983;

Drăghici. G., - Conceptia proceselor de prelucrare mecanica, Editura Politehnica, Timisoara, 2005;

Picoș. C., ș.a. - Proiectarea tehnologiilor de prelucrare mecanică prin așchiere - Editura Universitas, Chișinău, 1992 ;

Popescu. I., ș.a., - Tehnologia fabricării produselor mecanice Vol. 1, 2 Editura MATRIXROM, București, 2005;

Stanimir. Al., - Tehnologia construcțiilor de mașini - Bazele proiectării proceselor tehnologice de prelucrare mecanică - curs - Reprografia Universității din Craiova, 1998;

Stanimir. Al., - Tehnologii de prelucrare pe strunguri cu comandă numerică - Editura Universitaria, Craiova, 2002;

Stanimir. Al., - Precizia de prelucrare si calitatea suprafețelor aschiate - Editura Universitaria, Craiova, 2005;

Zamfirache, M., - Prelucrari mecanice - Editura Universitaria, Craiova, 2002.

Subject of study: Manufacturing devices I (Code:D22TCML773) + II (Code: D22TCML883)

NUMBER OF CREDITS: 4 + 4

YEAR/SEMESTER: 4th year/1st and 2nd semesters

TYPE OF COURSE: Mandatory

OBJECTIVES: The course offers the students theoretical and practical basis regarding the design of the machining devices, starting with the centering and clamping-in schemes and finishing final design of the device (parts and assembly drawings).

CONTENT: Devices. Introduction. Definitions. The goal of the machining devices. Principles and construction of the orientation elements. Surfaces geometry of orientation elements. Orientation errors. Calculus methods of the real errors. Orientation and clamping-in scheme. The design of the technique-possible scheme. Technique selection of the technique possible. Economical selection of the technique possible scheme. Application. The orientation basis symbol. Clamping-in of the pieces on devices. The forces structure system with loads the pieces. The load analysis from the machining process. Clamping-in mechanisms of the pieces. Types of the clamping-in mechanisms (key type, thread type, eccentric type). Centering and clamping-in mechanisms (V-block type, jaw and plujer type, with elastic elements- collets type). Drive systems of the clamping-in mechanisms (air, hydraulic, air-hydraulic). The practice of constructive design of the devices.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Dragnei M., Dispozitive din elemente modulate, Editura Universitaria, Craiova 2004.

Dragnei, M., Tehnologii si echipamente de control, Editura Universitaria, Craiova, 1999;

Sturzu A., Bazele proiectarii dispozitivelor de control a formei si pozitiei relative a suprafețelor in

constructia de masini, Editura Tehnica, Bucuresti, 1977.

Bragaru, A., s.a., SEFA-DISROM Sistem si metoda, Volumul I si II - teoria si practica proiectarii dispozitivelor pentru prelucrari pe masini-unelte, Editura Tehnica, Bucuresti 1982.

Subject of study: Special tools design, Code: D22TCML774

NUMBER OF CREDITS: 5

YEAR/SEMESTER: 4th year/First semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The course offers the students theoretical and practical basis regarding the special cutting tools design, and in the same time, both the knowledge of the dimensional and geometrical elements of the cutting tools.

CONTENT: Broaches. Clasification. Caracterisation. Constructive and dimensional elements. Geoemtry. Special broaches. Drills. Clasification. Drill types. Constructive and dimensional elements. Geometry of twist drill. Drill – suplimentary resharpenings. Counter-bores. Geometry and dimensional elements. Reamers. Clasification. Geometry and dimensional elements. Mills. Clasification. Geometry and dimensional elements.

TEACHING LANGUAGE: Romanian

EVALUATION: Written examination

BIBLIOGRAPHY (selective):

Stoian, A. Proiectarea sculeor aşchietoare, Reprografia Universitatii din craiova, 1994.
Stoian, A., Proiectarea broşelor, Editura Universitaria, Craiova, 2001
Secara, Gh. Proiectarea sculelor aşchietoare, Editura Didactică si Pedagogica, Bucuresti, 1974.
Cozmincă, M., Panait, S., Constantinescu, S., Bazele aşchierii, Editura Instit. Politehnic, Gh. Asachi, Iaşi, 1995
Oprean, A., ş.a., Bazele aşchierii şi generării suprafeţelor, Editura Didactică şi Pedagogică, Bucureşti, 1981;
Popescu I., Teoria aşchierii, Universitatea din Craiova, Facultatea de Mecanică, 1994.

Subject of study: AUTOMATION of the PROCESSES and PRODUCTION SYSTEMS I (Code: D22TCML775)+ II (Code: D22TCML884)

NUMBER OF CREDITS: 5-1st sem. + 2- 2nd sem.

YEAR/SEMESTER: 4th year/1st and 2nd semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The course offers students the theoretical and practical aspects of the theoretical and practical aspects of automation processes, machines and production systems.

CONTENT:

Technological flexibility: concepts, forms of organization, structure typical of flexible; Modular design concept, design, modular; Reconfigurable manufacturing systems: defining principles of achievement, ways / schemes composition; Units of work: definition, structure, selection criteria, elements calculation; Automation control, forms of

organization, control systems; Automation rigid / flexible mass production and mass; Automation of complex production processes; Economic efficiency of introducing automation.

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Dumitru, C., Automatizarea proceselor şi sistemelor tehnologice. Concepte, problematică şi aplicaţii, Editura Universitaria, Craiova, 2001, autor unic;
Popescu, D., Dumitru, C., Petrişor, D., Sisteme flexibile de prelucrare - curs, Reprografia Universităţii din Craiova, 1996;
Dumitru, C., Maşini unelte automate-Îndrumar de laborator, Reprografia Universităţii din Craiova, 1988;
Manoliu, R., Maşini agregate şi linii automate, Editura Tehnică, Bucureşti, 1965;
Botez, E., Maşini unelte. Automatica, Editura Tehnică, Bucureşti, 1972;
Boncoi, GH., Zetu, D., Maşini unelte automate cu comandă numerică, Editura Didactică şi Pedagogică, Bucureşti, 1983;
Covacs, FR., Cojocar, G., Manipulatoare, roboţi industriali şi aplicarea lor, Editura Facla Timişoara, 1982;
Trandafir, R., Constantinescu, D., Automatizarea proceselor tehnologice, Reprografia I.P.B., Bucureşti, 1987.

SUBJECT OF STUDY: Microtechnologies, Code: D22TCML776

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 4th year/ 1st semester

TYPE OF COURSE: optional

OBJECTIVES: The main purpose of the course is to familiarize students with technological processes determined by the releasing of new materials, the improvement of thermal treatments or miniaturizing tendencies by precision mechanics, electronics, mechatronics, aeronautical engineering.

CONTENT: Erosion processing technologies/ General considerations/ Electrical erosion microtechnologies/ Electrochemical erosion microtechnologies/ Abrasive erosion microtechnologies/ Lapping processing microtechnologies/ Magneto-abrasive processing microtechnologies.

Ultrasound processing technologies/ Ultrasounds properties/ Producing ultrasounds/ Parts cleansing using ultrasounds/ Ultrasound processing microtechnologies (plastic deformation, powder annealing, micro-cutting, galvanic deposits, welding, defectoscopy), measuring physical characteristics (distance measuring in water, thickness measuring, liquid level measuring, flow velocity measuring, applications in medicine).

Laser based microtechnologies/ physical phenomenons/ Types of lasers/ Lasers applications/ Active applications (thermal micro-processing, micro-cutting or micro-cropping, micro-drilling, welding etc.)/ Passive applications (optical, digital measuring of signal transmission, applications in medicine). Plasma processing microtechnologies/ Definitions. Generating plasma/ Plasmotron

construction principles/ Technical applications of plasma (micro-cutting, welding, metallic coatings). Microwaves processing/ Generalities. Materials processed using microwaves/ Microwaves generators/ Microwaves applicator/ Technical applications of microwaves (the microwave oven). Micro-processing applications/ Laser micro-processing for fuel injector holes/ Micro-drilling diesel oil injectors/ Other applications of laser micro-drilling/ Laser micro-milling/ Marking and engraving/ Tracing and dice game (dicing)/ Solar cells fabrication/ Fine tracing.

LANGUAGE: Romanian

EVALUATION: written examination

SELECTIVE REFERENCES:

Popescu, D., – Mașini și utilaje speciale, Ed. BREN, 2004

Donțu, O., – Tehnologii și sisteme de fabricație utilizate în mecatronică

SUBJECT OF STUDY: Experimental Researches, Basics, Code: D22TCML778

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 4th year/ 1st semester

TYPE OF COURSE: optional

OBJECTIVES: The main purpose of the course is to familiarize students with the main researches technique, experimental chains, methods and instruments using in experimental procedure

CONTENT:

Experimental research, Research methods, Steps in experimental research, Measurements systems, Measurements of pressure, temperature, cutting forces, power, wear, Transducer etc.

LANGUAGE: Romanian

EVALUATION: written examination

SELECTIVE REFERENCES:

Ciolacu F.G., Mazilu, D., Pogorschi, L., Bazele cercetării experimentale, Îndrumar de laborator, Reprografia Univ. Din Craiova, 1997

David L, I. Păunescu, Bazele cercetării experimentale a sistemelor biotehnice, București, 1999

Lupea I., Măsurători de vibrații și zgomote prin programare cu LabView, Cluj Napoca, 2005. 8.

Oprîșan G., G. I. Sebe, Compendiu de teoria probabilităților și statistica matematică, București, 1999

SUBJECT OF STUDY: Plastic Deformation Technologies, code: D22TCML780

NUMBER OF CREDITS: 5

YEAR/SEMESTER: 4th year/ 1st semester

TYPE OF DISCIPLINE: Optional

OBJECTIVES: The main objective of this course is familiarizing the students with the main operations of cold plastic deformation, the analysis of forces, mechanical work, consumed power, organological analysis and kinematics of plastic deformation equipments.

CONTENT: Generalities. Classification of operation for plastic deformation. Used materials. The cutting of materials. Forces. Mechanical work. Power. Analysis of cutting machines. Embossing operations. Tailoring blanks. Types of embossing. Mechanical presses with simple action. Precision

embossing. Cropping and perforation of rubber. Cropping with plastic material. P.M. with double action. Materials folding. Elastic recovery from folding. Hydraulic presses. Shaping. Forces. Mechanical work. Power. Stencils. Special shaping. Examples.

Molding processes. Bottlenecking. Expansion. Embossing. Leveling. Volumetric compression processes. Extrusion. Discharging. Mold pressing. Specific cold pressing processes. Assembling by cold pressing. Straightening machines. Mechanization and automation of TTA operations in operations of plastic deformation. Economical efficiency of processing operations with plastic deformation. Allowed reconfigurability of sustainable development in plastic deformation technologies.

LANGUAGE: Romanian

EVALUATION: written examination

SELECTIVE REFERENCES:

Popescu, D., – Mașini pentru prelucrări prin deformare, Ed. SPICON, 1995

Popescu, D., – Mecanizarea și automatizarea operațiilor de transport, transfer și alimentare în sistemele de producție, Ed. BREN, 2003

Popescu, D., - Tehnologii și Echipamente de Deformare Plastică, Editura SITECH, Craiova, ISBN 978- 606 -11- 2209-7, 2012

Subject of study: Production systems with NC Code: D22TCML882

NUMBER OF CREDITS: 3

YEAR/SEMESTER: 4th year/2nd semester

TYPE OF COURSE: Mandatory

OBJECTIVES: The students assimilation of: the concepts specific to products fabrication technology, the design methodology of technological fabrication processes in classical systems production and with CNC and the typical technology for different groups of products.

CONTENT: The basis of CNC products systems programming. Knowledge: Machines tools with CNC, ISO G-code. Canned cycles

TEACHING LANGUAGE: Romanian

EVALUATION: Written/oral examination

BIBLIOGRAPHY (selective):

Albu. A., ș.a. - Programarea asistată de calculator a mașinilor-unelte - Editura Tehnică, București, 1980;

Ciocârdia. C., ș.a. - Bazele elaborării proceselor tehnologice în construcția de mașini, E.D.P., București, 1983;

Drăghici. G., - Conceptia proceselor de prelucrare mecanica, Editura Politehnica, Timisoara, 2005;

Picoș. C., ș.a. - Proiectarea tehnologiilor de prelucrare mecanică prin așchiere - Editura Universitas, Chișinău, 1992 ;

Popescu. I., ș.a., - Tehnologia fabricării produselor mecanice Vol. 1, 2 Editura MATRIXROM, București, 2005;

Stanimir. Al., - Tehnologia construcțiilor de mașini - Bazele proiectării proceselor tehnologice de prelucrare mecanică - curs - Reprografia Universității din Craiova, 1998;

Stanimir. Al., - Tehnologii de prelucrare pe strunguri cu comandă numerică - Editura Universitaria, Craiova, 2002;

Stanimir, Al., - Precizia de prelucrare si calitatea suprafetelor aschiate - Editura Universitaria, Craiova, 2005;
Zamfirache, M., - Prelucrari mecanice - Editura Universitaria, Craiova, 2002.

Subject of study: Management (Code: D22TCML885)

NUMBER OF CREDITS: 2/2nd semester
YEAR/SEMESTER: 4th year/2nd semester
TYPE OF Project: Mandatory
TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination

SUBJECT OF STUDY: Creativity and invention, Code: D22TCML886

NUMBER OF CREDITS: 2
YEAR/SEMESTER: 4nd year/2nd semester
TYPE OF COURSE: Specialty course
OBJECTIVES: At the end of the course the students should be able to master the main technics and methods of technical creation. The students should develop the necessary skills for designing, promoting and implementing in the production process of new technical solutions.
CONTENT: The creativity concept. Creativity factors. Intuitive techniques for technical creation. Innovation – the science and art of technical creation. Definition of inventions. Classifying inventions. Methods to protect inventions. Systems for obtaining a patent. The effects of patenting. Protecting an invention in Romania. Analyzing the patentability of an innovation and the purity of a patent. Researching the patent literature. Managing the patent. International patenting.
TEACHING LANGUAGE: Romanian
EVALUATION: Written test
BIBLIOGRAPHY (selective):
Belous, V., Manualul inventatorului („The manual of the inventor“), Ed. Tehnica, Bucuresti, 1990.
Belous, V., Plahteanu, B., Fundamentele creatiei tehnice (“The fundaments of technical creation”), Ed. Performantica, Iasi, 2005.
Bucsa, Gh., Erhan, V., Protectia inventiilor prin brevetare in Romania – ghidul inventatorului (“Protection of inventions by patenting in Romania – the inventors guide”), Ed. API, Bucuresti, 1992.
Constantin, I., Proprietatea intelectuala si succesul in afaceri (“The intellectual property and business success”), Ed. Rentrop & Straton, Bucuresti, 1996.
* * * WIPO, Introducere in proprietate intelectuala (“Introduction of intellectual property”), Ed. Rosetti, Bucuresti, 2001.
* * * Law no. 64/1991 regarding patenting – Official Journal of Romania no. 456 from August 8 2007, http://www.osim.ro/legis/legislatie/brevet/lg64_91_re_p07.htm;
* * * Emergency Ordinance no. 547 for approving the application of law no. 64/1991 – Official Journal of Romania no 541 from June 18 2008, <http://www.osim.ro/legis/legislatie/brevet/legege.pdf>

SUBJECT OF STUDY: Welding Constructions Technology, Code: D22TCML887

NUMBER OF CREDITS: 2
YEAR/SEMESTER: 4nd year/2nd semester
TYPE OF COURSE: Specialty course
OBJECTIVES: At the end of the course the students should be able to master the main technics and methods of welding technology. The students should develop the necessary skills for designing welding constructions..
CONTENT: 1. Gas Welding : Air Acetylene, Oxy Acetylene, Oxy Hydrogen Welding 2: Arc Welding (a): Carbon Arc welding (b); Plasma Arc welding (c): Shield Metal Arc Welding (d): T.I.G. (Tungsten Inert Gas Welding) (e): M.I.G. (Metal Inert Gas Welding) 3: Resistance Welding: (a): Spot welding (b): Seam welding (c): Projection welding (d): Resistance Butt welding (e): Flash Butt welding 4: Solid State Welding: (a): Cold welding (b): Diffusion welding (c): Forge welding (d): Fabrication welding (e): Hot pressure welding (f): Roll welding 5: Thermo Chemical Welding (a): Thermit welding (b): Atomic welding 6: Radiant Energy Welding (a): Electric Beam Welding (b): Laser Beam Welding Welding Joints Different types of welding joints are classified as Butt, Lap , Corner, Tee
TEACHING LANGUAGE: Romanian
EVALUATION: Written test
BIBLIOGRAPHY (selective):

Subject of study: Technologies and Control equipments (Code: D22TCML890)

NUMBER OF CREDITS: 3/2nd semester
YEAR/SEMESTER: 4th year/2nd semester
TYPE OF Project: Mandatory
TEACHING LANGUAGE: Romanian
EVALUATION: Written/oral examination