

**Field of Study: Industrial Engineering and Management**  
**Programme of studies: Environmental Management and Sustainable Energy**

**First year of study:**

**Subject of study: Environmental protection and sustainable development**

**CODE: D24MMEDL101**

**NUMBER OF CREDITS: 7**

**YEAR/SEMESTER:** 1st year / 1st semester

**TYPE OF COURSE:** thorough discipline

**OBJECTIVES:** Discipline "Environment protection and sustainable development" aims is to initiating students on environmental protection and sustainable development and operation of national and international organizations for environmental protection. Emphasis is put on the knowledge and enforcement of environmental protection and sustainable development. The main objective of the course is to provide a knowledge base, systematized and updated master needed to guide young researchers in the field of environmental quality. Develop the capacity to analyze the overall activities of the organization in order to manage and modernize manufacturing processes in harmony with the environment. acquisition of knowledge in the taking, characterization and study of environmental

**CONTENT:** Environmental pollution - definition, historical and causes. Pollutants Factors air, water, soil. The impact of air pollution on the environment and ways to reduce. The impact of water pollution on the environmental and ways to reduce. The impact of Soil pollution on the environmental and ways to reduce. The concept of sustainable development. Sustainable use of the prime materials. Sustainable use of the energy resources Waste and recycling - sustainable development objective. Biodiversity conservation and sustainable development. Environmental protection legislation. National programs for sustainable development

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

1. Demian Mihai – Protecția mediului și dezvoltare durabilă – Note de curs
2. Bran, F., Rojanschi, V.- Protecția și ingineria mediului; Editura Economică 1997;
3. Gavrilăscu E., Olteanu I., - Calitatea mediului, Ed. Universitaria, Craiova, 2005
4. Legea Apelor nr. 107/1996 (M.Of. nr. 244/08.10.1996) modificată și completată prin Legea nr. 310/2004;
5. Legea nr.137/29.12.1995/ 17.02.2005 – Legea protecției mediului;
6. Răducanu, Viorica - Economia resurselor naturale, Ed. All Bek , București, 2000;
7. Vădineanu, A. - Dezvoltare durabilă, vol.I, II, Ed. Universității din București, 1999.
8. \*\*\* Standarde în vigoare

**Subject of study: Quality and environmental management**

**CODE: D24MMEDL102**

**NUMBER OF CREDITS: 7**

**YEAR/SEMESTER:** 1st year / 1st semester

**TYPE OF COURSE:** thorough discipline

**OBJECTIVES:** The course enables students to develop the skills to appreciate the quality of the environment in which their organizations work and to ensure compliance with international standards.

**CONTENT:** Quality characteristics of air, water and soil. Integrated monitoring of the environment. Environmental management systems. Legal and economic approach to environmental management

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

1. Bran, F., Rojanschi, V., Protecția și ingineria mediului; Editura Economică 1997;
2. Ionescu, C., Cum să construim și să implementăm un sistem de management de mediu în conformitate cu ISO 14001, Editura economică, București, 2000;
3. Gavrilăscu E., Olteanu I., - Calitatea mediului, Ed. Universitaria, Craiova, 2005
4. Standarde în vigoare
5. Ghermec, O. – Chimie aplicată în inginerie, Tipografia Universității din Craiova, 2006.

**Subject of study: Informatization and optimization of control processes**

**CODE: D24MMEDL104**

**NUMBER OF CREDITS: 8**

**YEAR/SEMESTER:** 1<sup>st</sup> year/1<sup>st</sup> semester

**TYPE OF COURSE:** thorough discipline

**OBJECTIVES:** The course provides students with basic theoretical and practical concepts related to the main techniques of quality assessment, analysis, improvement and control with emphasis on processes and activities optimization techniques.

**CONTENT:** Computerization process and its impact. Evolution of the quality concept and of quality control process. The role of computers in automatic control. Informatics systems in processes control. Probabilistic methods and models used in quality control. Techniques and tools for analyzing, evaluating, controlling and improving quality. Elements of optimization. Process optimization in terms of dynamic programming.

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written/oral examination

**BIBLIOGRAPHY (selective):**

- Niculită L., Palade D. D., etc. Control automat integrat în sistemele de prelucrări mecanice, Ed. Tehnică
- Boboc C., Analiză statistică multidimensională-aplicații în cadrul studiului produselor și serviciilor, Ed. Meteor Press, 2007
- Zaharie, D., etc. Sisteme informatice pentru asistarea deciziei, Ed. Dual Tech, 2006.
- Stăncioiu I., Cercetări operaționale pentru optimizarea deciziilor economice, Ed. Economică, 2004
- Baron T., Calitatea și fiabilitatea produselor, Ed. Did. Ped., București 1988
- Nagy M., Vizental M., Asistarea deciziei folosind mediul Excel, Ed. Albastră, 2011

Victor Andrei, Managementul asigurării calității. Principii, concepte, politici și instrumente, Ed. Infarom, 2008  
 Popovici A. Probabilități, Statistică și Econometrie asistate de programul Excel, Ed. Niculescu 2013.  
 PopC., Managementul calității, Ed. Alfa, 2008

**Subject of study: The bases of research I**

**CODE: D24MMEDL105**

**NUMBER OF CREDITS: 4**

**YEAR/SEMESTER:** 1st year / 1st semester

**TYPE OF COURSE:** complementary

**OBJECTIVES:** Application of the principles of interdisciplinarity and transdisciplinarity in the integration of scientific, technical and socio-economic information in the directions of fundamental scientific research, applied scientific research and technological development. Correct use of quantitative and qualitative research methods - acquiring analytical and integrative skills in defining and solving problems

**CONTENT:** Types of research activities. Methodology of research. Running the research. Formulation of the problem to be researched. Hypotheses. Running the research. Data collection. Methods of processing experimental data. Similarities and differences between research and development activities and industrial activities

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** verification

**BIBLIOGRAPHY (selective):**

1. Gingu, O., Bazele cercetării, Supot de curs
2. Enăchescu, C., Tratat de teoria cercetării științifice, Editura Polirom, Iași, 2005
3. Manolea, Gh., Bazele cercetării creative, Editura AGIR, București, 2006
4. Teseleanu, G., Metodologia cercetării științifice, Editura Universitas, Petroșani, 2007

**Subject of study: The bases of research II**

**CODE: D24MMEDL206**

**NUMBER OF CREDITS: 3**

**YEAR/SEMESTER:** 1<sup>st</sup> year/2<sup>nd</sup> semester

**TYPE OF COURSE:** mandatory

**OBJECTIVES:** Application of the principles of interdisciplinarity and transdisciplinarity in the integration of scientific, technical and socio-economic information in the directions of fundamental scientific research, applied scientific research and technological development

**CONTENT:** The concept of innovation. Categories of innovation activities. Conceiving, drafting and anti-plagiarism protection of the results of scientific research presented in a scientific paper. Conceiving, writing and presenting the results of the scientific research presented in a dissertation. Conceiving, writing and presenting the results of scientific research presented in a doctoral thesis. National and international research funding at doctoral level. Post-doctoral research carried out through scholarships with national and international funding

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** verification

**BIBLIOGRAPHY (selective):**

1. Gingu, O., Bazele cercetării, Supot de curs

2. Chelcea S., Metodologia elaborării unei lucrări științifice, Ed. Comunicare.ro, București, 2003
3. Enăchescu, C., Tratat de teoria cercetării științifice, Editura Polirom, Iași, 2005
4. Manolea, Gh., Bazele cercetării creative, Editura AGIR, București, 2006
5. Teseleanu, G., Metodologia cercetării științifice, Editura Universitas, Petroșani, 2007

**Subject of study: Sustainable industrial production**

**NUMBER OF CREDITS: 8**

**CODE: D24MMEDL207**

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

**TYPE OF COURSE:**

**OBJECTIVES:** Environmental quality control, risk assessment and development of low-impact technology variants in line with BAT / BREF requirements.

**CONTENT:** Environmental legislation on sustainable industrial production. The concept of clean production. Benefits of implementing clean production. Applying clean production. Management system for clean production The concept of Sustainable Development. Evolution from clean production to sustainable development. Eco-efficiency and industrial ecology. Stages of sustainable development. Principles of sustainable development management Changes imposed by sustainable development.

Programs to support sustainable industrial production. Program to increase energy efficiency in homes. National Strategy on Sustainable Industrial Development.

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written/oral examination

**BIBLIOGRAPHY (selective):**

1. Strategia națională pentru dezvoltare durabilă a României – Orizonturi 2013-2020-2030
2. xxx – Modele de producții curate, Suceava 2008
3. Programe pentru susținerea industriei și a dezvoltării durabile
4. Xxx – Dezvoltare durabilă și producție curată - <http://cleanprod.ecosv.ro/edu/3.1.swf>
5. ID Savu – Producție industrială durabilă – note de curs

**Subject of study: Integrated Pollution Prevention and Control**

**CODE: D24MMEDL208**

**NUMBER OF CREDITS: 4**

**YEAR/SEMESTER:** 1<sup>st</sup> year/2nd semester

**TYPE OF COURSE:** fundamental

**OBJECTIVES:** Environmental quality control, risk assessment and development of low-impact technology variants in line with BAT / BREF requirements

**CONTENT:** Environmental legislation on sustainable industrial production. The concept of clean production. Benefits of implementing clean production. Applying clean production. Management system for clean production The concept of Sustainable Development. Evolution from clean production to sustainable development. Eco-

efficiency and industrial ecology. Stages of sustainable development. Principles of sustainable development management Changes imposed by sustainable development.

Programs to support sustainable industrial production. Program to increase energy efficiency in homes. National Strategy on Sustainable Industrial Development.

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Verification during the semester

**BIBLIOGRAPHY (selective):**

1. Strategia nationala pentru dezvoltare durabila a Romaniei – Orizonturi 2013-2020-2030
2. xxx – Modele de productii curate, Suceava 2008
3. Programe pentru sustinerea industriei si a dezvoltarii durabile
4. Xxx – Dezvoltare durabila si productie curata - <http://cleanprod.ecosv.ro/edu/3.1.swf>
5. ID Savu – Productie industriala durabila – note de curs

**Subject of study: Product Life Cycle. Ecodesign**

**CODE: D24MMEDL209**

**NUMBER OF CREDITS: 7**

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

**TYPE OF COURSE:** S

**OBJECTIVES:** The INTEGRATED POLLUTION PREVENTION AND CONTROL course aims to assimilate multidisciplinary knowledge by forming a correct concept on pollution prevention, reduction and control. The discipline emphasizes the knowledge already acquired by students in some fundamental disciplines by applying them in the field of high actuality and practical importance, environmental pollution (due in particular to human activities - through the development of the industrial society)

**CONTENT:** The IPPC Directive. Best Techniques Available for Large Combustion Plants. Best Available Techniques in the Field of Oil and Gas Refinery. Best Practices Applied to Residual Water and Residual Gas Treatment / Chemical Management Systems IPPC-Non-Ferrous Materials Industry Directive. IPPC-Ferrous Materials Industry Directive. IPPC-organic chemicals industry. ICCP-Inorganic Chemical Industry Directive. IPPC Directive on Industrial Emissions (VOC). SEVECO Directive

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

1. Brundtland, G. Our Common Future, U.N. World Commission on Environment and Development
2. Jeroen B. Guinee Handbook on life cycle assessment operational guide to the ISO standards, The International Journal of Life Cycle Assessment September 2002, Volume 7, Issue 5, pp 311-313
3. Adisa Azapagic, Life cycle assessment and its application to process selection, design and optimisation, Chemical Engineering Journal Volume 73, Issue 1, April 1999, Pages 1–21
4. Barsan, A., Barsan, L. The Eco-design Education for Engineers, a Pathway to a Sustainable Future.Seminarul National de Organe de Masini Ecodesign, editia XXV, Universitatea Transilvania

din Brasov, Editura Universitatii Transilvania din Brasov, 2005.

5. Ken Yeang Ecodesign: A Manual for Ecological Design, Wiley Academy 2006

**Subject of study: Energy resource management**

**CODE: D24MMEDL210**

**NUMBER OF CREDITS: 7**

**YEAR/SEMESTER:** 1<sup>st</sup> year /2nd semester

**TYPE OF COURSE:** of knowledge

**OBJECTIVES:** training and improvement of specialists in the multidisciplinary field of energy resource management namely Development of documentation, design, research, investigation to balance the consumption, the cost and the impact on the environment

**CONTENT:** Energy and human activity. Energy resources. Improving energy efficiency and promoting renewable energy sources. Energy conservation management. Energy audit. Legislative, regulatory and institutional framework for energy. The energy market. European energy market policy. Impact of energy systems on the environment. Classical power transformation and transport installations. Management of Sustainable Development of Energy Systems. Waste management in the field of energy

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

1. Note de curs. Managementul resurselor energetice . Demian Gabriela
2. GADOLA, C.E.M. ș.a. ,PRINCIPII MODERNE DE MANAGEMENT ENERGETIC, Universitatea Tehnică din Cluj-Napoca
3. Ungureanu M., Pătrașcu R. – Tehnologii curate, Editura AGIR, București, 2000.
4. Mircea I., – Îndrumar pentru eficienta energetica a clădirilor, Craiova, 2000.
5. Rotariu M., – Termoeenergetică industrială și termoficare, Rotaprint, Iași, 2000

**Subject of study:**

**Audit and certification of management systems**

**CODE: D24MMEDL103**

**NUMBER OF CREDITS: 6**

**YEAR/SEMESTER:** 1<sup>st</sup> year/1<sup>st</sup> semester

**TYPE OF COURSE:** mandatory

**OBJECTIVES:** Knowledge, understanding of basic concepts, theories and methods in the field of auditing and certification of management systems, development of communication skills and creative attitude.

Developing the skills to apply in practice the accumulated knowledge of the audit and certification of management systems according to the quality standards.

Developing skills and attitudes to act independently in the context of analyzing advanced ideas and applications as well as being able to propose improvements and to be able to predict their implications.

Developing managerial, communication skills, professional ethics and field-specific legislation.

Responsible execution of professional tasks. Team work ability..

**CONTENT:** standard presentation iso 9001: 2008, Definition, importance and functions of iso 9000 standards

Process approach, Compatibility with other management systems. Application

The principles of quality management systems Iso 9001/2000 requirements, Documentation requirements

standard presentation iso 19011: 2002, "guide for auditing quality and / or environmental systems"

Auditing / audit processing principles, audit program management, Objectives and content of the audit program

Responsibilities, resources and procedures for the audit program, Implementation of the audit program

Audit activities, Initiating the audit, Performing document analysis, Preparation for on-site audit activities

Performing on-site audit activities, Preparation, approval and dissemination of the audit report

Concluding the audit. Performing follow-up audit, Competence and evaluation of auditors 10.1.

Personal qualities

Knowledge and skills, Education, work experience, auditor training and audit experience

Maintaining and improving competence. Auditor's assessment

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written/oral examination

**BIBLIOGRAPHY (selective):**

1. Bernard Froman, *Manualul Calității.. Instrument strategic al abordării calității*, Editura Tehnică, București, 1998,

2. A. Hinescu, Gh. Onețiu, I.S.Mihon, *Managementul Calității*, Editura Aeternitas, Alba Iulia ,2003

3. Juran. *Supremația prin calitate. Manualul directorului de firmă*, Editura Teora, București, 2002

4. M. Olaru, Al. Isaic-Maniu, V. Lefter, N. Al. Pop, S. Popescu, N. Drăgulănescu, L. Roncea, C. Roncea, *Tehnici de instrumente utilizate în managementul calității*, Editura Economică, București, 2000,

5. SR EN ISO 9000:2006: Sisteme de management al calitatii. Principii fundamentale si vocabular. 6. SR EN ISO 9001:2001: Sisteme de management al calitatii. Cerinte.

7. SR EN ISO 9004:2001: Sisteme de management al calitatii. Linii directoare pentru imbunatatirea performantelor.

8. SR EN ISO 19011:2003: Ghid pentru auditarea sistemelor de management al calitatii si/sau de mediu.

## Second year of study:

**Subject of study:**

**Technologies and Renewable energy sources**

**CODE: D24MMEDL311**

**NUMBER OF CREDITS: 8**

**YEAR/SEMESTER:** 2<sup>nd</sup> year/1<sup>st</sup> semester

**TYPE OF COURSE:** of deepening( A)

**OBJECTIVES:** Technologies and Renewable energy sources aims to assimilate multidisciplinary knowledge through the development of a correct concept of renewable energy technologies. The discipline highlights the knowledge already acquired by students in some fundamental disciplines by applying them in the field of high actuality and practical importance, of the renewable energies and the technologies for obtaining them.

**CONTENT:** Renewable energies. Renewable energy. General. Energy map Renewable energy sources. Classification of renewable energy sources. Integrating Renewable Energy Sources into an Energy System Solar Energy Recovery Technologies. Photothermal conversion. Photovoltaic conversion. Technologies for the use of wind energy. Technologies for the exploitation of geothermal energy. Technologies for the capitalization of hydraulic energy. Renewable energies and heating of buildings The impact of renewable energy systems. The impact of renewable energy systems on the environment. The impact of renewable energy systems on the economy. Recycling of renewable energy systems. Trends in future development of conversion technologies.

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

1. Demian M – Materiale si tehnologii neconventionale

2. Ciobanu M – Sisteme si tehnologii pentru energii regenerabile, note de curs

3. D. Marinescu, V. Nicolae Surse regenerabile de energie, București 2004 ISBN 973-87023-13

4. A. Bîrlog, Gheorghe Lăzăroiu, Constantin Bulac, Marius Tudor- Centrale energetice hibride bazate pe surse de energie regenerabile, Simpozionul Național Optimizarea Serviciilor Energetice, ediția a VIII-a, Buzău, 2011

**Subject of study: Optimizing Material Selection**

**CODE: D24MMEDL312**

**NUMBER OF CREDITS:7**

**YEAR/SEMESTER:** 2<sup>nd</sup> year/1<sup>st</sup> semester

**TYPE OF COURSE:** of deepening (A)

**OBJECTIVES:** Training and improvement of engineering and management specialists, namely the development of documentation, design, research, investigation to balance consumption and cost

**CONTENT:** Metallic materials. Symbolization of metallic materials. Metallic material properties. General considerations on the selection of metallic materials - methods of selection of metallic materials - the steps of selecting a material for the manufacture of the parts. Multi-Criteria Selection of Materials. Design stages in material choice. Formulation of optimization problems. Classification of optimization issues. Matrix differential calculus elements. Conditions of optimality. Conditions of

Extreme. Ecodesigning and ecodesign of products. Ecodesign of products. Optimal design in mechanical engineering

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Verification during the semester

**BIBLIOGRAPHY (selective):**

1. Mitelea Ion – Selectia materialelor în ingineria mecanică, Ed. Politehnica 2008
2. Demian mihai – Optimizarea alegerii materialelor – curs pentru uzul studenților
3. Demian mihai – Alegerea si utilizarea materialelor – îndrumar de proiectare
4. Crăciunescu M. C.- Materiale composite. Ed. Sedona, Timisoara 1998
5. Alexandru Domsa Serban Domsa, Materiale Metalice In Constructia De Masini Si Instalatii Ed. Dacia

**Subject of study: Environmental projects management**

**CODE: D24MMEDL313**

**NUMBER OF CREDITS: 8**

**YEAR/SEMESTER:** 2nd year/1<sup>st</sup> semester

**TYPE OF COURSE:** speciality

**OBJECTIVES:** Developing the student's ability to understand correctly and efficiently the basic concepts of Project Management. The objective of the discipline is to know the fundamental principles necessary for a process of planning, organizing and controlling the phases and resources of an environmentally applicable project in order to meet a well-defined objective that usually has time, resource and cost constraints.

**CONTENT:** Conceptual Clarifications. Management: management system characterization, management relations, modernization of the management system, project management. Project Management. Concept. Planning. Implementation of projects. Fundraising. Organizational structure and fundraising. Classification of funding sources. Fundraising campaign. Methods of attracting funds. Management of material resources management within a project. Risk management of the project. Project quality management.

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

1. COVRIG Mircea; OPRAN Constantin; 2002; Managementul proiectelor; Agenția Managerială pentru Cercetare Științifică Inovare și Transfer Tehnologic - POLITEHNICA; Editura Pritech 2000; București.
2. MITONNEAU Herri; 2000; Inițiere în auditul calității; Traducere de Maria Ciobanu; Editura NICULESCU; București, Romania
3. MOCKLER L.Robert; 2001; Management strategic multinațional, un proces integrativ bazat pe contexte; Editura Economică; București, Romania.
4. NICULESCU Ovidiu; 2000; Sistemem metode și tehnici manageriale ale organizației; Editura Economică, București, Romania

**Subject of study: Quality management system**

**CODE: D24MMEDL314**

**NUMBER OF CREDITS: 7**

**YEAR/SEMESTER:** 2<sup>nd</sup> year/1<sup>st</sup> semester

**TYPE OF COURSE:** A

**OBJECTIVES:** The familiarization of the students with quality concepts and the standards used in quality field.

**CONTENT:** Concept of the management system.

Implementing of a quality management system SMQ.

Presenting the ISO 9001:2000 standard: the principles of the quality management; relations between principles-policies-processes; modeling of a quality management system based on process.

Planning the quality management system;; responsibility and authority; internal communication Management of the resources.

Planning the product manufacturing: determining the requirements regarding the product; analisis of the requirements regarding the product; communication with the client

Measurement, analysis and improvement. Monitoring and measurement. Data analysis. Improvement

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Written examination

**BIBLIOGRAPHY (selective):**

Olaru, M. - Managementul calitatii, Ed. Economica, Bucuresti, 1999

Costache Rusu- Manual de Inginerie Economica- Bazele managementului calitatii, Ed. Dacia, 2001

I. Abrudan, D. Candea – Manual de Inginerie Economica- Ingineria si Managementul Sistemelor de Productie, Ed. Dacia, 2002

Ciurea S. Managementul calității totale: Standardele ISO 9004 comentate. Editura Economică. București, 1995

Oprean, C., Țițu, M. Managementul calității în economia și organizația bazate pe cunoștințe, Editura AGIR, București, 2008

Kifor, C., Oprean, C. Ingineria calității. Îmbunătățirea 6 Sigma, Editura ULBS, Sibiu, 2006

Dahlggaard, J.,J., Kristensen, K., Kanji,G., K., Fundamentals of Total Quality Management, Chapman &Hall, London, 1998

Roncea, C., Aspecte practice privind auditul sistemului calității, în „Managementul calității. Tehnici și instrumente”, editura ASE, București, 1999

\*\*\* Colecția de Standarde în Domeniul Asigurării și Managementului Calității

**Subject of study: Scientific research**

**CODE: D24MMEDL415**

**NUMBER OF CREDITS: 10**

**YEAR/SEMESTER:** 2<sup>nd</sup> year/2<sup>st</sup> semester

**TYPE OF COURSE:** S

**OBJECTIVES:** Applying the principles of interdisciplinarity and transdisciplinarity in the integration of scientific, technical and socio-economic information in the directions of sustainable development of society through the use of sustainable energy and continuous improvement of environmental management systems

**CONTENT:** Labor protection in scientific research laboratories. Presentation of the theoretical elements, laboratory experiments, explanation, problem, development of the analytical spirit. Criteria and methods of selection of the research topic. Examining research topics previously done. Analiza SWOT. Analyzing previous research through personal preferences, building the "Tree of

Ideas". Methods of formulating the purpose and objectives of the research. Delimiting the object and plotting the boundaries of the research. Elaboration of the scientific research plan. Effective documentation. Critical analysis of selected bibliographic sources. Choosing methodological research strategies. Ways of collecting data. Qualitative and Quantitative Data Analysis. Qualitative and quantitative analysis of phenomena.

**TEACHING LANGUAGE:** Romanian

**EVALUATION:** Verification during the semester

**BIBLIOGRAPHY (selective):**

1. Chelcea S., Metodologia elaborării unei lucrări științifice, Ed. Comunicare.ro, București, 2003.
2. Enăchescu, C.: Tratat de teoria cercetării științifice, Editura Polirom, Iași, 2005
3. Manolea, Gh.: Bazele cercetării creative, Editura AGIR, București, 2006.
4. Rad, Ilie, Cum se scrie un text științific, Iași, Ed. Polirom, 2008.
5. Teseleanu, G.: Metodologia cercetării științifice, Editura Universitas, Petroșani, 2007.