SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject		**Advanced management methods**					
2.2 Holder of the subject		**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**					
2.3 Holder of the academic seminar/laboratory/project		**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**					
2.4 Year of study	**I**	2.5 Semester	**1**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 academic seminar/laboratory/project	**2**
3.4 Total of hours from the curriculum	**56**	Of which: 3.5 course	**28**	3.6 academic seminar/laboratory/project	**28**

Distribution of time	68h
Study using the manual, course support, bibliography and handwritten notes	30
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	10
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	20
Tutorials	
Examinations	9
Other activities.	

3.7 Total of hours for individual study	**69**
3.9 Total of hours per semester	**125**
3.10 Number of credits	**5**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	Knowledge of the General Management course
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- attending at least 50% of the course - the course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- Mandatory attendance at all seminars; - Students come with observed seminar papers - A maximum of 3 seminars can be recovered during the semester (30%); - Attendance at seminar hours below 70% leads to the restoration of the

	discipline - The seminar can be held face to face or online

6. Specific skills acquired	
Professional skills	**C1**. Knowledge of the main types of processes and phenomena of economic communication, of the theoretical elements of microeconomics and practical aspects regarding the economic-financial flows at business level **C4**. Development and evaluation of technical, economic and financial flows at business level, advanced management methods
Transversal skills	**TC3**. Identifying opportunities for continuous training and efficient use, for one's own development, of information sources and of communication resources and assisted professional training (Internet portals, specialized software applications, databases, online courses, etc.) both in Romanian, as well as in a language of international circulation.

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	Familiarization of students with the main management methods in emergency situations
7.2 Specific objectives	The course aims to present the theoretical elements of the emergency situation in case of fire The seminar familiarizes students with practical aspects of operational interactions for change management in a complex context

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
Chapter 1. Fire - phenomenon - event	Free exposure, with the presentation on-line	2 h
Chapter 2. Fire safety performance a constructions	Free exposure, with the presentation on-line	2 h
Chapter 3. Methods for calculating the load and thermal density of fire	Free exposure, with the presentation on-line	2 h
Chapter 4. Technical causes of fire - their establishment and research	Free exposure, with the presentation on-line	4 h
Chapter 5. Technical fire prevention systems	Free exposure, with the presentation on-line	2 h
Chapter 6. Technical fire extinguishing systems	Free exposure, with the presentation on-line	4 h

Chapter 7. Fire risk management	Free exposure, with the presentation on-line	4 h
Chapter 8. Methods of identification and assessment of fire risk	Free exposure, with the presentation on-line	2 h
Chapter 9. Fire defense management in a goal	Free exposure, with the presentation on-line	2 h
Chapter 10. Control of fire prevention and extinguishing installations	Free exposure, with the presentation on-line	2 h
Total		28 h

Bibliography

1. Crăciun,Ionel, **Managementul situaţiilor de urgenţă, Vol.II**, Editura Bren, Bucureşti, 2006
2. Crăciun, Ionel; Udor, Aurel, **Riscuri generatoare de situaţii de urgenţă şi managementul riscurilor de incendiu,** Editura Stadiform, Bucureşti, 2009
3. Bălulescu, Pompiliu; Crăciun,Ionel, **Agenda pompierului**, Ediţia a II-a revizuită şi adăugită, Editura Imprimeriei de Vest, Oradea, 2009
4. Crăciun, Ionel,**Servicii de urgenţă**, Editura Contrast,Bucureşti, 2009
5. Calotă, Sorin ş.a., **Manualul pompierului,** Editura Imprimeriei de Vest, Oradea, 2009
6. Crăciun, Ionel; Calotă, Sorin; Lencu,Victor, **Stabilirea şi prevenirea cauzelor de incendiu**, Editura Tehnică, Ediţia a II-a,Bucureşti, 2001
7. Bălulescu, Pompiliu; Crăciun, Ionel, **Agenda pompierului**, Editura Tehnică, Bucureşti, 1993
8. Bălulescu, Pompiliu; Călinescu, Vasile, **Instalaţii automate de detectare şi stingere a incendiilor**, Editura tehnică, Bucureşti, 1977
9. Udor, Aurel; Nour, Aurel, **Securitatea naţională si managementul situaţiilor de urgenţă generate de insecuritatea obiectivelor economice importante**, Editura Stadiform, Bucureşti, 2007
10. *** **Ghidul serviciilor voluntare si private pentru situaţii de urgenţă - SVPSU**, Editura Contrast, Bucureşti, 2009

8.2 Academic seminar/laboratory/project	Teaching methods	No. of hours/ Observations
1. Report: Emergency situations caused by fire 2. Paper: On the combustibility of materials and substances 3. Paper: Fire resistance and stability 4. Report: Calculation of load and thermal density of fire 5. Report: Technical causes of fire 6. Paper: Technical fire prevention and extinguishing systems 7. Paper: The concept of fire risk management	Students receive homework for the seminar papers or choose their homework at least a week in advance, study, design the papers and present them at the seminar. Appreciations and comments are made under the guidance of the teacher.	4 h 4 h 4 h 4 h 4 h 4 h 4 h
Total:		28 h
Bibliography It is the one indicated for the course		

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline is adapted and satisfies the requirements imposed by the labor market, being agreed by social partners, professional associations and employers in the field related to the study program.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percent from the final mark
10.4 Course	- for grade 5 it is necessary to know the fundamental notions required in the subjects, without presenting details on them - for grade 10, a thorough knowledge of all subjects is required	Oral examination Students receive 3 topics to solve	70%
10.5 Project	- for Note 5, it is necessary to know the structure of the paper and one or two concepts in the paper - for grade 10, in-depth knowledge of the topic of the paper and its support during the seminar	At each seminar, the students draw up a report, which can be collective, which they support and which is submitted to debates during the seminars. Each student also receives a grade for the seminar activity during the semester	30%
10.6 Minimum performance standard: **Course**: - Solving and explaining complex problems associated with the discipline of advanced management methods specific to the field of engineering and management - Participation in at least half of the courses. **Seminar**: - Designing processes for removing fire risks, preventing and extinguishing fires at business level, for a given situation - Participation at all seminar hours.			

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Automatic systems management**				
2.2 Holder of the subject			**Prof. PhD eng. Helga Silaghi**				
2.3 Holder of the academic laboratory			**Prof. PhD eng. Helga Silaghi**				
2.4 Year of study	**I**	2.5 Semester	**1**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 academic laboratory	**2**
3.4 Total of hours from the curriculum	**56**	Of which: 3.5 course	**28**	3.6 academic laboratory	**28**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	40
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	20
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	25
Tutorials	
Examinations	9
Other activities.	

3.7 Total of hours for individual study	**94**
3.9 Total of hours per semester	**150**
3.10 Number of credits	**6**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- The project can be carried out face to face or online - The frequency at project hours below 70% leads to the restoration of the discipline

6. Specific skills acquired

Professional skills	**C3.** Planning, scheduling and management of enterprises and related logistics networks and assisted tracking of production. **C4.** Development and evaluation of technical flows, financial economic and business level, advanced management methods.
Transversal skills	**TC2**. Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	• The discipline has as objective the familiarization of the students from the master's specialization Management and Communication in Engineering, with the field of advanced electric drives.
7.2 Specific objectives	• The course aims to present the theoretical elements of the technique of of advanced electric drives. • The project provides the necessary knowledge to the students to be able to design an advanced electric drive

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Advanced electric drives with DC servomotors	Free exposure, with the presentation of the course with video projector, on the board or online	4h
2. Advanced electric drives with asynchronous servomotors	Free exposure, with the presentation of the course with video projector, on the board or online	4h
3. Advanced electric drives with synchronous servomotors	Free exposure, with the presentation of the course with video projector, on the board or online	4h
4. Advanced electric drives with stepper motors	Free exposure, with the presentation of the course with video projector, on the board or online	6h

5. Variable frequency induction machine control systems	Free exposure, with the presentation of the course with video projector, on the board or online	6h
6. Advanced electric drives with linear motors	Free exposure, with the presentation of the course with video projector, on the board or online	4h

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1. SILAGHI H., SPOIALĂ V., SILAGHI M. – *Acţionări electrice*, Editura Mediamira , Oradea, 2009
2. SILAGHI, H., SPOIALĂ, VIORICA, *Acţionări electrice-probleme fundamentale şi noţiuni de proiectare*, Ed. Universităţii din Oradea, 2002
3. SILAGHI H., SILAGHI M. – *Sisteme de acţionări electrice cu maşini asincrone*, Editura Treira , Oradea, 2000
4. IANCU V., SPOIALĂ D., SPOIALĂ VIORICA, *Maşini electrice şi sisteme de acţionări electrice*, vol.II, Ed. Universităţii din Oradea, 2006
5. RICHARD CROWDER, *Electric drives and electromechanical systems*, Elsevier, Great Britain, 2006
6. VIORICA SPOIALĂ, HELGA SILAGHI, *Acţionări electrice speciale*, Editura Universităţii din Oradea, 2010
7. HELGA SILAGHI, V. SPOIALA, D.SPOIALA, A. SILAGHI - *Acţionări electrice avansate*, Editura Universităţii din Oradea, Oradea, ISBN 978-606-10-2035-5, 157 pg., 2019

8.2 Academic project	Teaching methods	No. of hours/ Observations
Design of the lifting mechanism of a general purpose overhead crane	Students receive the project theme and design methodology and under the guidance of the teacher perform the project stages	14h

Bibliography

1.Silaghi Helga, Spoială Viorica, *Proiectarea acţionărilor electrice*, Îndrumător de proiectare, Editura Universităţii din Oradea, 2009
2.Helga Silaghi, V. Spoiala, D.Spoiala, A. Silaghi - *Acţionări electrice avansate*, Editura Universităţii din Oradea, Oradea, ISBN 978-606-10-2035-5, 157 pg., 2019
3. Viorica Spoială, Helga Silaghi, Dragoş Spoială – *Acţionări electrice*. Indrumator de laborator. Universitatea din Oradea, ISBN 978-606-10-1432-3, Ediţie CD-ROM, 140 pag, 2014
4. Helga Silaghi, Viorica Spoială, Claudiu Costea, *Acţionări electrice* – îndrumător de laborator, Editura Universităţii din Oradea, 126 pg, 2008

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineering from other university centers that have accredited similar specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of Iasi, etc.) and knowledge of the types of electric drives and their operation and design is a stringent requirement of employers in the field (Comau, Faist Mekatronics, Celestica, GMAB, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be	10.3 Percent from the final mark

		done face-to-face or online	
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** Students receive for solving each a form with 3 subjects of theory and an application.	60 %
10.5 Project	Minimum required conditions for promotion (grade 6): going through the design stages, without deepening the calculations For 10: going through all the design stages, with the completion of the calculations and the electrical supply and control diagrams	**Oral presentation** Following the presentation of the project completed during the semester, each student receives a grade.	40%
10.6 Minimum performance standard: Course: Selection and independent use of learned methods and algorithms for known standard situations as well as completion of calculations (analytical and numerical) with physical quantities. Project: Development and design of automation structures based on electrical drives by using the principles of project management The timely solution, in individual activities and group activities, in conditions of qualified assistance, of the problems that require the application of principles and rules respecting the norms of professional deontology. Responsible assumption of specific tasks in multi-specialized teams and efficient communication at institutional level. Elaboration and argumentative support of the application of a personal professional development plan.			

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject				**Ethics and integrity in scientific research**			
2.2 Holder of the subject				**Lect. PhD jr. Anca PĂCALĂ**			
2.3 Holder of the academic seminar/laboratory/project				**Lect. PhD jr. PĂCALĂ**			
2.4 Year of study	I	2.5 Semester	2	2.6 Type of the evaluation	Continuous Assessment	2.7 Subject regime	SYD

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	1	of which: 3.2 course	1	3.3 academic seminar/laboratory/project	-
3.4 Total of hours from the curriculum	14	Of which: 3.5 course	14	3.6 academic seminar/laboratory/project	-
Distribution of time					
Study using the manual, course support, bibliography and handwritten notes					20
Supplementary documentation using the library, on field-related electronic platforms and in field-related places					10
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					
Tutorials					
Examinations					
Other activities.					
3.7 Total of hours for individual study	**36**				
3.9 Total of hours per semester	**50**				
3.10 Number of credits	2				

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic laboratory/project	

6. Specific skills acquired
CT1. Responsibly apply the principles, norms and values of professional ethics in order to achieve the goals and identify the objectives, the available resources, the steps to be done and time spent for finishing the works, the deadlines, and the risks involved.

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	Knowledge, understanding, explanation and interpretation of concepts specific to ethics and integrity in scientific research for their application in the development of a responsible professional career.
7.2 Specific objectives	The course aims to familiarize students with the notions of ethics, integrity in scientific research; acquiring the knowledge and skills necessary to apply the rules of ethics in scientific research

8. 8. Contents

8.1.Course	Teaching methods	No. of hours/ Observations
The concept of ethics; general aspect of the ethics in scientific research. Regulations on ethics in Romanian universities.	Free exposure, with the presentation of the course with video projector, on the board or online	4h
Integrity in the educational system: integrity standards, promotion of academic integrity, violations of academic integrity, good practices.	Free exposure, with the presentation of the course with video projector, on the board or online	2h
Ethical issues of research and publication: plagiarism, forms of plagiarism. Other forms of academic dishonesty.	Free exposure, with the presentation of the course with video projector, on the board or online	4h
Justice and equity in academic organizations and research teams. Legal provisions applicable to the ethics and integrity of scientific research.	Free exposure, with the presentation of the course with video projector, on the board or online	2h
Elaboration of a scientific paper according to the principles of ethics and academic integrity	Free exposure, with the presentation of the course with video projector, on the board or online	2h

Bibliography

1. Ariely, D. (2012). *Adevărul (cinstit) despre necinste. Cum îi minţim pe toţi dar mai ales pe noi înşine*. Bucureşti: Editura Publica
2. Proiect PODCA 2013. Ghid practic privind cercetarea stiintifica
3. Pisoschi, A., Vacariu V, Ioana Popescu I. 2006. Etica în cercetare,
4. Singer, P. (2006), *Tratat de Etică*, Bucureşti: Editura Polirom
5. Șarpe, D., Popescu, D., Neagu, A., Ciucur, V., (2011**),** *Standarde de integritate în mediul universitar, UEFISCDI,* București.
6.Șercan, Emilia, (2017), *Deontologie academică. Ghid practic,* Editura Universității București
7. L.E.N- 1/2011
8. Legea 8/1996 privind drepturile de autor
9. Legea 206/2004 privind buna conduită în cercetarea ştiinţifică, dezvoltarea tehnologică şi inovare

8.2 Academic seminar/laboratory/project	Teaching methods	No. of hours/ Observations

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

Knowledge of these notions is a stringent requirement of vocational training. The content of the discipline is correlated with the need to train responsible adults, able to apply and respect the principles of ethics and integrity in personal and professional life.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** Students receive for solving each a form with 2 subjects of theory and an application.	100 %
10.6 Minimum performance standard: Course: - Knowledge of the essential notions in the field of ethics and integrity in scientific research; - Ability to know and recognize the extent of one's rights and obligations as a researcher;			

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2st cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Flexible fabrication systems**				
2.2 Holder of the subject			**Lect.. PhD eng. Marius Romocea**				
2.3 Holder of the academic laboratory/project			**Lect. PhD eng. Marius Romocea**				
2.4 Year of study	**I**	2.5 Semester	**2**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**3**	of which: 3.2 course	**1**	3.3 academic laboratory/project	**2**
3.4 Total of hours from the curriculum	**42**	Of which: 3.5 course	**14**	3.6 academic laboratory/project	**28**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	28
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	19
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	30
Tutorials	
Examinations	6
Other activities.	

3.7 Total of hours for individual study	**83**
3.9 Total of hours per semester	**125**
3.10 Number of credits	**5**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic	- Mandatory presence at all laboratories; - The laboratory/project can be carried out face to face or online

laboratory/project	- Students come with the observed laboratory works - A maximum of 4 works can be recovered during the semester (30%); - The frequency at laboratory hours below 70% leads to the restoration of the discipline

6. Specific skills acquired	
Professional skills	Knowledge of the main types of processes and phenomena of economic communication, of the theoretical elements of microeconomics and practical aspects regarding the economic-financial flows at business level Knowledge of electric power sources, knowledge of company software, managerial informatics, elaboration and interpretation of technical documentation.
Transversal skills	identification of continuous training opportunities and efficient use, for one's own development, of information sources and of communication resources and assisted professional training (Internet portals, specialized software applications, databases, online courses, etc.) both in Romanian, as well as in a language of international circulation

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	The acquisition, by the future specialists, of information and knowledge regarding: the place and the role of the Assisted Production Systems (SPA) in the modern production; behavior, structure, forms of organization of SPA; the logic of SPA design and their synthesis; organization and endowment of advanced systems; SPA modeling and simulation; management concepts regarding production systems; Acquiring principles and skills for designing and organizing advanced production systems. Formation of documentation skills in the field of SPA and analysis of the economic efficiency of the introduction of advanced systems
7.2 Specific objectives	Using cutting-edge theoretical and practical knowledge in the field of management and communication in engineering as a basis for the development and / or original application of ideas; Awareness of key issues in the field of management and communication in engineering and in the area of interference between fields; Developing new skills in response to emerging new knowledge and techniques;Manifestation of an active behavior towards a series of social, scientific and ethical aspects that appear in work or study.

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
Chapter I .The organizational structure of the enterprise1.1. The economy and its sectors1.2. Its enterprise and organization1.2.1. Getting started1.2.2. Organization of the enterprise1.2.3. Functions of the enterprise1.2.4. Global enterprise	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 2.Product and product life cycle2.1. The product and its role2.2. Types of products2.2.1. Consumer goods and industrial goods2.2.2. Goods and services2.3. Product	Free exposure, with the presentation of the course with	1h

attributes.2.4. Product name and brand2.4.1. name2.4.2. mark2.5. Product life cycle.2.6.The PLM (Product Lifecycle Management) concept	video projector, on the board or online	
Chapter III. Computer integrated production (CIP)3.1. The CIP principle3.2. CIP facilities3.3. Modeling and simulation in CIP hypersystems3.4. The control system architecture of a CIP hypersystem3.5.Advantages and disadvantages of the CIP hypersystem	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 4.Automated Storage and Retrival System (ASRS)4.1. Development of automatic storage and retrieval systems4.2. Deposit functions4.3. Classification of deposits4.4. Retrieval systems.4.5. Fixed and mobile storage (support) structures4.6. Shelves	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter. V. Automated Storage and Retrival System (ASRS)5.1. Means for serving storage structures5.2. Automatic warehouse control systems5.3. ASRS control system architecture5.4. Strategies for managing automatic deposits5.5. The advantages of automatic storage systems are as follows5.6. Cost optimization using ASRS systems	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 6. AGVS (Automated Guided Vehicles System)6.1. The structure of a robocar6.2. Navigation of AGV systems6.2.1. Navigation using raffiofrequency6.2.2. Navigation using tapes (magnetic or colored)6.2.3. Laser navigation6.2.4. Gyroscopic navigation	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 7. AGVS (Automated Guided Vehicles System)7.1. Management of the AGV system7.2. Robot traction system7.3. Robot steering system7.4. Kinematics of robot steering7.5. Precisely stopping the robots7.6. On-board microcomputer7.7. Security systems7.8. The main types of AGV- used in industry	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 8.Flexible Manufacturing Systems (SFF)8.1. General structure of manufacturing systems8.2. Analysis of flexible manufacturing systems8.3. Synthesis of manufacturing flows in flexible manufacturing systems8.4. The need to model and simulate the management and operation of flexible manufacturing systems8.5. Mathematical modeling of flexible manufacturing systemS	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Head. IX. Computer Aided Quality Assurance CAQ, CAT9.1. Quality assurance system9.2. Quality management9.3. Using the computer in testing	Free exposure, with the presentation of the course with video projector, on the board or	1h

	online	
Chapter 10..Computer aided design CAD / CAM10.1. Definition of CAD / CAM10.2. CAD / CAM content10.3. CAD / CAM development history10.4. Production cycle and CAD / CAM	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 11.Computer aided design CAD / CAM11.1. The structure of a design and manufacturing process11.2. Computer aided design, CAD11.3. Computer Aided Manufacturing, CAM11.4. CAD / CAM tools11.5. Study and design of computer aided electrical devices	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 12.Computer Aided Engineering, CAE	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 13.Computer Aided Technology Design, CAPP	Free exposure, with the presentation of the course with video projector, on the board or online	1h
Chapter 14.Computer Aided Production Planning, Preparation and Tracking, CAPS	Free exposure, with the presentation of the course with video projector, on the board or online	1h

Bibliography

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8.2 Academic laboratory	Teaching methods	No. of hours/ Observations
1.Product and product life cycle Computer integrated production (CIP) 3.Automated Storage and Retrival System (ASRS) 4.AGVS (Automated Guided Vehicles System) 5.Computer Aided Quality Assurance CAQ, CAT	During the laboratory classes, the aim was to acquire the	4h 4h 4h 4h 4h 4h

6.Computer aided design CAD / CAM 7.Teaching Synthesis Papers	theoretical concepts and to transfer in the applicative plan the theoretical knowledge acquired during the course.	4h
8.3 Academic project	Teaching methods	No. of hours/ Observations
Bibliography		

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

The content of the Discipline Sheet is adapted and satisfies the requirements imposed by the labor market, being agreed by social partners, professional associations and employers in the field related to the master's program.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Written exam** Students receive for solving each a form with 3 subjects of theory and an application.	70%

10.5 Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard recognition of the stands used to carry out the laboratory works, without presenting details on them For 10: detailed knowledge of how to perform all laboratory work	**Test + practical application** At each laboratory students receive a test and a grade. Each student also receives a grade for laboratory work during the semester and for the laboratory work file. This results in an average for the laboratory.	30%
10.6 Project			

10.6 Minimum performance standard:

Course

The student is able to develop a synthesis paper, a case study using bibliographic material as well as knowledge of engineering, management and communication. Can perform a job responsibly performing role-specific tasks in a team.

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Fundamentals of economic communication**				
2.2 Holder of the subject			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.3 Holder of the academic sminar			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.4 Year of study	**I**	2.5 Semester	**1**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**3**	of which: 3.2 course	**2**	3.3 academic laboratory	**1**
3.4 Total of hours from the curriculum	**42**	Of which: 3.5 course	**28**	3.6 academic laboratory	**14**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	46
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	24
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	30
Tutorials	2
Examinations	6
Other activities.	

3.7 Total of hours for individual study	**108**
3.9 Total of hours per semester	**150**
3.10 Number of credits	**6**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions) Knowledge of the Basics of Economics and General Economics
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- Mandatory presence at all seminars; - The can be carried out face to face or online - Students come with the observed seminar papers - A maximum of 4 works can be recovered during the semester (30%);

	- The frequency at seminar hours below 70% leads to the restoration of the discipline - The seminar can be held face to face or online

6. Specific skills acquired	
Professional skills	**C2.** Knowledge of electrical power sources, knowledge of business software, computer management, drafting and interpreting technical documentation. **C5.** Project management and enterprise of electrical, electronic and energy marketing and economic agreements. **C6.** Knowledge of key issues in the field of communication and management in engineering and from the interference of fields
Transversal skills	**TC2**. Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team **TC3.** Identify the long-life training opportunities and the efficient use (for self development) of informational sources, as well as communication and assisted professional training resources (Internet websites, dedicated software applications, databases, on-line courses etc.) both in Romanian language and some other international spoken language

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	• Familiarizing students with theories on economic communication
7.2 Specific objectives	• The course aims to present the theoretical elements of economic communication • The seminar familiarizes students with practical aspects of communication and negotiation in the field of economics

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Communication	Free exposure, with the presentation of the course with video projector, on the board or online	3h
2. Communication techniques in interpersonal relationships	Free exposure, with the presentation of the course with video projector, on the board or online	3h
3. Oral communication	Free exposure, with the presentation of the course with video projector, on the board or online	2h

4. Written communication	Free exposure, with the presentation of the course with video projector, on the board or online	2h
5. Negotiation. The concept of negotiation	Free exposure, with the presentation of the course with video projector, on the board or online	3h
6. Basic principles in the negotiation process	Free exposure, with the presentation of the course with video projector, on the board or online	3h
7. The function of negotiation - the profile of the negotiator	Free exposure, with the presentation of the course with video projector, on the board or online	3h
8. Contract negotiation	Free exposure, with the presentation of the course with video projector, on the board or online	3h
9. Selling techniques. The concept of sale	Free exposure, with the presentation of the course with video projector, on the board or online	3h
10. Product presentation and the art of negotiation	Free exposure, with the presentation of the course with video projector, on the board or online	3h

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10. Rada, Ioan Constantin; Rica Ivan; Măgdoiu, Liliana Doina**, Finanțe și credit (aplicații pentru seminar)**, Editura Universității din Oradea, 2011, CD-ROM.

8.2 Academic seminar	Teaching methods	No. of hours/ Observations
1. Paper: Public communication techniques. The speech. 2.Reported: Communication techniques with customers. 3. Report: The interview. 4. Paper: Written communication. 5. Paper: Negotiation. The concept of negotiation. 6. Paper: Basic principles in the negotiation process. 7. Paper: Product presentation and the art of negotiation.	Students receive laboratory reports at least one week in advance, study them, and are randomly tested throughout the laboratory. Students implement the work under the guidance of the teacher.	2 h 2 h 2 h 2 h 2 h 2 h 2 h
Bibliography It is the one indicated for the course		

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineering from other university centers that have accredited similar specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of Iasi, etc.) and knowledge of the types of electric drives and their operation and design is a stringent requirement of employers in the field (Comau, Faist Mekatronics, Celestica, GMAB, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** - Students are given two topics to solve	70 %
10.5 Academic seminar	- for grade 5, it is necessary to know the structure of the paper and one or two concepts	At each seminar, the students draw up a report, which can be collective, which they	30%

	in the paper - for grade 10, in-depth knowledge of the topic of the paper and its support during the seminar	support and which is submitted to the debates during the seminars. Each student also receives a grade for the seminar activity during the semester	

10.5 Minimum performance standard:
Course: Elaboration of a professional project specific to the field of Engineering and Management using specific software systems and databases. Designing communication processes at business level, for a given situation in the electrical, electronic and energy field
Academic seminar: Responsible implementation, in conditions of qualified assistance, of projects for solving some problems specific to the field, with the correct evaluation of the workload, of the available resources, of the necessary completion time and of the risks, in conditions of application of deontological norms and professional ethics in the field, as well as occupational safety and health.

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Managerial informatics**				
2.2 Holder of the subject			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.3 Holder of the academic laboratory			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.4 Year of study	**I**	2.5 Semester	**2**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**3**	of which: 3.2 course	**2**	3.3 academic laboratory	**1**
3.4 Total of hours from the curriculum	**42**	Of which: 3.5 course	**28**	3.6 academic laboratory	**14**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	36
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	17
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	24
Tutorials	
Examinations	6
Other activities.	

3.7 Total of hours for individual study	**83**
3.9 Total of hours per semester	**125**
3.10 Number of credits	**5**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- The computer network in the laboratory to work, with the Linux program installed - Mandatory presence at all laboratories - Students come with laboratory papers theoretically known

	- A maximum of 2 works can be recovered during the semester (30%) - The laboratory can be carried out face to face or online - The frequency at project hours below 70% leads to the restoration of the discipline

6. Specific skills acquired	
Professional skills	**C2.** Knowledge of electrical power sources, knowledge of business software, computer management, drafting and interpreting technical documentation. **C4.** Development and evaluation of technical flows, financial economic and business level, advanced management methods. **C5.** Project management and enterprise of electrical, electronic and energy marketing and economic agreements. **C6.** Knowledge of key issues in the field of communication and management in engineering and from the interference of fields
Transversal skills	**TC2**. Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	• The discipline has as objective the reasoned use of concepts in informatics and computer technology in solving well-defined problems in engineering and management and in applications that require the use of hardware and software in industrial systems or computer systems.
7.2 Specific objectives	• Application of basic principles and methods for planning, programming and management of enterprises in conditions of qualified assistance

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Informatics in economics	Free exposure, with the presentation of the course with video projector, on the board or online	2h
2. General aspects regarding operating systems	Free exposure, with the presentation of the course with video projector, on the board or online	4h
3. Alternative operating systems	Free exposure, with the presentation of the course with video projector, on the board or online	2h

4. UNIX – LINUX files system	Free exposure, with the presentation of the course with video projector, on the board or online	2h
5. File and directory management in UNIX-LINUX	Free exposure, with the presentation of the course with video projector, on the board or online	4h
6. UNIX-LINUX text editors	Free exposure, with the presentation of the course with video projector, on the board or online	2h
7. UNIX shells	Free exposure, with the presentation of the course with video projector, on the board or online	2h
8. Elements of networking	Free exposure, with the presentation of the course with video projector, on the board or online	2h
9. Internet and WEB technologies	Free exposure, with the presentation of the course with video projector, on the board or online	4h
10. Elements of programming and calculation in the economic field	Free exposure, with the presentation of the course with video projector, on the board or online	4h

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7. UNIX – Tutorial - Internet

8. *** "Operating Systems", Wikipedia, http://en.wikipedia.org/wiki/Operating_system 10. *** http://fedoraproject.ro/		
8.2 Academic laboratory	Teaching methods	No. of hours/ Observations
1. Install Linux-Fedora. The first orders 2. System variables - Input / output operations - Network applications 3. Text editors - Processes - Files and directories 4. Creating users and groups. File and directory rights 5. Shell programming. Shell scripts 6. Microsoft Excel. Economic applications 7. Microsoft Access. Database 8. Closing the situation at the laboratory	Students receive laboratory reports at least one week in advance, study them, and are randomly tested throughout the laboratory. Students implement the work under the guidance of the teacher.	2h 2h 2h 2h 2h 2h 1h 1h
Bibliography 1. Spoială Dragoş Cristian, Spoială Viorica, *Utilizarea calculatoarelor*, îndrumător de laborator, Tipografia Univ. din Oradea, 145 pag., 2010 2. Spoială Dragoş-Cristian, Spoială Viorica, Sisteme de operare. Îndrumător de laborator Lito Universitatea din Oradea, 2010		

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineering from other university centers that have accredited similar specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of Iasi, etc.) and knowledge of the types of electric drives and their operation and design is a stringent requirement of employers in the field (Comau, Faist Mekatronics, Celestica, GMAB, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Continuous Assessment	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** - consisting of 10 questions each with a score displayed .	100 %
10.5 Minimum performance standard: Course: Elaboration of a project for the planning, programming and management of the production to systems of medium complexity			

Laboratory: - browsing the content of laboratory works
- participation in all laboratory works.

The timely solution, in individual activities and group activities, in conditions of qualified assistance, of the problems that require the application of principles and rules respecting the norms of professional deontology.

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Microeconomy**				
2.2 Holder of the subject			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.3 Holder of the academic sminar			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.4 Year of study	**I**	2.5 Semester	**1**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 academic laboratory	**2**
3.4 Total of hours from the curriculum	**56**	Of which: 3.5 course	**28**	3.6 academic laboratory	**28**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	30
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	10
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	20
Tutorials	0
Examinations	9
Other activities.	

3.7 Total of hours for individual study	**69**
3.9 Total of hours per semester	**125**
3.10 Number of credits	**5**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions) Knowledge of the Basics of Economics and General Economics
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- Mandatory presence at all seminars; - The can be carried out face to face or online - Students come with the observed seminar papers - A maximum of 4 works can be recovered during the semester (30%);

	- The frequency at seminar hours below 70% leads to the restoration of the discipline - The seminar can be held face to face or online

6. Specific skills acquired	
Professional skills	**C1.** Knowing the main types of economic processes and phenomena of communication, elements of microeconomic theory and practical aspects of financial and economic flows at business **C2.** Knowledge of electrical power sources, knowledge of business software, computer management, drafting and interpreting technical documentation.
Transversal skills	**TC2**. Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	• Familiarization of students with the main types of processes and economic phenomena at the microeconomic level
7.2 Specific objectives	• The course aims to present the theoretical elements of microeconomics • The seminar acquaints the students with practical aspects regarding the economic-financial flows at business level, the management of the economic and financial phenomenon

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Consumer behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
2. Consumer behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
3. Market	Free exposure, with the presentation of the course with video projector, on the board or online	2h

4. Economic competition	Free exposure, with the presentation of the course with video projector, on the board or online	2h
5. The company	Free exposure, with the presentation of the course with video projector, on the board or online	2h
6. Producers behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
7. Producers behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
8. Production costs	Free exposure, with the presentation of the course with video projector, on the board or online	2h
9. Selling prices	Free exposure, with the presentation of the course with video projector, on the board or online	8h
10. Entrepreneurial profit	Free exposure, with the presentation of the course with video projector, on the board or online	4h

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3. Rada, Ioan Constantin; Bodog, Simona;Rada, Ioana Carmen; Lăzurean, Elena Nicoleta, **Economie generală, Marketing industrial (note de curs)**, Ed. Universităţii Oradea, 2006
4. Rada, Ioan Constantin; Bodog, Simona;Rada, Ioana Carmen; Lăzurean, Elena Nicoleta, **Economie generală, Marketing industrial (aplicații pentru seminar)**, Ed. Universităţii Oradea, 2006
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10. Rada, Ioan Constantin; Rica, Ivan; Măgdoiu, Liliana Doina**, Finanțe și credit (aplicații pentru seminar)**, Editura Universității din Oradea, 2011, CD-ROM

8.2 Academic seminar	Teaching methods	No. of hours/ Observations
1. Paper: Consumer concepts 2. Paper: About resources 3. Paper: The concept of competition 4. Paper: The role of the environment in obtaining production factors 5. Report: The information system of the enterprise 6. Paper: Substantiation of production cost decisions 7. Report: The production price and the profit of the entrepreneur	Students receive laboratory reports at least one week in advance, study them, and are randomly tested throughout the laboratory. Students implement the work under the guidance of the teacher.	4h 4h 4h 4h 4h 4h 4h

Bibliography
It is the one indicated for the course

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineering from other university centers that have accredited similar specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of Iasi, etc.) and knowledge of the types of electric drives and their operation and design is a stringent requirement of employers in the field (Comau, Faist Mekatronics, Celestica, GMAB, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** - Students are given two topics to solve	70 %
10.5 Academic seminar	- for grade 5, it is necessary to know the structure of the paper and one or two concepts	At each seminar, the students draw up a report, which can be collective, which they	30%

	in the paper - for grade 10, in-depth knowledge of the topic of the paper and its support during the seminar	support and which is submitted to the debates during the seminars. Each student also receives a grade for the seminar activity during the semester	

10.5 Minimum performance standard:
Course: Solving and explaining complex problems, associated with the discipline of microeconomics or general economics, specific to the field of engineering and management
Academic seminar: - browsing the content of seminar works
The timely solution, in individual activities and group activities, in conditions of qualified assistance, of the problems that require the application of principles and rules respecting the norms of professional deontology.

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering/ Master of Science in Engineering**

2. Datarelated to thesubject

2.1 Name of the subject			**Project management**				
2.2 Holder of the subject			**Lect. PhD eng. Coroiu Laura**				
2.3 Holder of the academic laboratory			**Lect. PhD eng. Coroiu Laura**				
2.4 Year of study	**I**	2.5 Semester	**2**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**AKD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 academic laboratory	**2**
3.4 Total of hours from the curriculum	**56**	Of which: 3.5 course	**28**	3.6 academiclaboratory	**28**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	30
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	10
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	20
Tutorials	
Examinations	9
Other activities.	

3.7 Total of hours for individual study	**69**
3.9 Total of hours per semester	**125**
3.10 Number of credits	**5**

4. Pre-requisites(where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- The project can be carried out face to face or online - The frequency at project hours below 70% leads to the restoration of the discipline

6. Specific skills acquired	
Professional skills	***C4. Development and evaluation of technical flows, financial economic and business level, advanced management methods.*** ***C5. Project management and enterprise of electrical, electronic and energy marketing and economic agreements.*** ***C6. Knowledge of key issues in the field of communication and management in engineering and from the interference of fields***
Transversal skills	***CT2. Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team.*** ***CT3. Identify the long-life training opportunities and the efficient use (for self development) of informational sources, as well as communication and assisted professional training resources (Internet websites, dedicated software applications, databases, on-line courses etc.) both in Romanian language and some other international spoken language.***

7. The objectives of the discipline(resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	• The discipline has as objective the familiarization of the students from the master's specialization Management and Communication in Engineering, with the Project Management
7.2 Specific objectives	• The course aims to present the theoretical elements of the Project Management. • The project provides the necessary knowledge to the students about Project manager techniques and tools.

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Introduction. Construction of the project proposal	Free exposure, with the presentation of the course with video projector, on the board or online	4h
2. Organizing projects on project phases. The internal organizational structure of the projects.	Free exposure, with the presentation of the course with video projector, on the board or online	4h
3. Project management tasks Project marketing Risk management	Free exposure, with the presentation of the course with video projector, on the board or online	6h
4. Controlul şi asigurarea calităţii Raportarea rezultatelor proiectelor	Free exposure, with the presentation of the course with video projector, on the board or online	4h

5. Project manager techniques and tools The SWOT analysis	Free exposure, with the presentation of the course with video projector, on the board or online	4h
6. Evaluation techniques Planning techniques Project monitoring	Free exposure, with the presentation of the course with video projector, on the board or online	4h
7. Redactarea raportului tehnic Raportarea Terminarea proiectelor	Free exposure, with the presentation of the course with video projector, on the board or online	2h
Bibliography 1.Laura Coroiu, *Managementul proiectelor,* curs în format electronic, 2010; 2.D. Isoc, *Managementul proiectelor de cercetare- Proiecte cu finanţare publică naţională şi internaţională. Capitalizarea şi gestiunea proprietăţii intelectuale. Ghid practic.* Editura Risoprint Cluj Napoca 2007; 3. Mariana Mocanu, Carmen Schuster, *Managementul proiectelor Ed a II-a,* Colecţia afaceri, Editura All Beck, Bucureşti, 2004; 4.O. Nicolescu, E. Burduş,… *Ghidul managerului eficient, Vol 1*, Editura Tehnică Bucureşti 1993; 5.J.L. Koorey, D.B. Medley, *Management Information Systems*, South-Western Publishing Co. Cincinnati,Ohio, 1986; 6.K.C.Laudon, J.Price Laudon, *Management Information Systems*, A Contemporary Perspective, Macmillan Publishing Company, 1988.		
8.2 Academic project	Teaching methods	No. of hours/ Observations
Project manager techniques and tools. Case studies	Students receive the project theme and design methodology and under the guidance of the teacher perform the project stages	28h
Bibliography 1. **Laura Coroiu,** *Managementul proiectelor,* curs în format electronic, 2010; 2. Lonnie Pacelli, *Consilierul managerului de proiect*, Meteor Press 2007, ISBN 978-973-728-215-6		

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineeringfrom other university centers that have accredited similar specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of Iasi, etc.) and knowledge of Project management is a stringent requirement of employers in the field (Comau, FaistMekatronics, Celestica, GMAB, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark

10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10:thorough knowledge of all subjects is required	**Oral examination** Students receive for solving each a form with 3 subjects of theory and an application.	60 %
10.5Project	Minimum required conditions for promotion (grade 6): a brief overview of the design stages For 10: going through all the design stages, with the completion of the calculations	**Oral presentation** Following the presentation of the project completed during the semester, each student receives a grade.	40%
10.6 Minimum performance standard: Course: Solving and explaining problems of medium complexity, associated with the discipline of project management. Project: Elaboration of a business plan that aims at the management of the enterprise using knoledge of project management The timely solution, in individual activities and group activities, in conditions of qualified assistance, of the problems that require the application of principles and rules respecting the norms of professional deontology. Responsible assumption of specific tasks in multi-specialized teams and efficient communication at institutional level. Elaboration and argumentative support of the application of a personal professional development plan.			

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Innovation and technology**				
2.2 Holder of the subject			**Prof. PhD eng. Teodor Leuca**				
2.3 Holder of the academic laboratory/**project**			**Prof. PhD eng. Teodor Leuca**				
2.4 Year of study	**II**	2.5 Semester	**3**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**SD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 academic project	**1**
3.4 Total of hours from the curriculum	**42**	Of which: 3.5 course	**28**	3.6 academic project	**14**
Distribution of time					83h
Study using the manual, course support, bibliography and handwritten notes					30
Supplementary documentation using the library, on field-related electronic platforms and in field-related places					14
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					30
Tutorials					0
Examinations					9
Other activities.					
3.7 Total of hours for individual study	**83**				
3.9 Total of hours per semester	**125**				
3.10 Number of credits	**5**				

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic laboratory/project	- Mandatory presence at all project hours; - The project can be carried out face to face or online - Students come with the observed laboratory works - A maximum of 2 works can be recovered during the semester (30%); - The frequency at project hours below 70% leads to the restoration of the

	discipline

6. Specific skills acquired	
Professional skills	**C1.** Knowing the main types of economic processes and phenomena of communication, elements of microeconomic theory and practical aspects of financial and economic flows at business **C4.** Elaboration and evaluation of technical, economic and financial flows at business level, advanced management methods
Transversal skills	**TC2.** Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team.

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	♣ Implementing theories, ideas on the theoretical and design bases of innovation and technology management. ♣ Training the necessary competencies for the objective assessment and retention by master students of the issue of innovation and technology management.
7.2 Specific objectives	

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Key aspects of innovation management	Free exposure, with the presentation of the course with video projector, on the board or online	4 h
2. Innovation - as a management process	Free exposure, with the presentation of the course with video projector, on the board or online	4 h
3. Elaboration of the necessary framework for the innovation strategy	Free exposure, with the presentation of the course with video projector, on the board or online	4 h
4. The position of the national and competitive environment	Free exposure, with the presentation of the course with video projector, on the board or online	4 h
5. Pathways: exploitation of technological trajectories	Free exposure, with the presentation of the course with video projector, on the board or online	4 h

6. Processes: integration for strategic learning	Free exposure, with the presentation of the course with video projector, on the board or online	4 h
7. The cognitive process based on market realities	Free exposure, with the presentation of the course with video projector, on the board or online	4 h

Bibliography

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2.Ciobotaru, Daniela / Milo , Teodor / Ciobotaru, Dan (2010): *Triunghiul de aur al realizării unui proiect tehnic: tehnic versus calitate, costuri de realizare, termene de execuţie*, în: Buletinul AGIR, nr. 2-3, aprilie-septembrie, pp. 176-180.

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4.Pollack, Julien (2006): *The changing paradigms of project management*, în: International Journal of Project Management, doi: 10.1016/j.ijproman.2006.08.002.

5.Thomas, Graeme / Fernández, Walter (2008): *Success in IT projects: A matter of definition?*, în: International Journal of Project Management, 26, pp. 733-742.

*Anexa A, Echipamente inovative de încălzire prin inducție, Teze de doctorat coordonate de profesor dr. ing. Teodor LEUCA, Biblioteca Universității din Oradea

**Anexa B, Echipamente inovative de încălzire în câmp de înaltă frecvență, Teze de doctorat coordonate de profesor dr. ing. Teodor LEUCA, Biblioteca Universității din Oradea.

8.2 **Academic project**	Teaching methods	No. of hours/ Observations
Theme 1: Innovative photovoltaic energy conversion systems Theme 2: Innovative wind energy conversion systems Theme 3: Innovative interior lighting systems Topic 4: Smart buildings - BMS	Master students receive the design theme and design methodology and under the guidance of the teacher perform the project stages	10h
Conclusions		2h
Project support		2h

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3. Phillips, Fred Y. – Market oriented Technology Management – Innovating for Profit in Entrepreneurial Times, Springer-Velag, Heidelberg, 2001
4. Tidd, Joe; Bessant, John și Pavitt, Keith – Managing Innovation, John Wiley & Sons Ltd,Chichester, West Sussexd, 2001
5. Utterback, James M – Mastering the dynamics of innovation, Harvard Business School Press, Boston, 1996
6. Von Stamm, Bettina – Managing Innovation, Desing & Creativity, John Wiley & Sons Ltd,Chichester, West Sussexd, 2003

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineering from other university centers that have accredited these specializations

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** Students sustain an oral exam	60 %
10.5 Project	- for grade 6, going through the design stages, without deepening the calculations - for grade 10, completion of all design stages, with completion of calculations and power supply and control diagrams	**Oral support** Following the presentation of the project made during the semester, each master student receives a grade, separate from the exam. .	40%
10.6 Minimum performance standard: - Critical evaluation of the strategic performance of the teams. - Manifesting autonomy in choosing a learning route and demonstrating understanding of learning processes. - Communicating project results, methods and key principles to an audience of specialists and non-specialists, using appropriate techniques. - Careful observation, reflection and decision-making in order to change social norms and interpersonal relationships. - Problem solving by integrating complex, sometimes incomplete, sources of information in new and unfamiliar contexts. - Demonstration of experience in operational interactions for change management in a complex context. - Manifestation of an active behavior towards a series of social, scientific and ethical aspects that appear in work or study.			

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	**Department of Control Systems Engineering and Management**
1.4 Field of study	**Engineering and management**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management and Communication in Engineering / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**Economy of the Entreprise**				
2.2 Holder of the subject			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.3 Holder of the academic sminar			**Assoc.prof. PhD eng.ec. Liliana Doina Măgdoiu**				
2.4 Year of study	**I**	2.5 Semester	**1**	2.6 Type of the evaluation	**Ex**	2.7 Subject regime	**THD**

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 academic laboratory	**2**
3.4 Total of hours from the curriculum	**56**	Of which: 3.5 course	**28**	3.6 academic laboratory	**28**

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	30
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	10
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	20
Tutorials	0
Examinations	9
Other activities.	

3.7 Total of hours for individual study	**69**
3.9 Total of hours per semester	**125**
3.10 Number of credits	**5**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions) Knowledge of the Basics of Economics and General Economics
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	- Attendance at least 50% of the courses - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	- Mandatory presence at all seminars; - The can be carried out face to face or online - Students come with the observed seminar papers - A maximum of 4 works can be recovered during the semester (30%);

	- The frequency at seminar hours below 70% leads to the restoration of the discipline - The seminar can be held face to face or online

6. Specific skills acquired	
Professional skills	**C1.** Knowing the main types of economic processes and phenomena of communication, elements of microeconomic theory and practical aspects of financial and economic flows at business **C2.** Knowledge of electrical power sources, knowledge of business software, computer management, drafting and interpreting technical documentation.
Transversal skills	**TC2**. Identify the roles and responsibilities of each member of a pluri-disciplinary team and apply efficient work and relational techniques inside the team

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	• Familiarization of students with the main types of processes and economic phenomena at the microeconomic level
7.2 Specific objectives	• The course aims to present the theoretical elements of microeconomics • The seminar acquaints the students with practical aspects regarding the economic-financial flows at business level, the management of the economic and financial phenomenon

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Consumer behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
2. Consumer behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
3. Market	Free exposure, with the presentation of the course with video projector, on the board or online	2h

4. Economic competition	Free exposure, with the presentation of the course with video projector, on the board or online	2h
5. The company	Free exposure, with the presentation of the course with video projector, on the board or online	2h
6. Producers behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
7. Producers behavior	Free exposure, with the presentation of the course with video projector, on the board or online	2h
8. Production costs	Free exposure, with the presentation of the course with video projector, on the board or online	2h
9. Selling prices	Free exposure, with the presentation of the course with video projector, on the board or online	8h
10. Entrepreneurial profit	Free exposure, with the presentation of the course with video projector, on the board or online	4h

Bibliography

1. Rada, Ioan Constantin, **Economie**, Ed. Anotimp, 2002
2. Rada, Ioan Constantin; Rada, Ioana Carmen, **Economie. Caiet de lucrări**, Ed. Anotimp & Adsumus, 2002
3. Rada, Ioan Constantin; Bodog, Simona;Rada, Ioana Carmen; Lăzurean, Elena Nicoleta, **Economie generală, Marketing industrial (note de curs)**, Ed. Universităţii Oradea, 2006
4. Rada, Ioan Constantin; Bodog, Simona;Rada, Ioana Carmen; Lăzurean, Elena Nicoleta, **Economie generală, Marketing industrial (aplicații pentru seminar)**, Ed. Universităţii Oradea, 2006
5. Rada**,** Ioan Constantin, **Economie generală I**, Editura Asociaţiei „Societatea Inginerilor de Petrol şi Gaze", Bucureşti, 2009,CD-ROM
6. Rada**,** Ioan Constantin, **Economie generală II**, Editura Asociaţiei „Societatea Inginerilor de Petrol şi Gaze", Bucureşti, 2009,CD-ROM
7. Rada, Ioan Constantin, **Microeconomie. Idei moderne. Vol. I**, Editura Asociaţiei „Societatea Inginerilor

<table>
<tr><td colspan="3">de Petrol şi Gaze”, Bucureşti, 2007
8. Rada, Ioan Constantin, Microeconomie. Idei moderne. Vol. II, Editura Asociaţiei „Societatea Inginerilor de Petrol şi Gaze”, Bucureşti, 2008
9. Rada, Ioan Constantin; Rica, Ivan; Măgdoiu, Liliana Doina, Finanțe și credit (note de curs), Editura Universității din Oradea, 2011, CD-ROM
10. Rada, Ioan Constantin; Rica, Ivan; Măgdoiu, Liliana Doina, Finanțe și credit (aplicații pentru seminar), Editura Universității din Oradea, 2011, CD-ROM</td></tr>
<tr><td>8.2 Academic seminar</td><td>Teaching methods</td><td>No. of hours/ Observations</td></tr>
<tr><td>1. Paper: Consumer concepts
2. Paper: About resources
3. Paper: The concept of competition
4. Paper: The role of the environment in obtaining production factors
5. Report: The information system of the enterprise
6. Paper: Substantiation of production cost decisions
7. Report: The production price and the profit of the entrepreneur</td><td>Students receive laboratory reports at least one week in advance, study them, and are randomly tested throughout the laboratory. Students implement the work under the guidance of the teacher.</td><td>4h
4h
4h
4h
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4h
4h</td></tr>
<tr><td colspan="3">Bibliography
It is the one indicated for the course</td></tr>
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9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

- The content of the discipline can be found in the curriculum of Management and Communication in Engineering from other university centers that have accredited similar specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of Iasi, etc.) and knowledge of the types of electric drives and their operation and design is a stringent requirement of employers in the field (Comau, Faist Mekatronics, Celestica, GMAB, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods The evaluation can be done face-to-face or online	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance standard it is necessary to know the fundamental notions required in the subjects, without presenting details on them For 10: thorough knowledge of all subjects is required	**Oral examination** - Students are given two topics to solve	70 %
10.5 Academic seminar	- for grade 5, it is necessary to know the structure of the paper and one or two concepts	At each seminar, the students draw up a report, which can be collective, which they	30%

	in the paper - for grade 10, in-depth knowledge of the topic of the paper and its support during the seminar	support and which is submitted to the debates during the seminars. Each student also receives a grade for the seminar activity during the semester	

10.5 Minimum performance standard:
Course: Solving and explaining complex problems, associated with the discipline of microeconomics or general economics, specific to the field of engineering and management
Academic seminar: - browsing the content of seminar works
The timely solution, in individual activities and group activities, in conditions of qualified assistance, of the problems that require the application of principles and rules respecting the norms of professional deontology.

SUBJECT DESCRIPTION

1. Data related to the study program

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**Faculty of Electrical Engineering and Information Technology**
1.3 Department	DEPARTMENT OF ELECTRICAL ENGINEERING
1.4 Field of study	ELECTRICAL ENGINEERING
1.5 Study cycle	Master (2^{nd} cycle)
1.6 Study program/Qualification	**MANAGEMENT AND COMMUNICATION IN ENGINEERING / ENGINEER**

2. Data related to the subject

2.1 Name of the subject			**ELECTRIC POWER SOURCES**				
2.2 Holder of the subject			**Conf.dr.ing. BANDICI LIVIA**				
2.3 Holder of the academic project			**Conf.dr.ing. BANDICI LIVIA**				
2.4 Year of study	I	2.5 Semester	1	2.6 Type of the evaluation	Ex	2.7 Subject regime	I

3. Total estimated time (hours of didactic activities per semester)

3.1 Number of hours per week	3	of which: 3.2 course	2	3.3 academic seminar/laboratory/project	1
3.4 Total of hours from the curriculum	42	Of which: 3.5 course	28	3.6 academic seminar/laboratory/project	14

Distribution of time	hours
Study using the manual, course support, bibliography and handwritten notes	**40**
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	**44**
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	**43**
Tutorials	**3**
Examinations	**3**
Other activities.	**-**

3.7 Total of hours for individual study	**133**
3.9 Total of hours per semester	**175**
3.10 Number of credits	**7**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	Special issues of electrical engineering, new energy sources, electrical installations
4.2 related to skills	Knowledge of how energy sources work

5. Conditions (where applicable)

5.1. for the development of the course	- Video projector, computer. - The course can be held face to face or online platform https://e.uoradea.ro/.
5.2.for the development of the academic project	- Elaboration of the project after choosing a theme - The project can be presented face to face or online on the platform https://e.uoradea.ro/.
6. Specific skills acquired	

Professional skills	**C4.** Development and evaluation of technical, economic, and financial flows at business level, advanced management methods
Transversal skills	**CT1.** The responsible application of the principles, norms, and values of professional ethics in the accomplishment of professional tasks and identifying the objectives to be achieved, the available resources, the work stages, the execution durations, the accomplishment terms, and the related risks.

7. The objectives of the discipline (resulting from the grid of the specific competences acquired)

7.1 The general objective of the subject	The course "Power Sources" aims to familiarize students with the study and usefulness of power sources. Master students have the opportunity to get acquainted with various modern facilities, learn practical skills in the design, construction, sizing, and operation of facilities, with the possibilities of execution, maintenance, operation, and repair.
7.2 Specific objectives	The project themes are designed to provide future master engineers with practical skills in designing, conducting, researching, operating, repairing, and maintaining power sources.

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
Chapter I. General notions regarding the evolution in time of the electric power sources.	Projector. Intercalated student contributions are requested on subject-specific topics. Some courses take place by teaching subjects and student debates.	4
Chapter II. Electric power systems. Supply and distribution of electrical energy.	Idem	2
Chapter III. Hydroelectric power.	Idem	4
Chapter IV. Wind energy.	Idem	6
Chapter V. Solar energy.	Idem	8
Chapter VI. Biomass	Idem	2
Chapter VII. Hydrogen energy.	Idem	2

Bibliography

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2. V. Alexandrescu, ''*Sisteme electroenergetice* I''. Editura Universităţii Tehnice Iaşi, 1997.
3. Gh. Cârţină, ''*Optimizarea şi dispecerizarea sistemelor electroenergetice''.* Editura Universităţii Tehnice Iaşi, 1989.
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7. Gh. Georgescu, M. Istrate, V. Varvara,. ş.a. ''*Transportul şi distribuţia energiei electrice''.* Ed. Gh. Asachi, Iaşi, 2001
8. V. Nitu, Lucia Pantelimon, C. Ionescu, *''Energetică generală şi conversia energiei''*. Editura Didactică şi Pedagogică, bucureşti, 1980.

8.4 Project		
Proposed topics: **1. Sizing of a solar installation with flat collector without forced circulation for domestic hot water preparation** **2. Sizing of a wind installation necessary for servicing an**	Video projector, in case of online courses, the E-learning platform of the University of Oradea will be used	2

isolated house.	(https://e.uoradea.ro), and in „video-audio conferencing" mode, the Microsoft Teams or Zoom communication platform will be used. Discussions on how to write the project.	
Chapter. I. General notions.	Brief approach to the main problems related to solar installations.	2
Chapter II. Materials used in the construction of the installation.	Explanations on how to choose the materials used for the construction of the installation.	2
Chapter III. Theoretical bases of equipment calculation.	Presentation of the notions related to the calculation of electrical parameters.	2
Chapter IV. Determination of equipment parameters. 4.1. Methods for calculating the electrical parameters of the equipment.	Presentation of the calculation method of the equivalent parameters.	2
4.2. Determination of thermal parameters.	Presentation of the calculation method of the thermal parameters.	2
Presentation of the project	Presenting and handing in the elaborated project.	2

Bibliography

1. Livia Bandici, '' *Surse electroenergetice''.* Note de curs, suport CD, 2019.
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4. Livia Bandici, D. Hoble, ''*Utilizări ale energiei electrice*. Editura Universiăţii din Oradea, 2006.
5. Gh. Cârţină, ''*Optimizarea şi dispecerizarea sistemelor electroenergetice''.* Editura Universităţii Tehnice Iaşi, 1989.
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10. V. Nitu, Lucia Pantelimon, C. Ionescu, *''Energetică generală şi conversia energiei''*. Editura Didactică şi Pedagogică, Bucureşti, 1980.
11. I. Şora, V.Conta, D.Popovici, ''*Utilizări ale energiei electrice''*. Editura Facla, 1983.

M. Ungureanu, M. Chindriş, I. Lungu, ''*Utilizări ale energiei electrice''.* Editura Didactică şi Pedagogică Bucureşti, 1999.

9. Corroboration of the discipline content with the expectations of the representatives of epistemological community, professional associations and representative employers in the field related to the program

The content of the subject is adapted and satisfies the requirements imposed by the labor market, being agreed by the social partners, professional associations, and employers in the field related to the master's degree program. Knowledge of the basics is a stringent requirement of employers in the field such as: Faist Mekatronics, Comau, S.C. Stimin Industries S.A., S.C. Electrica.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percent from the final mark
10.1 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the minimum performance	The evaluation can be done face to face or online.	

	standard		
10.2. Project	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard		
10.3. Minimum performance standard: Carrying out a work/ project, as a leader in a multidisciplinary team and responsibly distributing specific tasks to subordinates. Grade components: exam (Ex), independent activity (Ai) Final grade calculation formula: N = 0.60 Ex + 0.30Pr + 0.1Ai; - Condition for obtaining credits: N≥5.			

Completion date:
29.08.2022

Date of endorsement in the department:
01.09.2022

Date of endorsement in the Faculty Board:

23.09.2022