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 Computers and Information Technology
1.4 Field of study	Computers and Information Technology
1.5 Study cycle	Master
1.6 Study program/Qualification	Management in Information Technology / Master of Science in Engineering

2. Data related to the subject

2.1 Name of the subject	**I.T. Project Management**						
2.2 Holder of the subject	Prof. dr. ing. Győrödi Robert Ștefan						
2.3 Holder of the academic seminar/laboratory/project	Prof. dr. ing. Győrödi Robert Ștefan						
2.4 Year of study	II	2.5 Semester	1	2.6 Type of the evaluation	Ex	2.7 Subject regime	SYD

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 seminar/laboratory/project	0/0/2
3.4 Total of hours from the curriculum	42	Of which: 3.5 course	14	3.6 academic seminar/laboratory/project	0/0/28
Distribution of time					hours
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					30
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					23
Tutorials					6
Examinations					4
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) Computer programming and programming languages I Computer programming and programming languages II
4.2 related to skills	Structured programming in the C language or object programming in C ++ / C # / Java

5. Conditions (where applicable)

5.1. for the development of the course	Classroom equipped with video projector and computer. The course can be held face to face or online

5.2.for the development of the academic seminary/laboratory/project	Laboratory equipped with video projector and computers that are connected to the internet, and they have installed Oracle 12c software. Laboratory equipped with: - computers that are connected to the Internet and have installed the following programs: Visual Studio, Eclipse for Java, SQL Business Intelligence Development Studio, Microsoft Project - access to the virtual environment in which the Microsoft Dynamics 365 BC / FO & SCM suite is installed (the latest versions) with all the necessary service infrastructure and tools The laboratory can take place face to face or online

6. Specific skills acquired

Professional skills	C5. Projects preparation and management in the field of Computers and Information Technology and related fields by applying C6. Developing skills of financiar marketing, quality management and customer relashionship management
Transversal skills	CT1. Applying principles, norms and values of professional ethics in the spirit of the law to ensure the reputation of the profession.

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

7.1 The general objective of the subject	▪ Learning the main concepts of IT project management and how they are used by organizations (both in the private and public sector) as well as the tools and techniques needed to manage IT projects.
7.2 Specific objectives	▪ This course introduces key principles of IT project management, including an introduction to Agile and Scrum approaches. At the same time, tools and techniques will be presented to initiate, plan and successfully manage IT projects and programs. Through a combined learning approach to courses, labs, and case studies, students will be able to understand all the essentials of good project management.

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Introduction to project management	Powerpoint presentation with the help of the video projector; free discussions;	1 hour
2. Business strategy and project business cases		1 hour
3. Introduction to Agile Predictive and Development Life Cycle		1 hour
4. Breakdown structures (work, product, cost)		1 hour
5. Key planning tools - planning, estimating and managing resources		1 hour
6. Stakeholder identification, analysis and management		1 hour
7. Management skills in project management - influence, leadership, team building and conflict management		1 hour
8. Managing the risk and the problems of a project		1 hour
9. Project planning. Applications and tools used in industry		2 hours

10. Project monitoring and control techniques.		4 hours

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1. Ken Laudon, Jane Laudon, Management Information Systems: Managing the Digital Firm (13th Ed), Prentice Hall, 2013, ISBN 0133050696
1. Information Technology Project Management, 9th Edition - Kathy Schwalbe, ISBN-10: 1-337-10135-4, ISBN-13: 978-1-337-10135-6
2. The APM Project Management Body of Knowledge, 6th Edition,(2012), Association for Project Management
3. J Cadle and D Yeates; Project Management for Information Systems (2008) Pearson Education Limited
4. Győrödi Robert, Lungu Ion, Győrödi Cornelia, Sisteme avansate de descoperire a cunoștințelor din bazele de date, Editura Universității din Oradea, Oradea, România, 2012, ISBN 978-606-10-0733-2.
5. Brian Larson, Delivering Business Intelligence with Microsoft SQL Server 2012 3/E, McGraw-Hill, 2012, ISBN 0071759387
6. James M. Wahlen, Financial Reporting, Financial Statement Analysis and Valuation, 8th Ed, Cengage Learning, 2014, ISBN 1285190904
7. Michael Alexander, Jared Decker, Bernard Wehbe, Microsoft Business Intelligence Tools for Excel Analysts, For Dummies, 2014, ISBN 1118821521
8. Adam Aspin, High Impact Data Visualization with Power View, Power Map, and Power BI, Apress, 2014, ISBN 1430266163
9. Brian Larson, Mark Davis, Dan English, Visualizing Data with Microsoft Power View, McGraw-Hill, 2012, ISBN 0071780823
10. https://e.uoradea.ro/course/view.php?id=6252 Materials (courses and project)

8.2 Academic laboratory	Teaching methods	No. of hours/ Observations

8.3. Project	Teaching methods	No. of hours/ Observations
1. General concepts used in project management	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
2. Business strategy		2 hours
3. The life cycle of a project. Agile strategy		4 hours
4. Breakdown structures (work, product, cost)		2 hours
5. Planning tools - planning, estimating and managing resources		4 hours
6. Project team management - influence, leadership, team building, conflict management		2 hours
7. Risk and problem management in a project. Identification of risk elements in a project		2 hours
8. Project planning. Analysis, planning, and elaboration of the structure of a project		4 hours
9. Project monitoring and control techniques		4 hours
10. Final evaluation		2 hours

Bibliography
1. The APM Project Management Body of Knowledge, 6th Edition,(2012), Association for Project Management. E. book available.
2. J Cadle and D Yeates; Project Management for Information Systems (2008) Pearson Education Limited. E book available.
3. The Microsoft Dynamics AX Team, Inside Microsoft Dynamics AX 2012 R3, Microsoft Press, 2014, ISBN 073568510X
4. Andreas Luszczak, Using Microsoft Dynamics AX 2012: Updated for Version R2, Springer Vieweg; 3rd ed. 2013, ISBN 3658017082
5. Keith Dunkinson, Andrew Birch, Implementing Microsoft Dynamics AX 2012 with Sure Step 2012, Packt Publishing, 2013, ISBN 1849687048

6. Mohamed Aamer, Microsoft Dynamics AX 2012 Financial Management, Packt Publishing, 2013, ISBN 1782177205
7. Simon Buxton, Microsoft Dynamics AX 2012 R2 Administration Cookbook, Packt Publishing, 2013, ISBN 1849688060
8. Kamalakannan Elangovan, Microsoft Dynamics AX 2012 Reporting Cookbook, Packt Publishing, 2013, ISBN 1849687722
9. Microsoft CustomerSource Portal (https://mbs.microsoft.com/customersource) – Materiale e-Learning
10. https://e.uoradea.ro/course/view.php?id=6252 Materials (courses and project)

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

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10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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: 50% of the subjects from the final exam should be correctly solved For 10: 100% of the subjects from the final exam should be correctly solved	Semester exam – oral	60%
10.5 Academic seminar	-	-	-
10.6 Laboratory	-	-	-
10.7 Project	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard: 50% of the practical application should be correctly solved - For 10: 100% of the practical application should be correctly solved	Practical applications - oral presentation	40%
10.8 Minimum performance standard: Course: 50% of the maximum score of the final exam Academic seminar: Laboratory: Project: 50% of the maximum score of the project evaluation			

Course instructor   Head of department

Completion date:
26.09.2023

prof. dr. ing. Győrödi Robert   conf. dr. ing. Pater Mirela
E-mail: rgyorodi@uoradea.ro

Date of endorsement in the department:
27.09.2023

Date of endorsement in the Faculty Board:
29.09.2023

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 Computers and Information Technology
1.4 Field of study	Computers and information technology
1.5 Study cycle	Master
1.6 Study program/Qualification	Management in Information Technology / Master of Science in Engineering

2. Data related to the subject

2.1 Name of the subject	**Relational Databases**					
2.2 Holder of the subject	Prof. dr. ing. Győrödi Cornelia Aurora					
2.3 Holder of the academic seminar/laboratory/project	Prof. dr. ing. Győrödi Cornelia Aurora					
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	0/1/1
3.4 Total of hours from the curriculum	56	Of which: 3.5 course	28	3.6 academic seminar/laboratory/project	0/14/14
Distribution of time					hours
Study using the manual, course support, bibliography and handwritten notes					38
Supplementary documentation using the library, on field-related electronic platforms and in field-related places					22
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					28
Tutorials					4
Examinations					2
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	Classroom equipped with video projector and computer - The course can be held face to face or online
5.2.for the development of the academic seminary/laboratory/project	Laboratory equipped with video projector and computers that are connected to the internet, and they have installed Oracle 12c software. The laboratory can take place face to face or online

6. Specific skills acquired	
Professional skills	C1. Software components design and their management through databases. C2. Advanced hardware and software design for computing systems and networks. C5. Projects preparation and management in the field of Computers and Information Technology and related fields by applying The course contributes to the acquisition of skills in the field of design and programming of database applications
Transversal skills	

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

7.1 The general objective of the subject	▪ This course contributes to the acquisition of skills in the field of designing and programming database applications. The course introduces the principles and concepts of relational and non-relational databases, Azure data services as well as database architectures and systems, object-oriented databases, and XML databases.
7.2 Specific objectives	▪ Acquiring knowledge in the field of database application programming, identifying the concepts and services of relational and non-relational databases in different environments (Oracle, Microsoft Azure, etc.).

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Fundamentals of data in Microsoft Azure	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
2. Modeling relational databases		2 hours
3. Relational languages		2 hours
4. Libraries and Database Programming Languages		2 hours
5. Database system architectures		2 hours
6. Azure Services for Relational Databases		2 hours
7. Parallel database systems		4 hours
8. Distributed database systems		2 hours
9. XML databases		2 hours
10. Non-relational (NoSQL) databases		4 hours
11. Fundamentals of non-relational data in Azure		2 hours
12. Fundamentals of data analysis. Visualization of data with Power BI		2 hours

Bibliography
1. Győrödi Cornelia, Lungu Ion "Sisteme de baze de date avansate", Editura Universității din Oradea, 2011, ISBN 978-606-10-0447-8, nr. pag 350.
2. Jeffrey A. Hoffer, Mary Prescott, Heikki Topi - " *Modern Database Management, 9/E*", Prentice Hall, 2009, ISBN: 9780136003915.
3. Greg Riccardi - " *Principles of Database Systems with Internet and Java Applications*", Addison Wesley (December 14, 2002), ISBN-13: 978-0321185563.
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5. Ramez Elmasri, Shamkrant Navathe, "*Fundamentals of Database Systems*" 6th Edition, April 2010, Publisher: Addison Wesley; ISBN: 978-0136086208.
6. Kevin Loney "*Oracle Database 11g The Complete Reference (Osborne ORACLE Press Series)*", Publisher: McGraw-Hill Osborne Media; 1 edition, December 2008, ISBN: 978-0071598750.

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11. Oracle Berkley DB http://www.oracle.com/technetwork/database/database-technologies/berkeleydb/overview/index.html

12. Mongo DB Documentation: www.mongodb.com

13. Neo4J Documentation: www.neo4j.com

14. https://www.javatpoint.com/rdbms-vs-cassandra

15. http://docs.oracle.com/cd/NOSQL/html/index.html

16. https://e.uoradea.ro/course/view.php?id=6249 Materials (courses and laboratories)

17. https://msle.learnondemand.net

8.2 Academic laboratory	Teaching methods	No. of hours/ Observations
1. Data modeling using Oracle Database Designer	Oral presentation. Students work with the following tools: - Oracle Server (Oracle Database 12, Oracle Developer Suite 12g), MySQL, or SQL Server 2018. The students are assessed by a practical test using computer from laboratory topics.	1 hour
2. SQL language. Data manipulation operations		1 hour
3. Querying a data table. Group functions		1 hour
4. Subqueries		1 hour
5. Setting up and querying an Azure SQL database		1 hour
6. Stored procedures and functions, data collections.		1 hour
7. NoSQL document databases. Case study - Mongo DB.		1 hour
8. NoSQL key-value databases. Case Study - Oracle NoSQL Database		1 hour
9. Column-oriented NoSQL databases (Columnar). Case study - Apache Cassandra.		1 hour
10. Azure Storage. Azure Cosmos DB		1 hour
11. Azure Synapse Analytics		1 hour
12. Visualization data using Power BI		2 hour
13. Final test		1 hour

Bibliography
1. Ion Lungu, Anca Andreescu, Adela Bâra, Anda Belciu, Constanța Bodea, Iuliana Botha, Vlad Diaconița, Alexandra Florea, **Cornelia Győrödi**, " Tratat de baze de date. Sisteme de gestiune a bazelor de date ", Volumul 2, Editura ASE, 2015, ISBN 978-606-505-472-1, nr. pag 375.
2. Győrödi Cornelia**,** Lungu Ion "*Sisteme de baze de date avansate*", Editura Universității din Oradea, 2011, ISBN 978-606-10-0447-8, nr. pag 350.
3. Oracle Berkley DB http://www.oracle.com/technetwork/database/database-technologies/berkeleydb/overview/index.html

4. Mongo DB Documentation: www.mongodb.com

5. Neo4J Documentation: www.neo4j.com

6. https://www.javatpoint.com/rdbms-vs-cassandra

7. http://docs.oracle.com/cd/NOSQL/html/index.html

8. Oracle Application Express (https://iacademy.oracle.com/)

8.3. Project	Teaching methods	No. of hours/ Observations
Implementing a practical application from a list published on the online platform https://e.uoradea.ro/course/view.php?id=6249 The project will be implemented in one of the development environments: Oracle Server (Oracle Database 11g or Oracle12, Oracle Developer Suite 12), MySQL 8, or SQL Server 2018, or in one of the NoSQL databases (MongoDB, Cassandra, etc.). For each project, both the practical application and a description in the form of a report will be presented. The report will contain: (a) Analysis and specification of the requirements and operation of the designed application. (b) Description and interpretation of results obtained.	Oral presentation	1 hours/ week 14 hours

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

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10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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: 50% of the subjects from the final exam should be correctly solved For 10: 100% of the subjects from the final exam should be correctly solved	Semester exam – written	50%
10.5 Academic seminar	Minimum required conditions for passing the examination (grade 5): in accordance with the minimum performance standard - For 10:	-	-
10.6 Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard:	Oral/written	15%

	50% of the problems from the final laboratory test should be correctly solved - For 10: 100% of the problems from the final laboratory test should be correctly solved		
10.7 Project	A practical application project covering the topics mentioned in the course and laboratory list	Project Evaluations - oral presentations	35%

10.8 Minimum performance standard:
Course: 50% of the maximum score of the final exam
Academic seminar:
Laboratory: 50% of the maximum score of the laboratory evaluations
Project: 50% of the maximum score of the Project Evaluations

Course instructor   Head of department

Completion date:
25.09.2023

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Date of endorsement in the department:
27.09.2023

Date of endorsement in the Faculty Board:
29.09.2023

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 Computers and Information Technology
1.4 Field of study	Computers and information technology
1.5 Study cycle	Master
1.6 Study program/Qualification	Management in Information Technology / Master of Science in Engineering

2. Data related to the subject

2.1 Name of the subject	**Information systems and decision support**					
2.2 Holder of the subject	Prof. dr. ing. Győrödi Robert Ștefan					
2.3 Holder of the academic seminar/laboratory/project	Prof. dr. ing. Győrödi Robert Ștefan					
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 seminar/laboratory/project	0/1/0
3.4 Total of hours from the curriculum	42	Of which: 3.5 course	28	3.6 academic seminar/laboratory/project	0/14/0
Distribution of time					hours
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					30
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					23
Tutorials					6
Examinations					4
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) Computer programming and programming languages I Computer programming and programming languages II
4.2 related to skills	Structured programming in the C language or object programming in C ++ / C # / Java

5. Conditions (where applicable)

5.1. for the development of the course	Classroom equipped with video projector and computer. The course can be held face to face or online

5.2.for the development of the academic seminary/laboratory/project	Laboratory equipped with video projector and computers that are connected to the internet, and they have installed Oracle 12c software. Laboratory equipped with: - computers that are connected to the Internet and have installed the following programs: Visual Studio, Eclipse for Java, SQL Business Intelligence Development Studio. - access to the virtual environment in which the Microsoft Dynamics 365 BC / FO & SCM suite is installed (the latest versions) with all the necessary service infrastructure and tools The laboratory can take place face to face or online

6. Specific skills acquired

Professional skills	C5. Projects preparation and management in the field of Computers and Information Technology and related fields by applying C6. Developing skills of financiar marketing, quality management and customer relashionship management
Transversal skills	CT1. Applying principles, norms and values of professional ethics in the spirit of the law to ensure the reputation of the profession.

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

7.1 The general objective of the subject	▪ Learning the concepts underlying the design and implementation of complex information systems in enterprises, as well as the use of knowledge discovery tools for decision support
7.2 Specific objectives	▪ The course presents the concepts used in complex computer systems used in various industries, how to organize enterprises for a more efficient implementation of these systems and how to map the various industrial processes in computer systems.

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Introduction to information systems	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
2. Enterprise, E-business and collaboration		2 hours
3. Information Systems, Organizations and Strategies		2 hours
4. Ethical and social issues related to information systems		2 hours
5. IT Concepts, Infrastructure and Emerging Technologies		2 hours
6. Business Intelligence		2 hours
7. Telecommunications and networks		2 hours
8. Information systems, control and security		2 hours
9. Enterprise applications		2 hours
10. E-commerce		2 hours
11. Decision support systems		2 hours
12. Building information systems		2 hours
13. Project and risk management		2 hours
14. Global systems management		
Bibliography		

1. Ken Laudon, Jane Laudon, Management Information Systems: Managing the Digital Firm (16th Ed), Pearson Education, 2020, ISBN 1292296569
2. Győrödi Robert, Lungu Ion, Győrödi Cornelia, Sisteme avansate de descoperire a cunoștințelor din bazele de date, Editura Universității din Oradea, Oradea, România, 2012, ISBN 978-606-10-0733-2.
3. Jamie MacLennan, ZhaoHui Tang, Bogdan Crivat, Data Mining with Microsoft SQL Server 2008, Wiley, 2008, ISBN 0470277742
4. Brian Larson, Delivering Business Intelligence with Microsoft SQL Server 2016 4/E, McGraw-Hill, 2016, ISBN 9781259641480
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10. Adam Aspin, High Impact Data Visualization with Power View, Power Map, and Power BI, Apress, 2014, ISBN 1430266163
11. Brian Larson, Mark Davis, Dan English, Visualizing Data with Microsoft Power View, McGraw-Hill, 2012, ISBN 0071780823
12. Pang-Ning Tan, Michael Steinbach, Anuj Karpatne, Vipin Kumar, Introduction to Data Mining, 2/e, Pearson, 2018, ISBN 0133128903
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16. https://e.uoradea.ro/course/view.php?id=6250 Materials (courses and laboratories)

8.2 Academic laboratory	Teaching methods	No. of hours/ Observations
1. Introduction to the Microsoft Dynamics 365 Business Central / FO & SCM	Powerpoint presentation with the help of the video projector; free discussions;	1 hour
2. Introduction to the SureStep implementation methodology		1 hour
3. Simulation of the implementation of the Dynamics 365 Business Central / FO & SCM in a virtual enterprise - parameterization of Financial Accounting modules		1 hour
4. Simulation of the implementation of the Dynamics 365 Business Central / FO & SCM in a virtual enterprise - parameterization of Management modules		1 hour
5. Simulation of the implementation of the Dynamics 365 Business Central / FO & SCM in a virtual enterprise - parameterization of production modules		1 hour
6. Configuration and extending the Microsoft Dynamics 365 Business Central / FO & SCM		1 hour
7. Configuration and extending the Microsoft Dynamics 365 Business Central / FO & SCM - adapting to specific business processes		1 hour

8. Ways to configure and extend the Microsoft Dynamics 365 Business Central / FO & SCM - adapt the standard interface		1 hour
9. Ways to configure and extend the Microsoft Dynamics 365 Business Central / FO & SCM - adapt the web interface		1 hour
10. Ways to configure and extend the Microsoft Dynamics 365 Business Central / FO & SCM - the possibility of implementing processes using mobile technologies (iOS, Android, Windows)		1 hour
11. Using and expanding Dynamics 365 Business Central / FO & SCM Business Intelligence facilities - existing data cubes, ways to customize		1 hour
12. Using Excel 2019 and Power BI to analyze data from the Dynamics 365 Business Central / FO & SCM		1 hour
13. Methods of interactive presentation of some KPIs from Dynamics 365 Business Central / FO & SCM using Excel 2019 and Power BI		1 hour
14. Final evaluation		1 hour

Bibliography
1. Győrödi Robert, Lungu Ion, Győrödi Cornelia, Sisteme avansate de descoperire a cunoştinţelor din bazele de date, Editura Universităţii din Oradea, 2012, ISBN 9786061007332.
2. Győrödi Robert, Győrödi Cornelia, Recunoaşterea formelor şi Descoperirea cunoştinţelor, *Editura Mediamira*, Cluj, România, 2005, ISBN 973713088X.
3. The Microsoft Dynamics AX Team, Inside Microsoft Dynamics AX 2012 R3, Microsoft Press, 2014, ISBN 073568510X
4. Andreas Luszczak, Using Microsoft Dynamics AX 2012: Updated for Version R2, Springer Vieweg; 3rd ed. 2013, ISBN 3658017082
5. Keith Dunkinson, Andrew Birch, Implementing Microsoft Dynamics AX 2012 with Sure Step 2012, Packt Publishing, 2013, ISBN 1849687048
6. Mohamed Aamer, Microsoft Dynamics AX 2012 Financial Management, Packt Publishing, 2013, ISBN 1782177205
7. Simon Buxton, Microsoft Dynamics AX 2012 R2 Administration Cookbook, Packt Publishing, 2013, ISBN 1849688060
8. Kamalakannan Elangovan, Microsoft Dynamics AX 2012 Reporting Cookbook, Packt Publishing, 2013, ISBN 1849687722
9. Microsoft CustomerSource Portal (https://mbs.microsoft.com/customersource) – Materiale e-Learning
10. https://e.uoradea.ro/course/view.php?id=6250 Materials (courses and laboratories)

8.3. 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

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10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percent from the final mark
10.4 Course	Minimum required conditions for passing the exam (mark 5): in accordance with the	Semester exam – oral	60%

	minimum performance standard: 50% of the subjects from the final exam should be correctly solved For 10: 100% of the subjects from the final exam should be correctly solved		
10.5 Academic seminar	Minimum required conditions for passing the examination (grade 5): in accordance with the minimum performance standard - For 10:	-	-
10.6 Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard: 50% of the practical applications should be correctly solved - For 10: 100% of the practical applications should be correctly solved	Practical applications - oral presentation	40%
10.7 Project	-	-	-

10.8 Minimum performance standard:
Course: 50% of the maximum score of the final exam
Academic seminar:
Laboratory: 50% of the maximum score of the laboratory evaluations
Project:

	Course instructor	Head of department
Completion date: 26.09.2027	prof. dr. ing. Győrödi Robert E-mail: rgyorodi@uoradea.ro	conf. dr. ing. Pater Mirela

Date of endorsement in the department:
27.09.2023

Date of endorsement in the Faculty Board:
29.09.2023

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 Computers and Information Technology
1.4 Field of study	Computers and Information Technology
1.5 Study cycle	Master (2nd cycle)
1.6 Study program/Qualification	Management in Information Technology /Master of Science in Engineering

2. Data related to the subject

2.1 Name of the subject	**Quality management in IT**						
2.2 Holder of the subject	**As. Prof. PhD eng. Ovidiu-Constantin NOVAC**						
2.3 Holder of the academic seminar/laboratory/project	**As. Prof. PhD eng. Ovidiu-Constantin NOVAC**						
2.4 Year of study	**I**	2.5 Semester	**2**	2.6 Type of the evaluation	Ex. - **Examination**	2.7 Subject regime	**SYD** - Synthesis Disciplines

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 seminar/laboratory	0/**2**
3.4 Total of hours from the curriculum	**42**	Of which: 3.5 course	**14**	3.6 academic seminar/laboratory	0/**28**/0

Distribution of time	**83 hours**
Study using the manual, course support, bibliography and handwritten notes	**32**
Supplementary documentation using the library, on field-related electronic platforms and in field-related places	**11**
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays	**32**
Tutorials	
Examinations	**8**
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	-
4.2 related to skills	-

5. Conditions (where applicable)

5.1. for the development of the course	The course can be held face-to-face or online. The course takes place with the modern techniques available: laptop, video projector, whiteboard or on specialized platforms for online courses (Moodle: e.uoradea.ro, Microsoft Teams).
5.2. for the development of the academic seminary/laboratory/project	The laboratory can be held face-to-face or online. The laboratory works are performed using the modern means of work existing in the laboratory: Personal computers, software programs, web browsers. Students presence to all laboratory hours is compulsory. Only one laboratory work can be recovered during the semester.
6. Specific skills acquired	

Professional skills	C6. Developing skills of financiar marketing, quality management and customer relashionship management
Transversal skills	

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

7.1 The general objective of the subject	The main goal is to familiarize students with the basic concepts related to quality management, to understand the current approaches regarding the models of quality management systems, to develop the capacity to use the basic techniques of quality management. The aim of the discipline is to provide students with a set of knowledge on the basic principles and techniques used in quality management in IT.
7.2 Specific objectives	After completing the " Quality management in IT" discipline, students acquire the following skills: - Knowledge of the areas of applicability of quality management - Understanding and knowing the models of quality management systems. Acquiring the ability to use what they have learned in this discipline in the case of a rigorous and abstract approach to practical problems that may arise in further research (master's, doctorate).

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Approaches to the quality of products and services in the context of economic globalization.	Interactive lecture + video projector / Online	2
2. Theoretical foundations of quality management.	Interactive lecture + video projector / Online	2
3. Defining the quality policy and its relationship with the general policy of the organization.	Interactive lecture + video projector / Online	2
4. Typology of quality strategies: Methods and techniques specific to the continuous improvement strategy.	Interactive lecture + video projector / Online	2
5. Quality planning. The quality planning process.	Interactive lecture + video projector / Online	2
6. Organizing activities related to quality.	Interactive lecture + video projector / Online	2
7. Elements of definition and characteristics of ISO 9000 quality management system models.	Interactive lecture + video projector / Online	2
8. Current state of implementation of ISO 9000 quality management systems.	Interactive lecture + video projector / Online	2
9. Design and implementation of a quality management system.	Interactive lecture + video projector / Online	2
10. Stages of implementing the quality management system.	Interactive lecture + video projector / Online	2
11. Quality audit. The concept of quality audit.	Interactive lecture + video projector / Online	2
12. Evaluation and certification of conformity of quality management systems.	Interactive lecture + video projector / Online	2
13. Quality management related to quality.	Interactive lecture +	2

	video projector / Online	
14. Total quality management. Current approaches to the concept of total quality.	Interactive lecture + video projector / Online	2

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9. I. Stanciu, MANAGEMENTUL CALITĂȚII TOTALE, Bucureşti: Cartea Universitară, 2003;

10. **Ovidiu Novac**, Managementul calității în IT, Curs https://e.uoradea.ro/course/view.php?id=2062

8.2 Laboratory	Teaching methods	No. of hours/ Observations
1. Analysis of the clauses of a contract regarding the quality assurance of the delivered products / services.	Introductory lecture; free and individual discussions;	2
2. Analysis of the quality policy of some organizations.	Introductory lecture; free and individual discussions;	2
3. Analysis of the quality objectives of some organizations.	Introductory lecture; free and individual discussions;	2
4. Identifying the processes within an organization - Analysis of the SMC process map.	Introductory lecture; free and individual discussions;	2
5. Stages of implementing a Quality Management System (QMS).	Introductory lecture; free and individual discussions;.	2
6. Analysis of the SMC documentation. Sketching the content of a quality manual.	Introductory lecture; free and individual discussions;	2
7. Analysis of SMC documents: Elaboration of an operational procedure.	Introductory lecture; free and individual discussions;	2
8. Quality audit. Development of an audit program and plan. Develop a checklist.	Introductory lecture; free and individual discussions;	2
9. Quality audit. Writing a report of non-conformities and corrective/preventive actions. Writing an audit report.	Introductory lecture; free and individual discussions;	2
10. Steps of SMC certification.	Introductory lecture; free and individual discussions;	2
11. Quality cost analysis.	Introductory lecture; free and individual discussions;	2
12. Determining costs related to quality.	Introductory lecture; free and individual discussions;	2
13. Application of the Ishikawa diagram to identify the causes of non-conformities.	Introductory lecture; free and individual discussions;	2
14. Applying the PEVA cycle to improve a process.	Introductory lecture; free and individual discussions;	2

Bibliography

1.M. Olaru, Managementul calității, ed. a II-a revizuită şi adăugită, Ed. Economică Bucureşti, Bucureşti, 1999, România

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4. J. Dahlgaard, K., Kai, K.K.. Goplal, Fundamentals of Total Quality Management – Process analysis and improvement , London: Taylor & Francis, 2002; 5.Derek, R., Allen, Customer Satisfaction Research Management, Milwaukee (Wisconsin): ASQPress, 2004; 6.Ovidiu Novac, Managementul calității în IT, https://e.uoradea.ro/course/view.php?id=2062		
8.3 Seminar	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

The content of the subject is in accordance with the one in other national or international universities. In order to provide a better accomodation to the labour market requirements, there have been organized meetings both with representatives of the socio-economic environment and with academic staff with similar professional interest fields.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percent from the final mark
10.4 Course	Written or online exam.	**Written examination** - The assessment can be done face to face or online. The elaboration and presentation of a report on a specific research topic in the field through which the state of the art is deepened, analyzed and presented on certain specific topics.	50 %
10.5 Seminar			
10.6 Laboratory	Laboratory report	**Oral evaluation** The assessment can be done face to face or online. After the presentation of the report, each student receives a grade for the report. The project is also presented in electronic format	50%
10.7 Project			
10.8 Minimum performance standard: Minimum conditions necessary to pass the exam in accordance with the minimum performance standard: **Note 5** - it is necessary to deal extensively with the subject, without detailing the concepts presented, the existence of a minimum bibliography, a short presentation. **Note 10:** it is necessary the complete, detailed approach of the proposed topic (comparative analyzes / discussions), extended bibliography, extended presentation.			

Completion date:
04.09.2023

Date of endorsement in the department:
27.09.2023

Date of endorsement in the Faculty Board:
29.09.2023

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 Computers and Information Technology
1.4 Field of study	Computers and information technology
1.5 Study cycle	Master (2nd cycle)
1.6 Study program/Qualification	**Management in Information Technology / Master Engineer**

2. Data related to the subject

2.1 Name of the subject	**Information management and multimedia**					
2.2 Holder of the subject	Assoc. Prof. Eng.PhD. Gabor Gianina					
2.3 Holder of the academic seminar/laboratory/project	Assoc.Prof. Eng.PhD. Gabor Gianina					
2.4 Year of study	2nd	2.5 Semester	2nd	2.6 Type of the evaluation	Examination	2.7 Subject regime	Synthesis Discipline

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 laboratory	2
3.4 Total of hours from the curriculum	42	of which: 3.5 course	28	3.6 laboratory	28
Distribution of time					hours
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					32
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					32
Tutorials					4
Examinations					6
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	face to face or online projector and access to Internet
5.2.for the development of the academic seminary/laboratory/project	face to face or online every student has access to a computer connected to Internet and with access to the applications/software used during the labs
6. Specific skills acquired	

Professional skills	**CP1**. Software components design and their management through databases **CP3.** Design and management of secure computing systems.	
Transversal skills	.	

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

7.1 The general objective of the subject	▪ Know and understand the information management concept in multimedia systems, how to use and develop multimedia applications and presentations, use the acquired knowledge to develop a multimedia web presentations using XHTML+TIME, SMILE, HTML5+CSS3 and Javascript
7.2 Specific objectives	

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
Characteristic elements of XHTML+Time, XHTML+Time document structure, timing attributes	lecture & debate	2
Association of XHTML + Time elements and methods used to insert multimedia objects	lecture & debate	2
HTML+Time support for synchronized execution and methods used to add animation effects	lecture &debate	2
Transition effects associated to XHTML+Time elements, multimedia elements display modes	lecture & debate	2
Document Object Model for XHTML+Time & define pattern presentation	lecture & debate	2
SMIL (Synchronized Multimedia Integration Language) - basic concepts, main modules, the structure of a SMIL document	lecture & debate	4
SMIL methods used to include multimedia objects, multimedia file types	lecture & debate	2
Animating SMIL elements and adaptive alternative presentation	lecture & debate	2
SMIL - hyperlinks and element synchronization	lecture & debate	2
SMIL - transition effects and document processing	lecture & debate	2
The structure of a multimedia web presentation, HTML5 multimedia elements used to develop and implement a web presentation	lecture & debate	2
CSS3 and Javascript elements used in an interactive multimedia presentation	lecture & debate	2
Information management of multimedia systems, the quality of multimedia systems, Information management in distributed multimedia systems	lecture & debate	2
Bibliography Julie C. Meloni, HTML, CSS, and JavaScript All in One, 3rd edition, Editura SAMS, 2019, ISBN 32372186 Jon Duckett, Web Design with HTML, CSS, JavaScript and jQuery Set, John Wiley and Sons Inc., 2014, ISBN10 1118907442, ISBN13 9781118907443 http://homepages.cwi.nl/~media/SMIL/Tutorial/SMILTut.html / accessed 1.09.2012 J.C. Teague, *DHTML și CSS*, Editura Teora, București, 2007		

Sabin Buraga, *Tehnologii XML*, Editura Polirom, Iași, 2006		
M.Brut, S.Buraga, *Prezentări multimedia pe Web*, Editura Polirom, 2004		
Ștefan Trausan-Matu, *Prelucrarea documentelor XML*, Editura Teora, București, 2003		
Bogdan Ghilic, Marian Stoica, *eActivitatile în societatea informationala*, Editura Economica, Bucuresti, 2002		
8.3 Laboratory	Teaching methods	No. of hours/ Observations
HTML, XHTML, CSS	discuss examples and assign problems to solve	2
XHTML + Time document structure , XHTML+ Time timing attributes, methods used to asociate actions to elements	discuss examples and assign problems to solve	2
XHTML + Time - methods used to insert multimedia objects	discuss examples and assign problems to solve	2
XHTML + Time - methods used for temporal containers and special animation elements	discuss examples and assign problems to solve	2
XHTML + Time – methods used to assign transition attributes, multimedia display and properties	discuss examples and assign problems to solve	2
XHTML + Time - events, special objects and case studies	discuss examples and assign problems to solve	2
SMIL – specific modules, document structure	discuss examples and assign problems to solve	2
SMIL – presentation patterns, methods used to insert multimedia objects	discuss examples and assign problems to solve	2
SMIL – asociere animație elemente & sincronizare elemente	discuss examples and assign problems to solve	2
SMIL – establish links and synchronize elements	discuss examples and assign problems to solve	2
HTML5 - define the structure of a web multimedia presentation, develop and implement a web presentation using HTML5 multimedia elements	discuss examples and assign problems to solve	2
CSS3 - include CSS3 elements in the developed and implemented web presentation	discuss examples and assign problems to solve	2
Include Javascript multimedia elements in the implemented web presentation	discuss examples and assign problems to solve	2
Show the web multimedia presentation developed and implemented with HTML5, CSS3 and Javascript	discuss examples and assign problems to solve	2

Bibliography
Julie C. Meloni, HTML, CSS, and JavaScript All in One, 3rd edition, Editura SAMS, 2019, ISBN 32372186
Jon Duckett, Web Design with HTML, CSS, JavaScript and jQuery Set, John Wiley and Sons Inc., 2014, ISBN10 1118907442, ISBN13 9781118907443
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M.Brut, S.Buraga, *Prezentări multimedia pe Web*, Editura Polirom, Iași, 2004

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

- through the information contained in the lecture and labs the students gain consistent knowledge matching with the required skills

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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 For 10: in accordance with the maximum performance standard	face to face or online oral based on assignments and the implementation of a web presentation	50%
10.6. Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard For 10: in accordance with the maximum performance standard	face to face or online oral based on assignments and laboratory work	50%
10.8 Minimum performance standard: Course: 5 Laboratory: 5			

Completion date: 20.09.2023

Date of endorsement in the department: 27.09.2023

Date of endorsement in the Faculty Board: 29.09.2023

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 Computers and Information Technology
1.4 Field of study	Computers and information technology
1.5 Study cycle	Master (2nd cycle)
1.6 Study program/Qualification	Management in Information Technology / Master of Science in Engineering

2. Data related to the subject

2.1 Name of the subject	**Internet Programming**						
2.2 Holder of the subject	**Prof.univ.dr.ing. Zmaranda Doina**						
2.3 Holder of the academic seminar/laboratory/project	**Prof.univ.dr.ing. Zmaranda Doina**						
2.4 Year of study	**I**	2.5 Semester	**2**	2.6 Type of the evaluation	**Ex**. - Examination	2.7 Subject regime	**THD -** Thoroughgoing Discipline

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					hours
Study using the manual, course support, bibliography and handwritten notes					21
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					20
Tutorials					2
Examinations					6
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	Object-oriented programming skills and user interface design skills for web applications

5. Conditions (where applicable)

5.1. for the development of the course	- the course can be held face to face (classroom equipped with computer and video projector) or online; slide-based presentation - attendance at least 50% of the course
5.2.for the development of the academic seminary/laboratory/project	- the laboratory can be held face to face (laboratory room equipped with computers and .NET platform / Visual Studio 2019) or online - mandatory presence at all laboratories - a maximum of 4 laboratory works can be recovered during the semester (30%) - the frequency of laboratory hours below 70% leads to the re-done the discipline

6. Specific skills acquired	
Professional skills	**C1.** Design of software components and their management through databases **C4.** Advanced design of Internet and multimedia applications
Transversal skills	

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

7.1 The general objective of the subject	The objective of the course is to provide knowledge on technologies for designing and implementing Internet applications: web application architecture, server-side technologies, client-side technologies, frameworks and tools used for web application development
7.2 Specific objectives	▪ The course aims to present the basic architecture of web applications as well as some of the specific technologies used for the development of Internet applications based on MVC architecture together with existing frameworks for development and other related technologies. Even if the presented implementations are focused on MicroSoft technologies (ASP.NET MVC), this does not restrict the generality of the presented concepts. ▪ The project familiarizes students with practical aspects regarding the design and implementation of an MVC web application

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
Introduction to web programming. Web application categories. Characteristics. Web application architecture. Particularities. Specific components		2
Technologies for web applications. Client / server communication technologies.		2
Client-side technologies: browsers, HTML, JavaScript /JavaScript libraries, front-end development frameworks, client-side extensions		2
Server-side technologies. Server-level scripting: PHP and PHP development frameworks; J2EE / JAVA and adjacent development frameworks: Spring Boot (Java); ASP.NET Core and ASP.NET MVC, Ruby on Rails (Ruby), Django (Python), Express (Node.js / JavaScript). Hybrid technologies: GWT (Google Web Toolkit)	Presentation of the course concepts and examples on slides, face to face or online	4
JavaScript language - advanced concepts. Progressive development of the client side (front-end) of a web application. JavaScript and the DOM. JavaScript objects. JavaScript and data storage		2
Validate customer-level data using JavaScript. JavaScript functions. Events in JavaScript. Using JavaScript and Ajax libraries. Development patterns in JavaScript.		2
ASP.NET MVC. MVC architecture in web applications. MVC and the structure of ASP.NET MVC applications. Development based on the principles of SOLID, DRY		2
Fundamentals of ASP.NET MVC: Routing in MVC. Levels in MVC: Controller, View, Model		4

Controller level. Model validation. Action filters. Authorization and authentication. View level. Syntax Razor. Lambda expressions. Model level.		
Object relational mapper (ORM) template. Entity Framework EF. Repository pattern.		4
Development of MVC Database First, Model First, Code First applications		2
ASP.NET web API. RESTful applications. Customer level optimization.		2

Bibliography

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4. Dorin Zaharie, Rodica Doina Zmaranda, Dezvoltarea aplicaţiilor software utilizând platforma .NET, Editura ASE, ISBN 978-606-505-547-6, 2012

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8.2 Academic project	Teaching methods	No. of hours/ Observations
Initial elements for the project. General analysis of the project.	Students choose a project theme - an MVC application and carry out the development stages of the project under the guidance of the teacher, face to face or online.	4
Familiarization with the development environment / framework / language		4
Project application design: structure, functionality, choice of implementation mode: database first, model first, code first		4

Project application implementation: model level, controller level, view level		8
Project application testing and deployment		4
Project evaluation, final assessment		4

Bibliography

1**. D. Zmaranda** – *Programare Internet* – Editura Universităţii din Oradea, 200 pg., ISBN 978-606-10-1422-4 – format electronic CD, 2014

2. Dorin Zaharie, Rodica Doina Zmaranda, *Dezvoltarea aplicaţiilor software utilizând platforma .NET*, Editura ASE, ISBN 978-606-505-547-6, 2012

3.   https://uoradea-my.sharepoint.com/personal/rodica_zmaranda_didactic_uoradea_ro/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Frodica%5Fzmaranda%5Fdidactic%5Fuoradea%5Fro%2FDocuments%2FPI%2DMaster&view=0

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 an important requirement of most employers in the field of software development. The discipline provides the necessary theoretical and practical concepts in this regard.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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 deal broadly with the approached subjects, without, however, detailing the presented concepts, brief presentation For 10: it is necessary the complete, detailed approach of the proposed subjects (possibly, comparative analyzes/discussions, elaborated presentation	**Oral exam** - the assessment can be done face to face or online	40 %
10.6 Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard: broadly knowing the options for approaching the project, going through the design stages, without completing the implementation; functional implementation in proportion of 50% of the project For 10, going through all the design stages, with the completion of the project implementation, 100% functional implementation is required	**Practical application – oral evaluation -** the assessment can be done face to face or online. After the presentation of the project completed during the semester, each student receives a grade for the project. The project is also presented in electronic format in the form of: PowerPoint presentation, textual description of the project and source code	60 %

10.8 Minimum performance standard:

Course:
- • knowledge and understanding the concepts underlying the design and implementation of web applications
- • familiarization with the most popular design patterns used in web applications
- • familiarization with the technologies used in the development of Internet applications: client-side technologies, server-side technologies, adjacent technologies

Laboratory:
- • acquiring practical skills and knowledge of using the most current frameworks used for web application development
- • use of the concepts presented in the development and implementation of a practical project

Completion date: 07.09.2023

Date of endorsement in the department: 27.09.2023

Date of endorsement in the Faculty Board:

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 Computers and Information Technology**
1.4 Field of study	**Computers and Information Technology**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management in Information Technology / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject	Data Acquisition, Processing and Management					
2.2 Holder of the subject	Assistant Professor dr. Otto Poszet					
2.3 Holder of the academic seminar/laboratory/project	Assistant Professor dr. Otto Poszet					
2.4 Year of study	II	2.5 Semester	3	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	0/2/0
3.4 Total of hours from the curriculum	56	Of which: 3.5 course	28	3.6 academic seminar/laboratory/project	0/28/0
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					26
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					32
Tutorials					0
Examinations					6
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	The course can be held face to face or online.
5.2. for the development of the academic seminary/laboratory/project	The laboratory can be carried out face to face or online

1

6. Specific skills acquired

Professional skills	☐ CP2 Advanced hardware and software design of computer systems and networks. ☐ CP3 Design and management of secure computer systems..
Transversal skills	☐ CT3 Identifying opportunities for continuous training and efficient use of learning resources and techniques for their own development.

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 aims to present advanced knowledge used in data acquisition techniques, process control, digital signal processing, with a special focus on hardware and highlighting the principles found in most industrial acquisition systems.
7.2 Specific objectives	In each chapter, after the presentation of the theoretical principles, concrete examples of realization are studied (National Instruments acquisition systems, microcontrollers, digital signal processing systems). The laboratory aims to familiarize students with the technique of data acquisition and control (hardware and software) and to develop their own data acquisition programs, using the notions learned in the course.

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Definition of a data acquisition and control system. Introductory notions, definition of an DAQS, block diagram, data acquisition terminology	lecture / debate	2
2. Signal conditioning circuits 1. Passive conditioning circuits, dividers, bridges, filters	lecture / debate	2
3. Signal conditioning circuits 2. Active conditioning circuits, instrumental operational amplifiers. Digital signal processing.	lecture / debate	2
4. Digital encodings used in data acquisition systems. Introduction to code theory. Error correcting codes used in data acquisition.	lecture / debate	2
5. Digital-to-analog converters 1. Characteristics. Construction and architecture of DAC. DAC for unipolar codes	lecture / debate	2
6. Digital-to-analog converters 2. DAC for bipolar codes. Voltage-frequency converters. Frequency-voltage converters.	lecture / debate	2
7. Analog-to-digital converters 1. Characteristics, ADC with parallel type comparison. ADC with serial-parallel comparison, ADC with serial comparison, ADC with integration.	lecture / debate	2
8. Sampling and hold circuits 1. SH characteristics, Architecture of SH. Control of a SH-DAC assembly	lecture / debate	2
9. Mono and multi-channel data acquisition systems. Construction and control of DAQS single channel, multi-channel. Different types.	lecture / debate	2
10. Mono and multi-channel data distribution systems. Architecture and control of single-channel, multi-channel DDS. Different types.	lecture / debate	2
11. Use of microcontrollers in data acquisition and processing.	lecture / debate	2
12. Acquisition, processing, analysis and generation of audio signals.	lecture / debate	2
13. Acquisition, processing, analysis and generation of video signals.	lecture / debate	2
14. Fault tolerant data acquisition systems. Use of error correcting codes in SADC. Security of a SADC.	lecture / debate	2

Bibliography
1. http://www.didatec.ro/sites/uo/ /sistemedeachizi%C5%A3ie%C5%9Fideprelucrareadatelor635082205368373861/default.aspx

2. Biswajit Ray, "An Instrumentation and Data Acquisition Course for Electronics Engineering Technology Students", Dept. of Physics & Engineering Technology, Bloomsburg University of Pennsylvania, Bloomsburg, PA 17815, http://www.ni.com/pdf/academic/us/journals/An_Instrumentation.pdf

3. http://physweb.bgu.ac.il/COURSES/SignalNoise/data_aquisition_fundamental.pdf

4. Vetterli, „Foundations of Signal Processing", 31/07/2014, ISBN 13 – 9781107038608

5. Theodoridis, „Image and Video Compression and Multimedia", Academic Press Library in Signal Processing, Volume 5, 29/05/2014, ISBN-13: 9780124201491

6. Giannakopoulos and Pikrakis, „Introduction to Audio Analysis, A MATLAB® Approach", 26/02/2014, ISBN-13: 9780080993881,

7. M. Muţ, O. Poszet, "Sisteme de achiziţie şi control", Îndrumător de laborator, Universitatea din Oradea, 1995, Updated in 2021, e.uoradea.ro

8. Marinela Muţ, "Sisteme de achiziţie şi control", Universitatea din Oradea, 2000, Updated in 2021, e.uoradea.ro

9. M.Muţ, O. Poszet, "Sisteme de achiziţie şi control", Îndrumător de proiectare, Universitatea din Oradea, 1995

10. Veljko Potkonjak, Michael Gardner, Victor Callaghan, Pasi Mattila, Christian Guetl, Vladimir M. Petrovic, Kosta Jovanovic, „Virtual laboratories for education in science, technology, and engineering: A review", Computers & Education, Vol. 95, Issue C, pp. 309-327, April 2016.

11. Peter Tiernan, „Enhancing the learning experience of undergraduate technology students with LabVIEW software", Computers & Education, Vol. 55, Issue 4, pp. 1579-1588, December 2010.

12. Xie Bing, Chen Chang-xin, Zheng Bin, „Design of Data Acquisition and Signal Processing System Based on LabVIEW", Modern Electronics Technique, Issue 14, pp. 173-175, 2011.

13. Wei Zhan, Jay R. Porter, Joseph A. Morgan, „Experiential Learning of Digital Communication Using LabVIEW", IEEE Transactions on Education, Vol. 57, No. 1, pp. 34-41, February 2014

14. Gilbert-Rainer Gillich, Doina Frunzaverde, Nicoleta Gillich, Daniel Amariei, „The use of virtual instruments in engineering education", WCES-2010, Procedia Social and Behavioral Sciences, Vol. 2, Issue 2, pp. 3806-3810, 2010.

15. Linggang Liu, Junhui Li, Luhua Deng, „Design of Data Acquisition System Based on LabVIEW", Advanced Materials Research, Vol. 569, pp. 808-813, 2012.

16. Hong min Wang , Dan dan Li, Ping Xue, Jie Zhu, Hai bo Li, „LabVIEW-based data acquisition system design", IEEE 2012 International Conference on Measurement, Information and Control (MIC), pp. 689-692, May 18-20, 2012.

8.2 Academic seminar/laboratory/project	Teaching methods	No. of hours/ Observations
1. Overview of LabPC + and myDAQ acquisition board. Familiarization of students with the acquisition systems of the laboratory. Testing the acquisition system and performing some measurements with the oscilloscope. NI Elvis, NI MAX.	Experimental study, practical activity	4
2. LabView programming environment. Introduction. Block diagram and Front Panel user interface. Configuration-based virtual tools. Creating applications in LabView.	Experimental study, practical activity	4
3. Data structures in LabView. Boolean, numerical indicators and controls, strings, matrices. Basic operations with these structures. View results, virtual tool library to create a user interface as intuitive as possible. Complex mathematical operations in LabView. Library of mathematical functions. String operations. Operations with composite structures (matrices, records). LabView applications, exercises.	Experimental study, practical activity	4
4. Programming and control structures in LabView. Decision structures, ramifications, repetitive structures, loops. Programming exercises in LabView.	Experimental study, practical activity	4
5. Acquisition and generation of signals in LabView. Simulation of waveforms, setting parameters by configuring VIs and then from the application program in real time. Capture and display waveforms using configuration-based VIs. Exercises and measurements.	Experimental study, practical activity	4
6. Analysis and generation of audio signals in LabView using the computer's sound card. Generation of frequencies corresponding to musical notes and spectral analysis of different waveforms. LabView Signal Analysis and Processing Library. Exercises in LabView.	Experimental study, practical activity	4
7. Image processing in LabView. 2D and 3D graphics in LabView. Exercises. Checking and concluding the situation at the laboratory.	Experimental study, practical activity	4

Bibliography
1. http://www.didatec.ro/sites/uo/ sistemedeachizi%C5%A3ie%C5%9Fideprelucrareadatelor635082205368373861/default.aspx
2. Biswajit Ray, "An Instrumentation and Data Acquisition Course for Electronics Engineering Technology Students", Dept. of Physics & Engineering Technology, Bloomsburg University of Pennsylvania, Bloomsburg, PA 17815,

http://www.ni.com/pdf/academic/us/journals/An_Instrumentation.pdf
3. http://physweb.bgu.ac.il/COURSES/SignalNoise/data_aquisition_fundamental.pdf
4. Vetterli, „Foundations of Signal Processing", 31/07/2014, ISBN 13 – 9781107038608
5. Theodoridis, „Image and Video Compression and Multimedia", Academic Press Library in Signal Processing, Volume 5, 29/05/2014, ISBN-13: 9780124201491
6. Giannakopoulos and Pikrakis, „Introduction to Audio Analysis, A MATLAB® Approach", 26/02/2014, ISBN-13: 9780080993881,
7. M. Muţ, O. Poszet, "Sisteme de achiziţie şi control", Îndrumător de laborator, Universitatea din Oradea, 1995, Updated in 2021, e.uoradea.ro
8. Marinela Muţ, "Sisteme de achiziţie şi control", Universitatea din Oradea, 2000, Updated in 2021, e.uoradea.ro
9. M.Muţ, O. Poszet, "Sisteme de achiziţie şi control", Îndrumător de proiectare, Universitatea din Oradea, 1995
10. Veljko Potkonjak, Michael Gardner, Victor Callaghan, Pasi Mattila, Christian Guetl, Vladimir M. Petrovic, Kosta Jovanovic, „Virtual laboratories for education in science, technology, and engineering: A review", Computers & Education, Vol. 95, Issue C, pp. 309-327, April 2016.
11. Peter Tiernan, „Enhancing the learning experience of undergraduate technology students with LabVIEW software", Computers & Education, Vol. 55, Issue 4, pp. 1579-1588, December 2010.
12. Xie Bing, Chen Chang-xin, Zheng Bin, „Design of Data Acquisition and Signal Processing System Based on LabVIEW", Modern Electronics Technique, Issue 14, pp. 173-175, 2011.
13. Wei Zhan, Jay R. Porter, Joseph A. Morgan, „Experiential Learning of Digital Communication Using LabVIEW", IEEE Transactions on Education, Vol. 57, No. 1, pp. 34-41, February 2014
14. Gilbert-Rainer Gillich, Doina Frunzaverde, Nicoleta Gillich, Daniel Amariei, „The use of virtual instruments in engineering education", WCES-2010, Procedia Social and Behavioral Sciences, Vol. 2, Issue 2, pp. 3806-3810, 2010.
15. Linggang Liu, Junhui Li, Luhua Deng, „Design of Data Acquisition System Based on LabVIEW", Advanced Materials Research, Vol. 569, pp. 808-813, 2012.
16. Hong min Wang , Dan dan Li，Ping Xue, Jie Zhu, Hai bo Li, „LabVIEW-based data acquisition system design", IEEE 2012 International Conference on Measurement, Information and Control (MIC), pp. 689-692, May 18-20, 2012.

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

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10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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 - For 10:	Exam. The evaluation can be done face to face or online.	50%
10.5 Academic seminar	Minimum required conditions for passing the examination (grade 5): in accordance with the minimum performance standard - For 10:		
10.6 Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard - For 10:	Reports. The evaluation can be done face to face or online.	50%

10.7 Project			
10.8 Minimum performance standard: 50% Course: Academic seminar: Laboratory: Project:			

Completion date:
25.09.2023

Signature of the course owner

Ş.L.Dr.Ing. Poszet Otto
poszet@uoradea.ro

Signature of the seminar/
laboratory/project owner
Ş.L.Dr.Ing. Poszet Otto
poszet@uoradea.ro

Date of endorsement in the
department:
27.09.2023

Signature of Department Director
Conf. Dr. Ing. Alexandrina Mirela Pater
....

Date of endorsement in the
Faculty Board:
29.09.2023

Signature of Dean
Prof. Dr. Ing. Habil Francisc Ioan Hathazi
....

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 Computers and Information Technology**
1.4 Field of study	**Computers and Information Technology**
1.5 Study cycle	**Master (2nd cycle)**
1.6 Study program/Qualification	**Management in Information Technology / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject	**Critical Systems Management**					
2.2 Holder of the subject	prof. dr. ing. Vari-Kakas Ştefan					
2.3 Holder of the academic seminar/laboratory/project	prof. dr. ing. Vari-Kakas Ştefan					
2.4 Year of study	2	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 seminar/laboratory/project	0/1/0
3.4 Total of hours from the curriculum	42	Of which: 3.5 course	24	3.6 academic seminar/laboratory/project	0/14/0
Distribution of time					hours
Study using the manual, course support, bibliography, and handwritten notes					42
Supplementary documentation using the library, on field-related electronic platforms and in field-related places					7
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					28
Tutorials					3
Examinations					3
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	
4.2 related to skills	

5. Conditions (where applicable)

5.1. for the development of the course	The course can be conducted face to face with a projector or online.
5.2.for the development of the academic seminary/laboratory/project	The laboratory can be carried out face to face or online, using personal computers.

6. Specific skills acquired

Professional skills	▪ Learning advanced methods for error control and fault tolerance in critical fault computing systems ▪ Comparative analysis of constructive solutions for safety critical systems ▪ Use of methods and tools for assessing the reliability and risk of critical systems ▪ Modeling safety critical systems ▪ Application of fault tolerance techniques to the design of failure critical systems
Transversal skills	▪ Honorable, responsible, ethical conduct in the spirit of the law to ensure the reputation of the profession ▪ Clear and concise written description of the results in the field of activity, including by consulting documentation 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	▪ Knowledge of the main concepts and techniques of fault tolerance and analysis in critical systems
7.2 Specific objectives	▪ Deepening the theoretical notions of designing critical calculation systems for defects through examples and concrete exercises ▪ Knowledge of methods for assessing the dependability

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
Embedded systems. Examples of critical systems.	Lecture	2
Functional safety.	Lecture	2
Dependability.	Lecture	2
Risk analysis.	Lecture	2
Design of critical systems.	Lecture	2
Critical systems architecture.	Lecture	2
Design of fail-safe systems.	Lecture	2
Design of fail-operate systems (I).	Lecture	2
Design of fail-operate systems (II).	Lecture	2
The influence of the human factor.	Lecture	2
Integrated testing.	Lecture	2
Anomaly detection.	Lecture	2
Coverage indicators.	Lecture	2
Verification by simulation.	Lecture	2

Bibliography
1. M. Borzano, A. Willafiorita: Design and Safety Assessment of Critical Systems, CRC Press, 2011.
2. N. G. Leveson: Safeware, Addison-Wesley, 1995.
3. N. Storey: Safety-Critical Computing Systems, 1996.
4. Hobbs, Chris: Embedded software development for safety-critical systems, CRC Press, 2016.
5. W. R. Dunn, Practical Design of Safety-Critical Computer Systems, Reliability Press, 2002.
6. Birmann, Kenneth P.: Reliable Distributed Systems. Technologies, Web Services and Applications, Springer Science and Business Media, Inc., 2005.

8.2 Laboratory	Teaching methods	No. of hours/ Observations
Defining the requirements of critical systems. Standards.	Exemplification, debate	2

Case study (I).	Exemplification, debate	2
FMEA method.	Exemplification, debate	2
Fault tree.	Exemplification, debate	2
Case study (II).	Exemplification, debate	2
The risk matrix.	Exemplification, debate	2
Conclusions and closure of the situation.	Reports presentation, questions	2

Bibliography
1. Software tools for safety design: http://www.safeware-eng.com; https://www.weibull.com/

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 discipline provides theoretical and practical knowledge directly applicable in the computer industry and in the field of information technology services.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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	Exam. Written paper.	70%
10.5 Academic seminar			
10.6 Laboratory	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard	Report. Defence.	Condition + 30%
10.7 Project			
10.8 Minimum performance standard: Course: Pass mark from 50% of the requirements met. Academic seminar: Laboratory: Pass. Project:			

Completion date:
26.09.2023

Date of endorsement in the department:
27.09.2023

Date of endorsement in the Faculty Board:
28.09.2023

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	**1) Department of Computers and Information Technology**
1.4 Field of study	**2) Computers and information technology**
1.5 Study cycle	**3) Master**
1.6 Study program/Qualification	**4) / 5) Management in Information Technology / Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject			**6) Developing and implementing solutions for cloud**			
2.2 Holder of the subject			Conf. univ. dr. inf. Elisa Moisi			
2.3 Holder of the academic seminar/laboratory/project			Conf. univ. dr. inf. Elisa Moisi			
2.4 Year of study	I	2.5 Semester	I	2.6 Type of the evaluation	7) Ex	2.7 Subject regime	8) 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	0/1/0
3.4 Total of hours from the curriculum	42	Of which: 3.5 course	28	3.6 academic seminar/laboratory/project	0/14/0
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					38
Tutorials					4
Examinations					10
Other activities.					

3.7 Total of hours for individual study	**154**
3.9 Total of hours per semester	**112**
3.10 Number of credits	**5**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions)
4.2 related to skills	• a basic level of familiarity with computer technology, and the Internet is assumed • basic level of familiarity with computer technology and cloud computing will make the concepts easier to understand • Some of the concepts covered in the course require a basic understanding of mathematics, such as the ability to interpret charts • knowledge of working online will be helpful

5. Conditions (where applicable)

5.1. for the development of the course	Classroom equipped with video projector - Attendance at least 50% of the courses
5.2.for the development of the academic seminary/laboratory/project	Room equipped with computers and specific programs - Mandatory attendance at all laboratories; - A maximum of 3 works can be recovered during the semester (20%);

6. Specific skills acquired

Professional skills	595 / 5000 Translation results C3. Problem solving using computer science and engineering tools. • Identifying classes of problems and methods of solving characteristic of information systems. • Using interdisciplinary knowledge, solutions and tools, performing experiments and interpreting their results • Hardware design • Comparative evaluation, including experimental, of solving alternatives, to optimize performance • Development and implementation of IT solutions for concrete problems • Effective realization of an application
Transversal skills	CT1. Honorable, responsible, ethical conduct in the spirit of the law to ensure the reputation of the profession

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

7.1 The general objective of the subject	▪ Describe cloud concepts. ▪ Describe Azure architecture and services. ▪ Describe Azure management and governance. ▪ Developing and implementing solutions for Microsoft Azure
7.2 Specific objectives	• Deploy and update apps in Azure App Service, implement App Service authentication and authorization, configuring app settings, scale apps, and how to use deployment slots. • Create and deploy Azure Functions and utilize bindings and triggers to interact with other Azure services. • Create Azure Blob storage resources, manage data through the blob storage lifecycle, and work with containers and items by using the Azure Blob storage client library V12 for .NET. • Develop solutions integrating Azure Cosmos DB resources with the appropriate consistency levels, and perform data operations by using the .NET SDK V3 for Azure Cosmos DB. • Implement authentication and authorization to resources by using the Microsoft identity platform, Microsoft Authentication Library, shared access signatures, and use Microsoft Graph. • Securely deploy apps in Azure by using Azure Key Vault, managed identities, and Azure App Configuration. • Implement the Azure API Management service to transform and secure APIs, and how to create a backend API. • Build applications with event-based architectures by integrating Azure Event Grid and Azure Event Hubs into their solutions. • Build applications with message-based architectures by integrating Azure Service Bus and Azure Queue Storage into their solutions. • Explain how Azure Monitor operates, how Application Insights collects events and metrics, and how to instrument apps to monitor and troubleshoot issues. • Improve the performance and scalability of applications by integrating

	Azure Cache for Redis and Azure Content Delivery Network into solutions.		

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Introduction. Cloud Concepts	• Powerpoint presentation; • free discussions;	2
2. Azure architecture and services		2
3. Azure management and governance		2
4. Implement Azure App Service web apps		4
5. Implement Azure Functions		2
6. Develop solutions that use Blob storage		2
7. Develop solutions that use Azure Cosmos DB		2
8. Implement containerized solutions		2
9. Implement user authentication and authorization		4
10. Implement secure cloud solutions. Implement API Management.		2
11. Develop event-based solutions. Develop message-based solutions		2
12. Troubleshoot solutions by using Application Insights. Implement caching for solutions		2
Bibliography Microsoft AZ-204 – Developing solutions for Microsoft Azure - https://learn.microsoft.com/en-us/credentials/certifications/exams/az-204/ Santiago Fernandez Munoz - Exam Ref AZ-204 Developing Solutions for Microsoft Azure, Microsoft Press PTG, 2021		
8.2 Academic seminar/laboratory/project	Teaching methods	No. of hours/ Observations
Seminar		
Laboratory		
Implementing aspects presented in course	Discussions. Individually work and also in small groups of students.	14
Bibliography Microsoft AZ-204 – Developing solutions for Microsoft Azure Santiago Fernandez Munoz - Exam Ref AZ-204 Developing Solutions for Microsoft Azure, Microsoft Press PTG, 2021		

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 to the requirements of specialized companies

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percent from the final mark

10.4 Course	Minimum required conditions for passing the Vp (mark 5): in accordance with the minimum performance standard For 10: the correct solving of all the subjects at the Vp, the presence and activity at courses	Final course evaluation and problem solving	60%
10.5 Academic seminar			
10.6 Laboratory	Minimum required conditions for promotion (grade 5): in accordance	Weekly evaluation of the laboratory preparation	40%
	with the minimum performance standard For 10: the presence and activity at seminars,	Tracking the activity along the way, practical applications.	
10.7 Project			
10.8 Minimum performance standard: Course: Know the design methods that are used Academic seminar: Laboratory: Carrying out projects respecting ethical and responsible behavior Project:			

Completion date: 07.09.2022

Date of endorsement in the department: 21.09.2022

Date of endorsement in the Faculty Board:23.09.2022

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	*Computers and Information Technology*
1.4 Field of study	*Computers and Information Technology*
1.5 Study cycle	Master (2st cycle)
1.6 Study program/Qualification	*Management in Information Technology /* Master of Science in Engineering

2. Data related to the subject

2.1 Name of the subject	*Data Protection and Monitoring*					
2.2 Holder of the subject	**Prof.dr.habil.eng. Daniela Elena Popescu**					
2.3 Holder of the academic seminar/laboratory/project	**Prof.dr.habil.eng. Daniela Elena Popescu**					
2.4 Year of study **I**		2.5 Semester **1**		2.6 Type of the evaluation	**Ex**	2.7 Subject regime **DS**

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	**1/1**
3.4 Total of hours from the curriculum	**56**	Of which: 3.5 course	**28**	3.6 academic seminar/laboratory/project	**14/14**
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					8
Preparing academic seminaries/laboratories/ themes/ reports/ portfolios and essays					**14**
Tutorials					2
Examinations					4
Other activities.					

3.7 Total of hours for individual study	**56**
3.9 Total of hours per semester	**112**
3.10 Number of credits	**4**

4. Pre-requisites (where applicable)

4.1 related to the curriculum	(Conditions) Operating Systems
4.2 related to skills	Computer Systems Architecture

5. Conditions (where applicable)

5.1. for the development of the course	- The course can be held face to face or online " - attendance at least 50% of the courses
5.2.for the development of the academic seminary/laboratory/project	- The seminar / laboratory / project can be held face to face or online - Mandatory presence at all laboratories; - Students must have completed the theoretical part of the paper; - 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	CP3. Problem solving using Computer Science and engineering tools

CP5. Design, life cycle management, integration and integrity of hardware, software and communications systems in order to increase the security of systems |
| Transversal skills | CT1. Applying, in the context of compliance with the law, intellectual property rights (including technology transfer), product certification methodology, principles, norms and values of the code of professional ethics within its own rigorous, efficient and responsible work strategy
• Defining the basic managerial concepts necessary to implement a high security operating environment at the level of organizations
• Scientific substantiation of management decisions regarding the preservation and increase of process security as well as the implementation and monitoring of their effects within the organization

CT2. Identify roles and responsibilities in a multi-specialized team decision-making and assigning tasks, with the application of relationship techniques and efficient work within the team
• Assuming the specific roles and responsibilities of leading teams engaged in development activities for high security infrastructures / systems
• Increasing the interest for the correct realization of a scientific research and for the pursuit of a career in research. |

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 the defining elements for implementing and increasing the level of information security at the organizational level as well as identifying healthy strategies for institutional development in this regard
7.2 Specific objectives	• The course aims to familiarize students with information security issues, with understanding and identifying what vulnerabilities are, with how the issue of protection of both the unconnected system and those connected in an internal network / Internet. Therefore, it proposes to present the basic characteristics of information security issues and to develop the capacities to develop security policies at organizational level in order to protect data.
• Project: Follow-up of the risks and vulnerabilities to which the structures of an institution are exposed, considered as a case study with identification of the protection measures that are required

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. Information processing security, protection of values, Characteristics of computer intrusion, Attacks, Significance of computer security, Security purposes, Privacy, Integrity, Availability, Vulnerabilities - hardware, software, Data vulnerabilities, Computer offenders, Methods Defense, Controls, The Future in the Field
2. Protection of non-networked computers, User authentication, Password systems, Advantages of password systems, Disadvantage, Rules to increase the security provided by the password system, Encryption protection, Authentication based on	Free course presentation with video projector / overhead projector and blackboard in an interactive way: punctuate from time to time questions for students in order to increase the degree of interactivity
• Indication of topics for documentation and individual study	28 ore

encrypted keys, Authentication based on what the user is, Biometric authentication systems, Use of fingerprints in authentication 1. Access control: • Identification • Authentication Three factors • Single login • Single conviction • Access control with subjects and objects • Access control mode (DAC, non-DAC, MAC and RBAC) • Bell-LaPadula, Biba, Clark -Wilson, and Chinese Wall architecture • Identity management • Cloud computing 2. Advanced communication and network elements: Open Systems Interconnection (OSI) and Transmission Control Protocol / Internet Protocol (TCP / IP) models • Bus, star and token ring network configurations • Common protocols in TCP / IP suite • Ports used with common protocols • Different network architectures such as Internet, intranet, and extranet • Demilitarized zones (DMZ) • Wireless security protocols such as Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA) and WPA2 • Wireless technologies such as Bluetooth, RFID, 802.11, WiMax, GSM, 3G and NFC 3. Communication and network elements: • Telecommunication methods used to access the Internet • Securing the Voice over Internet Protocol (VoIP) with Secure Real-Time • Transport Protocol (SRTP) • Filtering packets, firewalls and firewalls application • Protects diversity with firewalls • Differentiates between network and host based firewalls • Risks and vulnerabilities related to remote access solutions • Different tunneling protocols using remote access • Authentication methods using remote access • Control network access 4. Differences between hackers and crackers • Differences between whitehats, blackhats, and grayhats • Denial-of-service and distributed denial-ofservice attacks • Zero-day exploits • Threats Advanced Persistence • Social Engineering Tactics • The Importance of Tools to Reduce Social Engineering Attacks 5. Code and Malware: Different types of viruses • Differences between viruses, worms, Trojans and logic bombs • Sets of roots, hatches, back doors and spyware • Differences between signature-based detection and heuristic-based detection • for antivirus software • The importance of keeping antivirus signature definitions up to date • Using spam filters and content filtering devices • The principle of least privilege and how it can help prevent infections • Educating users about practices 6. Malicious code and activity: • Different types of viruses • Differences between viruses, worms, Trojans and logic bombs • Root sets, hatches, backdoors and spyware • Differences between signature-based detection and detection-based of antivirus heuristics • The importance of keeping antivirus signature definitions up to date • Using spam filters and content filtering devices • The least privilege principle and how it can help prevent infections • Educating users about safe computer practices • Common vulnerabilities and exposures 7. Risk, responses and recovery: • Definition of risk, threats, vulnerabilities and impact • Four main		

methods of risk management: mitigation (mitigation), avoidance, transfer and acceptance • Definition of residual risk • Steps used in risk assessment • Differences between analyzes quantitative and qualitative • Steps in response to the incident: preparation, detection, analysis, retention, eradication, • recovery and post-incident activities 8. Monitoring and analysis: • Security alert and false positive • Network-based and host-based intrusion detection systems • Intrusion prevention systems • Method of detection and prevention of attacks • File integration verifiers • Honeypots, plas honeycomb and lined cells • Event And Incident Managers, such as SIMs, System Event Managers (SEMs) and SIEMs • Types of vulnerability assessment tests • Tools		

Bibliography
- Course notes (slides) made available to students in electronic format on the Office 365 platform
- Deborah Russel and. mul 1 CISCOmaterialului course comprin in Mprotection that se impuncareamilor specific search IA general notions legaG.T. Gangemi Sr, Computer security basics, Editura O'Reilly & Assoc, ISBN: 0-
- 937175-71-4, 1993
- Stallings W, Cryptography and Network Security Principles and Practice, Thhird Edition, Prentice Hall, 2003,
- K.Hwang, F.A.Briggs, Computer Architecture and Parallel processing, Mc Graw - Hill Book company 1987
- Artech House, Fundamentals of Network Security, Artech House
- D.E.Popescu, Information Security Management, University of Oradea Publishing House, 2012
- ITIL

8.2 Laboratory	Teaching methods	No. of hours/ Observations
1. Presentation of project activities, the laboratory, labor protection norms and conventional signs specific to the field of computer systems - general, general information on Protection and data monitoring. Presentation of the required design specifications 2. Analysis of existing vulnerabilities for the case study considered 3. Analysis of the existing risks for the case study considered 4. Classification of the information with the establishment of the security policies for the considered case 5. Identifying the solutions for increasing the security with establishing the concrete security policies for the considered case 6. Tracing the audit techniques for maintaining the security at the level of the analyzed objective 7. Teaching the project with knowledge verification	Students receive laboratory papers at least one week in advance, study them, inspect them, and take a theoretical test at the beginning of the laboratory. Then, the students carry out the practical part of the work under the guidance of the teacher.	• 4 hours are allocated for each of the 7 detailed points of the laboratory activity. • The results of the project activities are presented in plenary at group level

Bibliography
1. D.E.Popescu, Information Security Management, University of Oradea Publishing House, 2012
2. Moodle module with project works
3. Webography recommended during project hours

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 found in the curriculum of Computer and Information Technology specializations and other university centers that have accredited these specializations (Technical University of Cluj-Napoca, University of Craiova, "Politehnica" University of Timisoara, Gh. Asachi University of

Iasi, etc.), and knowledge of the architecture and organization of computer systems as well as their operation and design is a stringent requirement of employers in the field (Rds & Rcs, Plexus, Neologic, Celestica, Keysys, etc.).			

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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: - for grade 10, a thorough knowledge of all is required	The evaluation can be done face to face or online depending on the situation imposed	70%
10.6 Laboratory	- for mark 5 it is necessary to solve the corresponding number of requirements, depending on the test scale. - for mark 10, all requirements on the test sheet must be correctly resolved.	Tests during the semester The evaluation of students is done through two tests, taken during the semester. The arithmetic mean of the marks of these tests represents the mark with which they enter the exam. Students can also get extra points, depending on their participation in the laboratory and solving exercises with a higher degree of difficulty. These points can be used to calculate the test score.	30%

10.8 Minimum performance standard:
Assimilation of detailed knowledge about vulnerabilities, risks and security solutions in managing and conveying information in a company
The timely solution, in individual activities and activities carried out in groups, 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.
- Development of team spirit, spirit of mutual help, awareness of the importance of training during the semester for good and sustainable results, awareness of the importance of research, own research related to learning (library, internet), cultivating a work discipline, done correctly and time

Data completării laborator 25.09.2023	Semnătura titularului de curs Prof.dr.habil.D.E.Popescu	Semnătura titularului de Prof.dr.habil.D.E.Popescu

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Data avizării în departament 27.09.2023	Semnătura directorului de departam Conf.univ.dr.ing.Mirela PATER

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Data avizării în Consiliul Facultății

Semnătură Decan
Prof. dr.habil. Francisc Ioan Hathazi
francisc.hathazi@gmail.com

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 Computers and Information Technology**
1.4 Field of study	**Computers and Information Technology**
1.5 Study cycle	**Master (2st cycle)**
1.6 Study program/Qualification	**Management in Information Technology /Master of Science in Engineering**

2. Data related to the subject

2.1 Name of the subject		**MARKETING ONLINE**					
2.2 Holder of the subject		**Pater Alexandrina Mirela**					
2.3 Holder of the academic seminar/laboratory/project		**Pater Alexandrina Mirela**					
2.4 Year of study	I	2.5 Semester	2	2.6 Type of the evaluation	Ex	2.7 Subject regime	THD - Thoroughgoing Discipline

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	0/0/1
3.4 Total of hours from the curriculum	42	Of which: 3.5 course	28	3.6 academic seminar/laboratory/project	0/0/14
Distribution of time					hours
Study using the manual, course support, bibliography and handwritten notes					14
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					10
Tutorials					4
Examinations					4
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	Classroom equipped with video projector and computer. The course can be held face to face or online.

5.2.for the development of the academic seminary/laboratory/project	Laboratory equipped with computers that are connected to the Internet. The project can be held face to face or online

6. Specific skills acquired

Professional skills	CP6. Development of financial management skills, quality management and customer relationship management
Transversal skills	

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

7.1 The general objective of the subject	1. Training the student as a specialist in online marketing; 2. Learning "step by step" the specific terminology from the e-marketing activity, the methods, techniques and specific online marketing tools; 3. Initiation in online marketing research and in the application of the 4 new software components (4C) of the e-marketing mix. 4. Ability to put into practice the knowledge of electronic marketing; 5. Ability to collaborate with specialists from other fields of economics.
7.2 Specific objectives	**Theoretical knowledge:** • Learning the basic concepts and terminology of online marketing • Knowledge and understanding of the online marketing plan • Knowledge and understanding of online business models • Learning and knowledge of online marketing methods and techniques • Knowledge and understanding of the online market • Studies and research of online marketing services Skills acquired: • Understand the basic principles of how an online marketing plan works. • Solve various problems using online marketing techniques, services and tools • Understand customer relationships, online buyer behavior • Capitalizing on the potential of each student for online marketing activity; • Cultivating a positive attitude towards training and involvement in rediscovery through experiences. • Explaining how to use Internet services as online marketing tools; • Scientific interpretation of customer awareness through communication in online business development

8. Contents*

8.1 Course	Teaching methods	No. of hours/ Observations
1. The concept of marketing and terminology	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
2. Fundamentals of marketing	Powerpoint presentation with the help of the video projector; free discussions;	2 hours

3. Strategic online marketing (e-marketing plan, strategies and online business models)	Powerpoint presentation with the help of the video projector; free discussions;	6 hours
4. Operational online marketing (e-marketing program, methods, techniques and tools)	Powerpoint presentation with the help of the video projector; free discussions;	8 hours
5. Online market - segmentation and positioning	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
6. Online marketing studies and research (Database management)	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
7. Online Buyer Behavior (Customer Relationship Management)	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
8. The traditional e-marketing mix - HARD components (product, price, placement and promotion)	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
9. Unconventional e-marketing mix - SOFT components (awareness, temperance, customization and direct communication)	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
10. Web service-as an online marketing tool	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
11. E-mail service - as an online marketing tool	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
12. E-chat service (forum, blog and socialization) - as an online marketing tool	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
13. E-com service - as an online marketing tool	Powerpoint presentation with the help of the video projector; free discussions;	2 hours
14. Legal elements and ethics in online marketing in Romania	Powerpoint presentation with the	2 hours

| | help of the video projector; free discussions; | |

Bibliography
1.Gay R., ş.a., *Marketing on-line*, Editura All, Bucureşti, 2009
2. Haig M., *Manual de e-marketing*, Editura Rentrop &Straton, Bucureşti, 2005
3. Kotler Ph., *Marketing Management*, Editura Pearson Educaţion, Paris, Franţa, 2006
4. Popovici Gh. *E-marketing*, Editura EDP, Bucureşti, 2009
5. Xeuxet L., *Regurile de aur ale marketingului direct*, Editura CH Beck, Bucureşti, 2008
6. Orzan, Gh., Orzan, M., *Sisteme informatice de marketing*, Ed. a II-a, Editura Uranus, Bucureşti, 2010
7. Funk, T., *Web 2.0 and Beyond: Understanding the New [Business Online]⧉ Business Models, Trends, and Technologies*, Editura Praeger, Westport, CT, S.U.A., 2008

8.2 Academic seminar/laboratory/project	Teaching methods	No. of hours/ Observations
Labor protection training 1. Presentation of project themes	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
2. The Internet as a new online marketing technology	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
3. Creating a database for customer management	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
4. Creating an electronic online research form	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
5. Online search engine marketing	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
6. Online marketing through the website	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
7. Online email marketing	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
8. Online marketing through forum, blog and socializing	Powerpoint presentation with the help of the video projector; free discussions;	1 hours
9. Online marketing through e-com. - online shopping	Powerpoint presentation with the	1 hours

		help of the video projector; free discussions;	
10. Online purchases		Powerpoint presentation with the help of the video projector; free discussions;	1 hours
11. Online sales		Powerpoint presentation with the help of the video projector; free discussions;	1 hours
12. Online advertising		Powerpoint presentation with the help of the video projector; free discussions;	1 hours
13. Electronic information security		Powerpoint presentation with the help of the video projector; free discussions;	1 hours
14. Teaching and supporting the project and final discussions		Powerpoint presentation with the help of the video projector; free discussions;	1 hours

Bibliography
1.Gay R., ş.a., *Marketing on-line*, Editura All, Bucureşti, 2009
2. Popovici Gh. *E-marketing*, Editura EDP, Bucureşti, 2009
3. Orzan, Gh., Orzan, M., *Sisteme informatice de marketing*, Ed. a II-a, Editura Uranus, Bucureşti, 2010
4. Funk, T., *Web 2.0 and Beyond: Understanding the New Business Online Business Models, Trends, and Technologies*, Editura Praeger, Westport, CT, S.U.A., 2008
5.Online Marketing Tutorial https://www.tutorialspoint.com/online_marketing/index.htm
6. Online Marketing https://www.quicksprout.com/the-beginners-guide-to-online-marketing/
7. **How to use google analytics? Tutorial for beginnings! Https://www.socialtools.me/blog/en/how-to-use-google-analytics-tutorial/**

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 found in the curriculum of Management in Information Technology from other university centers ("Politehnica" University of Bucharest), and knowledge of the basic principles of online marketing are current requirements in the operation of any company being also requirements of employers in domain (Qubiz, DecIT, Access, Fortech, Diosoft, IT Maniax, etc.).

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	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	Oral exam The evaluation can be done face to face or online	70%

	For 10: KnowledgeUnderstanding		
10.5 Academic seminar	-		
10.6 Laboratory			
10.7 Project	Minimum required conditions for promotion (grade 5): in accordance with the minimum performance standard For 10:Knowledge and understanding;Ability to explain and interpret;Complete and correct solution of the requirements.	- Practical works The evaluation can be done face to face or online	30%

10.8 Minimum performance standard:
Course:
1.To solve well a minimum of topics -questions and applications
2.Minimum grade 5 in the project
Academic seminar:-
Laboratory:
Project:-
1.The student knows the main concepts, recognizes them, defines them correctly and builds a simple application;
2. To use of the concepts presented in the development and implementation of a practical project

Completion date: 15.09.2023

Date of endorsement in the department: 27.09.2023

Date of endorsement in the Faculty Board: 29.09.2023