POSTGRADUATE STUDIES IN INFORMATICS

DOSSIER

PROFESSIONAL STANDARDS
OF A MASTER IN "INFORMATICS"

Degree course: **Informatics**
Educational Degree: **Master**
Professional Qualification: **Master in Informatics**
Term of education: **1 year (2 terms)**

The study program is aimed at specializing bachelors in the field of Informatics and Information Technologies in compliance with the modern requirements of the computer society. The qualification of Masters of Informatics allows them to work as programmers as well as for companies that intensively use computer applications and information technologies, i.e. high-technology-based productions, banks, insurance companies, institutes, laboratories, computing centers, universities, etc.

Students attending the course gain in-depth knowledge on databases, information systems and technologies, computer graphics, computer networks. The graduates have potential for suggesting modern ideas in designing and using of software in wide range of applications. They are able to administrate operations in network environment and effectively apply contemporary Internet technologies.

Characteristic for the teaching process of all disciplines of this course degree is the organic inclusion of computer-based technologies for training and self-study. The accent is laid on programming in network environment and on data security as well as the management and analysis of computer networks. The applied licensed and free software include C++ compilers, PASCAL, the software products Mathematica, Mathlab, ORACLE, and MPI. Personal computers run on licensed MS Windows, MS Office, Borland Pascal, Microsoft Visual Studio. Mathematical studies are expanded with the course "Operations Research".

The full-time study program is scheduled for two terms, and the part-time study program – for three terms. The course ends up with the submission of a thesis or the performance of a state examination. For obtaining a master degree the applicants should have completed a bachelor's degree of Informatics, Pedagogy of Education in Mathematics and Applied Mathematics, Computing.

CURRICULUM
of the Master's degree course in
INFORMATICS

Code	First term	ECTS	Code	Second term	ECTS
SM13439	Modern Software Engineering	5	SM13445	Management and Analysis of Computer Networks	4
SM13440	Object-oriented and Distributed Databases (DBs)	6	SM13446	Programming in Network Environment and Data Security	4
SM17332	Distributed Artificial Intelligence and Computer Vision	5	SM13447	Modern Internet Technologies	4
SM13442	Operations Research	5	SM13448	Workshop 2	3
SM13443	Multi-agent Artificial Intelligence Systems	5			
SM13444	Workshop 1	4		***Facultative Courses***	
			SM17335	AI Ethics II and AI Policy Making	4
	Facultative Courses		SM17336	AI on the Edge Webinars I and II	4
SM17333	AI Ethics I	4		***Summer AI camp***	4
SM17334	AI Entrepreneurship	4		***Graduation***	
			SM13323	Master Diploma thesis	15
	Total for the term:	**30**		**Total for the term:**	**30**

SM13439 Modern Software Engineering

ECTS credits: 5　　　　　　　　　　　　**Weekly classes**: 2lec+0sem+0labs+2ps
Assessment: exam　　　　　　　　　　　**Type of exam**: written
Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education
Lecturers:
Assoc.prof. Plamenka Todorova Hristova, PhD, Department of Informatics and Information Technologies
tel. 888 326, E-mail ptx@ami.uni-ruse.bg
Assoc.prof. Galina Evgenieva Atanasova, Ph.D., Dept. of Informatics and Information Technologies,
tel. +359 82 326, e-mail gatanasova@ami.uni-ruse.bg
Abstract:
The course objective is to deepen students' knowledge in continuation of the bachelor's course of Software Technologies. The stress is laid on the phases of analyzing the technology/requirements for designing of software systems using modern tools for automatizing the process. In the workshop sessions a particular attention is paid on the team work. After the course the graduates are able to design overall software systems and work in a team.
Course content:
Role of software engineering for software systems design. Software technologies' links with other areas of the software production. Analysis of the requirements for a software system. Specifying a software project – DFD, UML, ERD, logical, etc. Object-oriented design. Functional-oriented design. Designing of user's interface. Evaluation of a software system performance. Software metrics. Testing and acknowledgment of software systems. Management of software project development.
Learning and assessment:
Problem-oriented lectures are conducted two class-hours per week. The practice sessions objective is to develop students' skills for designing software systems in practice. Students learn to work in a team for working out a complete software project. The course ends up with an examination. The final grade is based on students' practice sessions activities (30), and the examination result (70%).

SM13440 Object – oriented and Distributed Databases (DBs)

ECTS credits: 6　　　　　　　　　　　　**Weekly classes**: 2lec+0sem+0labs+3ps
Assessment: exam　　　　　　　　　　　**Type of exam**: written
Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education
Lecturer:
Prof. Katalina Petrova Grigorova, PhD, Department of Informatics and Information Technologies
tel. 888 464, E-mail: kgrigorova@ami.uni-ruse.bg
Abstract:
The course objective is students to get familiar with the specificity of organization, development and application of the object-oriented databases and distributed databases DBs. Students learn the basic concepts of the object-oriented approach and its applicability to the database theory. The stress is laid on the main architectures for building-up distributed DBs as well as the principles for designing, fragmentation and locating of distributed DBs considering relevant restrictions and data security.
Course content:
Extended entity-relationship model (EERM). Conversion from EERM to object-oriented model (OOM). Object definition – identification, structure. Encapsulating methods. Stability. Classes and types of hierarchy. Inheritance. Advantages and disadvantages of distributed databases management systems (DDBMS). Homogeneous and heterogeneous relational database management systems (RDBMS). Functions and architecture of RDBSs. Distributed relational DBs. Fragmentation. Optimization of distributed queries. Management of distributed transactions and parallelism.
Learning and assessment:
The program of study involves lectures and practice sessions. The lectures elucidate particular stages of the organization, design, build and application of object-oriented and distributed databases. During the practice sessions the students practice relevant stages of designing and application of a specific database for a particular Database Management System (DBMS). During the term the students complete two tests including theoretical questions and practical tasks. The course ends up with an examination. The final grade is based on the examination result, term tests and students' practice activities.

SM17332 Distributed Artificial Intelligence and Computer Vision

ECTS credits: 5   **Weekly classes**: 2lec+0sem+0labs+2ps
Assessment: exam   **Type of exam**: written

Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education

Lecturers:
Assoc. Prof. Rumen Ivanov Rusev, Department of Informatics and Information Technologies
tel. 888 754, E-mail: rir@ami.uni-ruse.bg
Assoc. Prof. Desislava Stoyanova Atanasova, PhD, Department of Informatics and Information Technologies
tel. 888 255, E-mail datanasova@ami.uni-ruse.bg

Abstract:
The main goal of the course is to give students knowledge about basic methods and techniques of Distributed AI and agent technology. Particular attention will be given to interaction models, organizational models and the articulation of individual and collective decision-making. Basic principles in Computer vision such as face and object detection will be also provided

Course content:
Agent Interaction Protocols, Negotiation, Contract Net Protocol; Coordination, collaboration and cooperation Organizations and self-organization; Agent and environment, Agent software architectures Image acquisition – face and object detection; .

Learning and assessment:
Students attend lectures and practice sessions. Students perform individually assigned tasks related to the lectures. Some practice activities apply commercial and freely distributed software. The course ends with a written exam. The final mark is formed on the basis of student's results shown at the practice sessions (30%) and the exam result (70%).

SM13442 Operations Research

ECTS credits: 5   **Weekly classes**: 2lec+0sem+0labs+2ps
Assessment: exam   **Type of exam**: written

Department involved:
Department of Numerical Analysis and Statistics
Faculty of Natural Sciences and Education

Lecturers:
Prof. Velizar Todorov Pavlov, PhD, Department of Applied Mathematics and Statistics
tel. 888 466, E-mail: vpavlov@uni-ruse.bg

Abstract:
The subject aim is to make students acquainted with some specific models arising in solving management problems and up-to-date mathematical and statistical methods for their solving, analyzing and interpretation of received solutions. The character of this course is markedly applied. All the discussed examples and problems have their economics applications near the practice. Demonstrations with usage of software packages for solving larger real models are provided.

Course syllabus:
Subject and aim of operations research. Mathematical model of operations. Efficiecy and optimum criterion. General formulation of the linear programming problem (LPP). Working out linear programming models. Linear vector spaces. Systems of n linear equations with m unknowns (LSE). Properties of the LSE solutions. Graphic method for solving LPP. Simplex Method. Duality in linear programming. The transportation problem. Goal programming. Integer programming. Network analysis, including PERT-CPM. Elements of queuing theory. Elements of inventory theory.

Teaching and learning methods:
The teaching process is realized through lectures and practice sessions. Topics discussed during lectures are illustrated with due examples at the practice sessions. Special attention is paid to the opportunities of the software package MATLAB for solving more complicated and close to the practice problems.

SM13443 Multi – agent Artificial Intelligence Systems

ECTS credits: 5   **Weekly classes**: 2lec+0sem+0labs+2ps
 Assessment: continuous assessment   **Type of exam**:

Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education

Lecturer:
Assoc. Prof. Desislava Stoyanova Atanasova, PhD, Department of Informatics and Information Technologies
tel. 888 326, E-mail datanasova@ami.uni-ruse.bg

Abstract:
The course objective is students to obtain a comprehensive conception and introductory understanding referring to creating of intelligence applications based on the principles of software agent technologies for the knowledge presentation, generation of conclusions and training. The study program of the discipline is scheduled in view of students' knowledge on programming techniques and artificial intelligence. The teaching process is concentrated on two main directions, i.e. enhancing the knowledge for the theoretical prerequisites for creating of multi-agent systems and the programming realization using Java as a basic language for creating of artificial intelligence.

Course content:
Infinite heaps – theoretical basis and application technology. Neural nets. Theory, types, modifications and applications. Agents and multi-agent systems – conversion from artificial intelligence to intelligent agents. Cooperating agents. Competitive agents. Planning of multi-agent systems. Architecture of a software intelligent agent.

Learning and assessment:
The lectures are supported with suitable visual aids and demonstrating outputs are used for some topics. Practice sessions are carried out in parallel to the lectures for gaining practical experience. For complex examples relevant software modification is made on purpose for the practice session. The course ends up with the continuous assessment result.

SM13444 Workshop 1

ECTS credits: 4   **Weekly classes**: 0lec+0sem+0labs+4ps
 Assessment: continuous assessment   **Type of exam:**

Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education

Lecturers:
Assos. Prof. Galina Evgenieva Atanasova, Department of Informatics and Information Technologies,
tel. 888 326, E-mail gea@ami.uni-ruse.bg

Abstract:
The course objective is to deepen students' knowledge in continuation of the bachelor's course of Software Technologies. The stress is laid on the phases of analyzing the technology/requirements for designing of software systems using modern tools for automatizing the process. In the practice sessions a particular attention is paid on the team work. After the course the graduates are able to design overall software systems and work in a team.

Course content:
Role of software technologies for software systems design. Software technologies' links with other areas of the software production. Analysis of the requirements for a software system. Specifying a software project – DFD, UML, ERD, logical, etc. Object-oriented design. Functional-oriented design. Designing of user's interface. Evaluation of a software system performance. Software metrics. Testing and acknowledgment of software systems. Management of software project development.

Teaching and assessment:
The course is conducted through 4-hours practice sessions. Students should have been preliminarily prepared for the themes practiced at the sessions. The workshop objective is to develop students' skills for designing software systems in practice. Students learn to work in a team for preparing a complete software project. The course ends up with a continuous assessment. The final grade is based on the continuous assessment during the practice sessions (50%), the result of developing and defending student's part of the teams project (20%), and the individual presentation of projects' parts (30%).

SM13445 Management and Analysis of Computer Networks

ECTS credits: 4   **Weekly classes**: 3lec+0sem+0labs+3ps
Assessment: exam   **Type of exam**: written

Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education

Lecturers:
Assoc.prof. Rumen Ivanov Rusev, Ph.D., Dept. of Informatics and Information Technologies,
tel. +359 82 888 754, E-mail: rir@ami.uni-ruse.bg

Abstract:
The course objective is students to obtain appropriate knowledge on the basic principles of network administrating as well as on the monitoring tools and management of computer networks.
The study program involves, on one hand, the principles for network resources administrating and relevant implementation in specific operating systems, and on the other hand, the architecture of the network devices management systems. The accent is laid on the concept of network management on the basis of SNMP protocol. Particular systems are examined during the practice sessions.

Course content:
Basic principles of network objects administrating. Directorial services. Security in local networks. Network analysis and management tools. Architecture of network management systems. Management systems standard on the basis of SNMP protocol. Local networks monitoring and analysis tools.

Learning and assessment:
The course is carried out three class-hours per week and presents the basic principles of the subject topics. During the practice sessions the students perform particular practical tasks related with the theory of the lectures. The course ends up with an examination including theory and practical tasks. The final grade is based on the result from the exam, and on the continuous assessment from the practice sessions activities.

SM13446 Programming in Network Environment and Data Security

ECTS credits: 4   **Weekly classes**: 3lec+0sem+0labs+3ps
Assessment: exam   **Type of exam**: written

Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education

Lecturers:
Assoc.prof. Svetlozar Stefanov Cankov, Ph.D., Dept. of Informatics and Information Technologies,
tel. +359 82 888 645, E-mail: tzcankov@uni-ruse.bg
Principal assist. prof. Valentin Petrov Velikov, Ph.D., Dept. of Informatics and Information Technologies, tel. +359 82 888 326 E-mail val@ami.uni-ruse.bg

Abstract:
The course objective is students to get familiar with the basic principles for programming in network environment as well as the data security tools. Network applications design techniques are studied on the basis of the TCP/IP protocol stacks using Java technologies. In the practice sessions students perform particular practical tasks. The graduates are able to design network applications of a medium complex character.

Course content:
Java – programming language in network environment. Packages and interfaces. Input/Output. Processing of exceptions. Multi-thread programming. Applets and events. Communication and operation in network environment. TCP – fundaments of TCP sockets. Development of client-server applications. UDP sockets. UDP server and UDP client development. IP multi-casting usage. Protocols manipulators. Data manipulators. Java security.

Learning and assessment:
Practice sessions follow lecture themes. The 3-hour-weekly-sessions are held in computer training room, where each student works individually. Students solve practical problems related with the lecture topics. They should have been prepared in advance with respect to lectures, documentation and examples. The course ends with a practical exam, i. e. each student is given an individual task that has to be implemented on a computer for a scheduled time. The task involves the specifities studied during the course. The results are evaluated by a score table referring to the basic points of the problem implementation. The final mark is formed taking into consideration student's activities during the practice sessions(20%).

SM13447 Modern Internet Technologies

ECTS credits: 4   **Weekly classes**: 3lec+0sem+0labs+3ps
 Assessment: continuous assessment   **Type of exam**:
Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Sciences and Education
Lecturers:
Assoc. prof. Valentina Nikolaeva Voinohovska, Ph.D., Dept. of Informatics and Information Technologies, tel. +359 82 888 645, E-mail: valia@ami.uni-ruse.bg
Abstract:
The course objective is to deepen students' knowledge on the modern tools used in programming for Internet. During the practice sessions students apply theoretical statements for implementation of practical tasks. The graduates are able to design Internet applications of medium complexity.
Course content:
Review of the modern aids for Internet programming. HTML, DHTML, XML Customers scripts. Java Script. Server scripts, JSP, PHP. Theory of programming using Perl. Internet applications using databases.
Learning and assessment:
Lectures are conducted three hours weekly for presenting the basics of the topics. During practice sessions students work out practical tasks related to the lectures. The course ends with a continuous assessment mark. The final mark is based on the results from the practice sessions activities.

SM13448 Workshop 2

ECTS credits: 3   **Weekly classes**: 0lec+0sem+0labs+6ps
 Assessment: continuous assessment   **Type of exam:** written and practical
Department involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Assoc. Prof. Desislava Stoyanova Atanasova, PhD, Department of Informatics and Information Technologies tel. 888 326, E-mail datanasova@ami.uni-ruse.bg
Abstract:
The course focuses on the development of a team project referring to a complex practice-oriented task. Students apply the knowledge gained from studying the diciplines included in the first and second term of the curriculum. The stress is laid on the individual work of students related to the project, that is assigned on a team of 3 to 5 students. After the course the graduates are able to design, test and present overall software systems, working in a team.
Course content:
Teams' task assignment, planning roles and tasks in the teams; Development project's plan; Working on scheduling sequences and collaborations diagrams; Data model specification; Test plan, test tasks and scenario development; Software system development; Testing and documenting of test results; Finalizing and defending the project.
Teaching and assessment:
The workshop objective is to develop students' skills for designing software systems in practice. Students learn to work in a team for preparing a complete software project. The course ends up with a continuous assessment. The final grade is based on the continuous assessment during the practice sessions (40%), the result of developing and defending the teams' project (30%) and the individual presentation of projects' parts (30%).

SM17333 AI Ethics I

ECTS credits: 4   **Weekly workload:** 3l + 0s + 0lab + 0p
Assessment: 2 assignments and a final exam   **Type of exam:** written
Departments involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Assoc. prof. Desislava Atanasova, PhD, Department of Informatics and Information Technologies,
phone 888 255, E-mail: datanasova@uni-ruse.bg
Prof. Antonis Kakas, PhD, University of Cyprus, Department of ……………………………..,
E-mail: …………………………………….

Abstract:
This course aims to raise awareness of the dangers that can arise from the development, deployment, and usage of intelligent autonomous systems and to introduce the students to socio-technical solutions for mitigating the risk of exhibiting unwanted non-ethical behaviour. Students will understand the basics of implementing systems that are not only high performing, but also adhere to our ethical socio-legal cultural values.

Course content: The course introduces the fundamental aspects of AI ethics by providing a holistic multidisciplinary view of the discipline. The course structure is such as to first help students understand the potential impact AI systems can have on societies and individuals (LO1, LO3). Then, they proceed by being introduced to ongoing discussions related to AI (LO2) and gaining the basic background in moral philosophy needed. Next, students are asked to put into knowledge gained into practice by learning how to develop systems that exhibit a desired ethical behaviour (LO4). The course finishes by examining the means of verifying and evaluating the ethical compliance or "ethicacy" of AI systems (LO5).
The course is divided into following thematic units: Introduction to AI Ethics; Machine Ethics from a Philosophy Perspective; Ethics *By* Design; Ethics *In* Design; Ethics *For* Design.

Teaching and assessment:
A variety of teacher-led and student-led activities. Weekly lectures will introduce and provide overview of topics. Students will conduct self-study of the weekly material. Students will be given the opportunity to participate in problem-based solving group exercises, where they will conduct critical analysis and debate timely issues related to AI ethics. In unsupervised technical labs, students will be given the opportunity to test technical solutions for compliance checking and implement *machine ethics,* i.e. agents with moral reasoning.. The final mark is formed on the basis of 2 major assignments (one group, one individual) and a final exam.

SM17334 AI Entrepreneurship

ECTS credits: 4   **Weekly workload:** 3l + 0s + 1lab + 0p
Assessment: project presentation, paper   **Type of exam:** written, oral
Departments involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Assoc. prof. Desislava Atanasova, PhD, Department of Informatics and Information Technologies,
phone 888 255, E-mail: datanasova@uni-ruse.bg
Assoc. prof. Marios Dikaiakos, PhD, University of Cyprus, Department of ……………………………..,
E-mail: …………………………………….

Abstract:
This course seeks to help students explore and master key concepts and challenges of relevance to AI and Data-driven entrepreneurship. The course introduces case studies that demonstrate successes, failures and challenges and it provides an introduction to key steps to develop a company, design a business model, explore product-market fit, manage intellectual property, and attract investment. Students will explore acknowledged innovation-driven entrepreneurship methodologies and experiment with them and associated tools to pursue the translation of their ideas into entrepreneurial endeavors.

Course content:
The course will comprise weekly live and recorded lectures by the professor and by invited speakers on various aspects of entrepreneurship and innovation. The students will be required to establish teams and work on an idea, producing a business plan and a prototype of an MVP, and several writeups for class readings and invited lectures: Case Studies in AI Entrepreneurship, Basics, Preparatory Analysis, Setting up a company, Value Proposition definition, Market Analysis and Competition, Business Modeling for IT Products and Services, Customer acquisition and Sales, Pitching day.

Teaching and assessment:
Lectures (3 hours weekly), Recitation (1 hour weekly), Team Project (all semester).The final mark is formed on the basis of final semester project presentation, midterm paper, reading assignments.

SM17335 AI Ethics II and AI Policy Making

ECTS credits: 4   **Weekly workload:** 2l + 0s + 0lab + 0p
Assessment: group project, essay exam   **Type of exam:** written, oral
Departments involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Assoc. prof. Desislava Atanasova, PhD, Department of Informatics and Information Technologies,
phone 888 255, E-mail: datanasova@uni-ruse.bg
Prof. Antonis Kakas, PhD, University of Cyprus, Department of ……………………………..,
E-mail: ……………………………………

Abstract:
The main purpose of this (second) course on AI Ethics is to help the students understand in depth the major ethical issues that concern various sectors of the society and how these are reflected into AI policy by governments and organizations, particularly by EU policy on AI. The students will understand how research into AI Ethics feeds into policy and how policy requirements affect the development of AI systems.

Course content:
The course introduces the important role of AI ethics in forming AI Policy by governments and organizations and examines how research in AI Ethics can affect and regulate AI policy making.
The course has two main parts serving its learning outcomes: understand the link of AI Ethics into AI Policy making (LO1-3) & understand the multidisciplinary research challenges faced to develop responsible AI policy (LO4-6).
The course is divided into following thematic units: Responsible AI, AI Governance, Process of AI Policy making, Evaluation of AI Policy, Challenges for "Ethicacy" of AI policy.

Teaching and assessment:
Bi-weekly lectures will introduce and provide overview of topics. Students will conduct a self-study on a weekly basis by attending seminars with guest speakers on AI Ethics & Policy issues, studying an policy documents, and applying AI policies to their AI projects (e.g. undergraduate dissertations, assignments from other projects, etc). Students will be required to present the results of their study in reports and/or presentations to the class.The final mark is formed on the basis of bi-weekly short assignments, one group project and final essay exam.

SM17336 AI on the Edge Webinars I and II

ECTS credits: 4   **Weekly workload:** 1l + 0s + 0lab + 0p
Assessment: report   **Type of exam:** oral
Departments involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Assoc. prof. Desislava Atanasova, PhD, Department of Informatics and Information Technologies,
phone 888 255, E-mail: datanasova@uni-ruse.bg
Prof. Antonis Kakas, PhD, University of Cyprus, Department of ……………………………..,
E-mail: ……………………………………

Abstract:
The main objective of this course is for the students to be aware of the latest developments in AI and to appreciate the wide breath of study that AI requires.

Course content:
The content of this course will be dynamically determined every semester by the Webinar talks in various AI related topics that are given by top AI scientists and practitioners worldwide. It will be comprised by a subset of such talks.

Teaching and assessment:
A list of Webinars will be maintained and updated weekly from which each student can choose to attend. Students can also suggest other webinars outside the official list of the course, to be approved by the course instructor.
The students submit a short report summarizing the talk they have attended and commenting on the significance of its topic to the development of AI.The final mark is formed on the basis of the quality of the students reports for a minimum of 12 webinar talks they have attended.

Summer AI Camp

ECTS credits: 4   **Weekly workload:** 0l + 0s + 0lab + 0p
Assessment: a presentation and a report   **Type of exam:** written, oral
Departments involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Assoc. prof. Desislava Atanasova, PhD, Department of Informatics and Information Technologies,
phone 888 255, E-mail: datanasova@uni-ruse.bg
Prof. Antonis Kakas, PhD, University of Cyprus, Department of ……………………………..,
E-mail: ……………………………………
Prof. George Pallis, PhD, University of Cyprus, Department of ……………………………..,
E-mail: ……………………………………

Abstract:
Raising the awareness that students are studying in an EU wide program.
Awareness of the career opportunities in the various countries and further studies at the partner universities.
Initiating joint supervision and joint research.

Course content:
The event (7-10 days) will be mainly driven by work of the students. The content of this course will include:
Students will present joint (across different universities) projects prepared beforehand by groups of students and other joint research studies.
Part of these joint projects will be hackathon efforts on problems set before the meeting by the SMEs in the project and CYENS.
Students will also present feedback on the program they are studying and in particular how the inter-collaboration between the universities can be strengthen.
Presentations from the participating universities so that the students get a good understanding of the research interests in AI at each university and of the opportunities they have for further study there.
Presentations will also be given on the labour market in AI in each of the countries of EU participating.
Mentoring sessions for students currently doing their Masters research and other mentoring general presentations for careers or PhD studies.

Teaching and assessment:
One-week retreat in some relatively isolated place so that students and faculty from the universities participating in the network of MAI4CAREU can have a close working interaction.
Before the event the students who will participate are given projects to carry out in groups of 3-4 students from different universities. At the event they are asked to finalize their project and present it to the community attending the camp.
Groups of Students will also jointly present research studies of some topic in AI. There will also be a special session where students can give feedback on the Masters program that they are attending.
Faculty and SMEs will present to the students current career and further research opportunities in the institutions and other links they have in the EU.The final mark is formed on the basis of the students presentations at the event and on their related reports. This will be a simple Pass/Fail assessment.

SM13323 Master Diploma Thesis

ECTS credits: 15   **Weekly classes:** -
Assessment: defense   **Type of exam:** oral
Departments involved:
Department of Informatics and Information Technologies
Faculty of Natural Science and Education
Lecturers:
Lecturers from the Informatics and Information Technologies Department
Abstract:
The diploma thesis is independent creative assignment, which is implemented under the guidance of a supervisor, and if necessary - a research consultant. The aim of the students is to make an independent development, presenting what they have learned during the training and to achieve the set goals of the thesis. The result is presented and defended before State Examination Commission.
Course content:
The Master thesis includes: a diploma note, which includes all the basic literature, ideas, existing solutions, analyses, calculations, explanations, conclusions; graphical part which includes schematic diagrams; application with source code and / or developed by the student model, if it's part of the job; presentation of the thesis.
Teaching and assessment:
The Department of Informatics and Information Technologies is responsible for collecting, confirming and announcing proposals for topics of theses; distribution of students by themes and supervisors; leadership, review and defense of theses.
The student defends his/her diploma thesis before the State Examination Commission.