Transilvania University of Braşov, Romania

Study program: Internet technologies (in English)

Faculty: Mathematics and Computer Science

Study period: 2 years (master)

1st Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Basic internet tehnologies	TIN11	8	2	-	2	-

Course description (Syllabus): A half part of this course is concerning the IoT – as one of the biggest challenges of our real life; This part is focuses on specific topics, as follows: take advantage of transforming everyday objects into smart devices with sensors and actuators, using the powerful and modern minicomputer boards like Raspberry Pi, Arduino or Intel Galileo Board for developing IoT projects, developing IoT prototypes with specific boards and the ideal choice of Python programming language; working with digital/analog inputs, polling, interrupts, local storage, retrieving data from the real world with sensors, displaying information and performing actions; The other half of this course is focused on Internetworking technologies, TCP/IP addressing, Internet Protocol IPv6, Distributed application development.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Web applications development	TIN12	8	2	-	2	-

Course description (Syllabus): Introductory concepts; Fundamental laws. Parallel computing; Introduction to cloud computing, typologies; Amazon Web Services. Google Compute Engine. HP Cloud Compute; IBM Smart Cloud Enterprise. Amazon S3. Google Cloud Storage. Host Europe Cloud Storage; Google App Engine. AWS Elastic Beanstalk; Private Cloud Infrastructure Services. Private platform services; Cluster computing; Grid computing; Peer to peer and Cloud Computing; MapReduce/Hadoop; Service Oriented Architectures. Web services.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Multimedia interaction technologies	TIN13	7	2	-	2	-

Course description (Syllabus): Basic principles in WEB-design, VRML2 vs VRML1, Work frame GREENFOOT, PROCESSING, Applying the rules of organized and efficient work, of responsible attitudes towards the didactic-scientific field, for the creative exploitation of its own potential. Respecting the principles of professional ethics. Use of efficient methods and techniques of learning, research, development and information. Ability to capitalize on knowledge, adapt to the demands of a dynamic society and communicate in English.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Management of projects in Web technologies	TIN14	7	2	-	2	-

Course description (Syllabus): Elements of general management theory (Management system, Function of a management system); IT project management. Project planning. Activities. Products to be achieved. People involved, IT Project management. Resource issue; IT Project management. The issue of quality; IT Project management. The risk issue; IT Project management. The issue of changing requirements.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Cybergsecurity programming	TIN21	6	2	-	2	-

Course description (Syllabus): Deployment Containers; Web Application Backend; Web Application Frontend; Cloud as PaaS; Communication Security; Programming Security.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Science, mamagement and engineering of services	TIN22	6	2	-	1	-

Course description (Syllabus): Google App Engine. AWS Elastic Beanstalk. Private Cloud Infrastructure Services. Private platform services. Service Oriented Architectures. Web services 10. Peer to peer and Cloud Computing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Data warehouse and Data mining	TIN23	6	2	-	1	-

Course description (Syllabus): Data analysis (average, dispersion, variance); Correlation analysis using data sets from banking, medical, economic fields, etc.; Computational methods for Data Mining; Classification algorithms in Weka / Python; Discover association rules using Weka / Python; Clustering algorithms in Weka / Python; Decision trees; Visualization and interpretation of results.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Business projects management	TIN24	6	2	-	1	-

Course description (Syllabus): Business projects management course can help you learn strategic planning, financial analysis, team leadership, and operational management. Students can develop skills in project management, effective communication, and performance evaluation. Some courses introduce tools such as SWOT analysis, Gantt charts, and CRM software, which help organize tasks, track progress, and manage customer relationships.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Cryptography and systems security	TIN25	6	2	1	-	-

Course description (Syllabus): Information Theory Basics: information entropy, equations, examples, properties. Noiseless and Noisy Codes: uniquely decodable and prefix codes, examples, Kraft theorems, Huffman optimal codes, communication channel entropy, rate of transmission and fundamental theorems of noiseless and noisy codes. Cryptography: prime numbers cryptography, symmetrical and asymmetrical schemes. Security: describing main type of attacks and protection, systems security issues and solutions, including authentication, key distribution and security protocols.

2st Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Wireless network management	TIN31	8	2	2	-	-

Course description (Syllabus): Wireless sensor networks; operating systems for scalable wireless sensor networks; dynamic power management Distributed sensor networks; Bluetooth in the distributed sensor networks; Bluetooth communication and networking, Applications of wireless sensor networks; application and communication support; habitat and environmental monitoring.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Cloud computing and distributed computing	TIN32	8	2	-	1	-

Course description (Syllabus): Introductory concepts; Fundamental laws. Parallel computing; Introduction to cloud computing, typologies; Amazon Web Services. Google Compute Engine. HP Cloud Compute; IBM Smart Cloud Enterprise. Amazon S3. Google Cloud Storage. Host Europe Cloud Storage; Google App Engine. AWS Elastic Beanstalk; Private Cloud Infrastructure Services. Private platform services; Cluster computing; Grid computing; Peer to peer and Cloud Computing; MapReduce/Hadoop; Service Oriented Architectures. Web services.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
WEB applications development II	TIN33	7	2	-	2	-

Course description (Syllabus): Introduction in using the Symfony framework, Doctrine ORM, Routes, GUI in Symfony, Testing (unit and functional), Email Service, RSS Feed, REST service, Internationalization, Localization, Good Practices, High performance with Symfony.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Remote control using Internet	TIN34	7	1	-	2	-

Course description (Syllabus): Definitions of services; survey of services; impact on modern economies, General description of systems; relevance to services; elements, interconnections, attributes, and stakeholders; client and provider interactions; cocreation relationship, Management of services versus manufacturing management; services strategy and services management planning; information in services; Use of methods in the services lifecycle; IT services business; increasing globalization of business.

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Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Capstone	TIN41	7	2	-	1	-

Course description (Syllabus): The logical organization of a Latex document, Latex writing of mathematical text and formulas, Other Latex formatting, Graphics and writing algorithms in Latex, Latex Package, Use of colors and graphic processing, Beamer document class, Other Latex 2ε facilities, Writing a scientific paper in Latex.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Specialized practice	TIN42	9	-	-	-	5

Course description (Syllabus): Presentation of new and significant new results in a certain fields of Computer science: Algorithms and computability. Activity of documentation; Identification of problems of research and applications. Developing of an own scientific research; Training in writing of scientific papers; Elaboration and presentation of a work at the student scientific session.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Dissertation writing practice	TIN43	8	-	-	-	5

Course description (Syllabus): Making a synthesis of the knowledge obtained in a field of Computer Science; Completion of the own contributions to the study; Redaction of the thesis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Ethics and academic integrity II	TIN44	6	1	-	-	-

Course description (Syllabus): Researchers should promote accuracy, honesty, and truthfulness in their work; Researchers should work in a fair manner taking into account issues of equality, impartiality, and proportionality; Researchers should show respect to the fundamental rights, dignity, and worth of all people.