Transilvania University of Braşov, România
Study program: Mobile Applications and Internet Technologies in e-Business (in German)

Faculty: Mathematics and Compute Science
Study period: 2 years (master)

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Integrated software and hardware systems	SH1	6	1	2	-	-

Course description (Syllabus): Knowledge on the development of integrated System-on-Chip and methods of developing and validation of digital systems**;** Developing HW/SW integrated systems; Partial functions

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Web Technologies and Images Processing	TW1	6	2	-	1	-

Course description (Syllabus): Advanced elements with Photoshop**;** HTML , Bootstrap and AngularJS**;** Advanced elements in JavaScript**;** Animation with Python; Project developing;

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mobile and Internet Databases	MB1	6	2	-	1	-

Course description (Syllabus): Design of mobile databases in Internet; Distributed databases administration; Cloud databases; Performance of distributed databases; Connecting mobile devices todistributed databases.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
ABAP OO	AO1	6	2	1	-	-

Course description (Syllabus): SAP introduction; Configuration of SAP ECC and SAP S/4HANA; ABAP development process; Create and configure SAP Fiori Launchpad; SAP IAM, authorization and security management; Developing with SAP BTP (Business Technology Platform); ABAP Applications.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
POO – Simulation and Games	PO2	5	2	-	2	-

Course description (Syllabus): Basic principles for game design; Mathematical elements in 3D graphics; Game logic; Application of OOP principles to games; Animation and simulation; Scratch and BlueJ.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Efficient Graph Algorithms	AE2	5	2	1	-	-

Course description (Syllabus): Maximal flows and minimum cuts in networks**;** Minimal flows innetworks.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Software Architecture	AS1	6	2	-	1	-

Course description (Syllabus): Software architecture requirements; Software design models; OpenUP; SCRUM; Project start; Software development standards; Architecture styles: layers, pipes, blackboard, broker, MVC, microkernel, reflection; Architecture analysis; Code metrics; Testing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Software Engineering	IS1	6	2	-	1	-

Course description (Syllabus): Software development lifecycle; Requirements engineering; System design; Implementation practices; Testing and quality.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Architectures Based on Micro Services	AB2	6	2	-	1	-

Course description (Syllabus): Integration services based on the latest software techniques; Event management techniques based on control by state; Assessment of quality of service, security and access policy; Developing user interfaces for e-Services.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Machine Learning	ML2	6	2	-	1	-

Course description (Syllabus): Data analysis and processing; Supervised learning – classification and regression; Unsupervised learning – clustering; Anomaly detection and dimensionality reduction; Introduction to neural networks; MLP; Feed-forward neural networks; Convolutional neural networks; Deep learning; Transformer architecture; Natural Language Processing applications.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Applied Statistics	SA2	7	2	1	-	-

Course description (Syllabus): Common distributions; Unidimensional statistical measurements; Bivariate contingency, regression and correlation analysis; Probability and random variables; Hypothesis testing; Partial regression and correlation; Variance analysis and covariance; Introduction to factorial analysis; Cluster analysis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Cybersecurity and Data Protection	CPD2	7	2	1	-	-

Course description (Syllabus): Electronic attacks and IT vulnerabilities; Safe code design; Security standards; Secure services in networks and cloud; Intrusion detection systems.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Universal Design and Product Management	DUMP2	7	2	2	-	-

Course description (Syllabus): Principles of Universal Design; User research; Inclusive product strategy; Prototyping and usability evaluation; Product lifecycle management; Metrics for product success.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Multimedia Interaction Technologies	TIM2	7	2	2	-	-

Course description (Syllabus): Basic WEB design principles; The GREENFOOT framework; PROCESSING; GIMP; HTML5 and Bootstrap; Javascript.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Legal issues in Internet and Marketing	MK3	5	1	1	-	-

Course description (Syllabus): Applicable legislation in the field of technology information and Internet; Network security and public information; Marketing activities in digital environment; Information systems vulnerability.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Distributed Algorithms and Security Mchnsms	ADSM3	5	2	1	0	-

Course description (Syllabus): Sockets; RPC; Selection algorithms; Deadlock avoidance; WEB services; Microservices; Clock synchronization.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Techniques of Writing the Dissertation Work	TR3	5	1	1	-	-

Course description (Syllabus): Methods of preparation of dissertation; Using LaTeX in preparation ofdissertation thesis; Logical structure of a document; Paragraph and Math views.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Practical Placement	SP3	5	-	-	-	8

Course description (Syllabus): Qualified company personal attendance to student's practical training; practicing the competences regarding human relations within working conditions; increasing students' motivation regarding their theoretical and practical preparation by offering them a better knowledge about their future profession.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Ethics and Academic Integrity	EI3	3	1	-	-	-

Course description (Syllabus): Learning about ethic principles in research and academic work; Copyright rights in publishing, software creation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Research Industry Projects - I	PCI3	7	2	-	1	-

Course description (Syllabus): Industry-focused problem exploration; Research methods; Literature review; Feasibility analysis; Prototyping and interim reporting.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Communication in Virtual Teams (CMC)	CV4	7	1	-	2	-

Course description (Syllabus): Learning about virtual teams management; Techniques and tools for virtual meeting and work; Advantages and disadvantages of working in virtual teams/projects.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Ellaboration of the Dissertation	EL4	9	-	-	-	5

Course description (Syllabus): Writing the dissertation thesis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Research Industry Projects - II	PCI4	7	2	-	2	-

Course description (Syllabus): Advanced solution development; Data collection and evaluation; Iterative refinement; Collaboration with industry partners; Implementation and presentation of research outcomes.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Web Application Development	DAW4	7	2	-	2	-

Course description (Syllabus): Advanced Java programming elements. Aspect Oriented Programming. Java Spring. REST API design. Hibernate. MVC design. Frontend development.