SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	**Babes-Bolyai University**
1.2 Faculty	**Mathematics and Computer Science**
1.3 Department	**Computer Science**
1.4 Field of study	**Computer Science**
1.5 Study cycle	**Master**
1.6 Study programme / Qualification	**Component based programming**

2. Information regarding the discipline

2.1 Name of the discipline	Design of interactive software systems
2.2 Course coordinator	Ph. D. Lecturer Adriana-Mihaela Guran
2.3 Seminar coordinator	Ph. D. Lecturer Adriana-Mihaela Guran

2.4. Year of study	**1**	2.5 Semeste	**2**	2.6. Type of evaluation	**E**	2.7 Type of discipline	**Optional**

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

3.1 Hours per week	4	Of which: 3.2 course	2	3.3 seminar/laboratory	2
3.4 Total hours in the curriculum	56	Of which: 3.5 course	28	3.6 seminar/laboratory	28

Time allotment:	hours
Learning using manual, course support, bibliography, course notes	40
Additional documentation (in libraries, on electronic platforms, field documentation)	45
Preparation for seminars/labs, homework, papers, portfolios and essays	24
Tutorship	8
Evaluations	2
Other activities:	

3.7 Total individual study hours	119	
3.8 Total hours per semester	175	
3.9 Number of ECTS credits	7	

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	• A room with Internet access and presentation devices
5.2. for the seminar /lab activities	• A room with computers and Internet access

6. Specific competencies acquired

Professional competencies	• Proficient use of verification, validation, and evaluation criteria and methods to his/her own software solutions, ability to formulate value judgements and to justify/explain constructive decisions • Use advanced skills to develop and conduct complex software projects, of practical and/or research nature, using a wide range of quantitative and qualitative methods • Advanced communication skills within different professional environments, appropriate use of computer science vocabulary, good English knowledge • Demonstrate advanced modeling skills for economic, industrial, scientific phenomena and processes, by using fundamental mathematical, statistical, and computer science knowledge
Transversal competencies	• Assimilation of mathematical concepts and formal models to understand, verify and validate software systems ; • Organization of software production processses • Team work capabilities; able to fulfill different roles • Professional communication skills; concise and precise description, both oral and written, of professional results, Antepreneurial skills;

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	• To understand and approach problems of modeling nature from other sciences • To design/develop usable systems • To be able to evaluate the usability of a system and to be able to find improvement methods regarding the usability of a system • To be aware of accessibility issues in systems design • To be able to develop multiplatform applications
7.2 Specific objective of the discipline	At the end of the semester students must be able to: • understand the human capacities in interaction with software systems • achieve knowledge of psychological aspects of human-computer interaction • understand the importance of real users in the development of interactive systems • indentify the best communication methods with the clients • use knowledge and models form sociological sciences in

	order to improve the communications with clients • be able to apply user centered design • achieve usability related notions • be able to apply automatic usability evaluation methods • design and develop groupware systems • apply interaction design patterns • use interface abstract description languages • develop plastic user interfaces • develop adaptive and adaptative user interfaces

8. Content

8.1 Course	Teaching methods	Remarks
1. Interaction Design • What is ID? • HCI and ID • UCD and ID • Professions in ID	Presentation, discussions, case studies, problem solving	
2. Basics of Human-Computer Interaction • Human factor in HCI • Input/output channels • Capacities, limitations • Computer • Output devices • Virtual reality and 3D devices • Non-conventional interaction devices • Usability • Errors	Presentation, discussions, case studies, problem solving	
3. Interaction Design Process • Interaction design lifecycle models • Needs and requirements • Interaction models • Interaction style	idem	
4. Task Analysis • Fundamentals of task analysis • Task analysis methods: HTA, GTA • Task analysis tools:EUTERPE, CTTE • The Bridge Method	idem	

5. Interdisciplinary approaches in Usability Engineering – a focus on user needs analysis • Qualitative vs quantitative approaches • A framework for early usability integration in the development of interactive softweare systems	idem	
6. Conceptual Models in Interaction Design • Conceptual models • Metaphors • Interaction modes	idem	
7. Prototyping vs. Pretotyping • prototyping • pretotyping • case studies	idem	
8. Graphic elements in user interfaces • Basic graphic elements in UIs • Criteria and recommendations for graphic elements • Focus, flow and layout in UI design	idem	
9. Usability engineering & User experience • What is usability? • Designing for usability • Usability engineering lifecycle • Usability metrics • Measuring user experience	idem	
10. Web Usability& Mobile Usability • Designing for web • Designing for mobile	idem	
11. Designing for accessibility • Disabilities • Accessibility • Accessibility APIs • Accessibility evaluation	idem	
12. Designing Gestural Interfaces • Gesture definition • Gesture in everyday life • Designing interactive gestures	idem	

• Interface conventions		
13. Designing Social Interfaces • History of computer mediated interaction • Social network vs. social media	idem	
14. User Interface Testing • **GUI Testing** • **Model-based testing** • **Web applications testing**	idem	

Bibliography:

1. Alan Dix, Janet Finlay, Gregory D Abowd, Russell Beale - Human-Computer Interaction,

Prentice Hall, third edition, 2004

2. Donald A. Norman - Emotional Design - Why we love (or hate) everiday things, 2004

3. Martijn van Welie - Task-based User Interface Design, 2001

4. Donald A Norman - The design of everyday things, basic Books, 1988

5. Fabio Paterno - Model-based design and evaluation of interactive applications, Springer, 1999

6. Jennifer Tidwell - Designing Interfaces: Patterns for Effective Interaction Design, O@Reilly, 2005

7. Jacob Nielsen - Usability Engineering, Academic Press, 1993

8. Marc Hassenzahl- Experience Design: Technology For All The Right Reason, Morgan & Claypool,2010

9. Alberto Savoya – Pretotyping IT, 2011

10.Tom Tullis, William Albert – Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics. Morgan Kaufmann Publishers Inc., San Francisco, CA, USA, 2008

8.2 Seminar / laboratory	Teaching methods	Remarks
Students will have to choose a project subject refering a medium size application that will be developed using a user centered approach (week 4). The project willl be developed in teams of 3-5 members		
Project design and development : 1. Users identification 2. Justify the need for the proposed product 3. Functionalities identification (Week 4-Week 6) 4. Building the conceptual model 5. Creating protoypes		

6. Evaluating prototypes (Week 8) 7. Applying the required changes to the prototype 8. Usability testing (Week 11) 9. Applying changes to the developed product in order to be used by people with disabilities/ designing an non-conventional interaction method to the product (Week 14)		

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- Students will be able to design interaction based on a user centred approach and to evaluate the quality of their prototypes, enhancing the quality of the developed products. Students will optionally present a technical report on a subject in the domain of Interaction Design evaluated to at most 1 point from the final grade.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course			
10.5 Seminar/lab activities	Project – students will be graded based on the quality of their projects and based on the quality of their technical reports (the project will represent 90% of the final grade and the technical report will represent 10% of the final grade). Technical report presentation is optional.	Grading of the project will be done for every stage in project development, the final grade will be computed based on the following criteria: • Use of appropriate methods to identify user needs (25%) • Use of design principles (30%) • Usability of the application (measured using a method from the literature) (30%) • Accessibility (15%) Grading for the technical report	100%

		will be done based on the following criteria: • State of the art in the approached subject • Identification of new problems/solutions to be studied • Quality of references • Oral presentation	
10.6 Minimum performance standards			
Students have to deliver a working software product that satisfies the client requirements.			

Date Signature of course coordinator Signature of seminar coordinator

17.04.2018 Ph. D. Lecturer Adriana Guran Ph. D. Lecturer
Adriana Guran

Date of approval Signature of the head of department

.... Ph. D. Prof. Anca Andreica