SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	**Babeş Bolyai University**
1.2 Faculty	**Faculty of Mathematics and Computer Science**
1.3 Department	**Department of Computer Science**
1.4 Field of study	**Computers and Information Technology**
1.5 Study cycle	**Bachelor**
1.6 Study programme / Qualification	**Information Engeneering**

2. Information regarding the discipline

2.1 Name of the discipline	**Development of applications for mobile platforms** **Dezvoltarea aplicatiilor pe platforme mobile**						
2.2 Course coordinator	Lect. Ph.D. Dan Cojocar						
2.3 Seminar coordinator	Lect. Ph.D. Dan Cojocar						
2.4. Year of study	**3**	2.5 Semester	**5**	2.6. Type of evaluation	**E**	2.7 Type of discipline	**Compulsory DS**

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 LP
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	10
Additional documentation (in libraries, on electronic platforms, field documentation)	10
Preparation for seminars/labs, homework, papers, portfolios, and essays	10
Tutorship	10
Evaluations	4
Other activities:	-

3.7 Total individual study hours	44
3.8 Total hours per semester	100
3.9 Number of ECTS credits	4

4. Prerequisites (if necessary)

4.1. curriculum	·
4.2. competencies	·

5. Conditions (if necessary)

5.1. for the course	·

5.2. for the seminar /lab activities	·

6. Specific competencies acquired

Professional Competencies	C3.1 Identifying classes of problems and solving methods that are specific to computing systems C3.2 Using interdisciplinary knowledge, solution patterns and tools, making experiments and interpreting their results C3.3 Applying solution patterns using specific engineering tools and mehods C4.1 Identifying and describing technologies, programming environments and various concepts that are specific to programming engineering C4.2 Explaining the role, interaction and operation patterns of software system components C4.3 Developying specifications and designing information systems using specific methods and tools C4.4 Managing the life cycle of hardware, software and communications systems based on performance evaluation
Transversal Competencies	CT1 Honorable, responsible, ethical behavior, in the spirit of the law, to ensure a professional reputation. CT3 Demonstrating initiative and proactive behavior for updating professional, economical, and organizational culture knowledge.

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

7.1 General objective of the discipline	· Knowledge of key base concepts for developing mobile applications.
7.2 Specific objective of the discipline	· Learn the Android platform. · Learn JavaScript frameworks for mobile development.

8. Content

8.1 Course	Teaching methods	Remarks
1. Base Android tooling - Android Studio. - Activity/Fragment lifecycle. - User interfaces.	Exposure: description, examples, discussion of case studies, live demo	
2. Lists and rest resources - Views - Background processing - Networking	Exposure: description, examples, discussion of case studies, live demo	
3. Master-details and rest resources - More views: NavigationDrawer - OkHttp, JsonReader, JsonWriter - ContentProviders	Exposure: description, examples, discussion of case studies, live demo	
4. Local persistence	Exposure:	

- Preferences and Files - Databases: SQLite, Room, Realm.	description, examples, discussion of case studies, live demo	
5. Securing mobile apps - Android security model - JSON Web Tokens - OAuth 2.0	Exposure: description, examples, discussion of case studies, live demo	
6. Synchronizing data - WebSockets - Local synchronization services - LoaderManagers	Exposure: description, examples, discussion of case studies, live demo	
7. Reactive programming - Realm - real-time database - Rx - reactive programming - Coroutines	Exposure: description, examples, discussion of case studies, live demo	
8. System services and sensors - Services - Processes - Sensors	Exposure: description, examples, discussion of case studies, live demo	
9. Animations - ValueAnimator. - ObjectAnimator. - Transitions framework	Exposure: description, examples, discussion of case studies, live demo	
10. Firebase Services - Authentication - Database - Remote Config	Exposure: description, examples, discussion of case studies, live demo	
11. Monetize - Ads - In-app billing - Firebase	Exposure: description, examples, discussion of case studies, live demo	
12. Awareness and nearby - Anticipate and react - Nearby - Physical Web	Exposure: description, examples, discussion of case studies, live demo	
13. Test your app - Junit - Mockito - UI Automator, Expresso - Firebase test lab - Performance testing	Exposure: description, examples, discussion of case studies, live demo	
14. Exam simulation and discussions - Sample exam requirement - Live exam simulation	Discussion of case studies, live exam simulation	

Bibliography
- Android Development. http://developer.android.com/index.html
- React Native. https://facebook.github.io/react-native/
- Flutter. https://flutter.io/docs
- Vogella. Android Development Tutorials. http://www.vogella.com/android.html

8.2 Seminar / laboratory	Teaching methods	Remarks
Lab 1-2. Getting Started - Create Android and Flutter sample applications. - Discuss the L1 and L2 assignments.	Exposure: description, examples, discussion of case studies, live demo	
Lab 3-4. Specification evaluation.	Exposure: description, discussion. Evaluation.	
Lab 5-6. CRUD Specifications discussion. Specification reevaluation.	Exposure: description, discussion. Evaluation.	
Lab 7-8. Evaluate the UI module.	Exposure: description, discussion. Evaluation.	
Lab 9-10. Evaluate the local persistence logic.	Exposure: description, discussion. Evaluation.	
Lab 11-12. Evaluate the network/online communication logic.	Exposure: description, discussion. Evaluation.	
Lab 13-14. Bonus problem. Project evaluation.	Exposure: description, discussion. Evaluation.	

Bibliography
- Android Development. http://developer.android.com/index.html
- React Native. https://facebook.github.io/react-native
- Flutter. https://flutter.io/docs
- Vogella. Android Development Tutorials. http://www.vogella.com/android.html

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

- The course respects the IEEE and ACM Curricula Recommendations for Computer Science studies.
- The course exists in the studying program of all major universities in Romania and abroad.
- The content of the course is considered the software companies as important for average programming skills.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	- the basic principle of the domain; - apply the course concepts - problem-solving	Practical examination	40 %
10.5 Seminar/lab activities	- be able to implement course concepts and algorithms - apply techniques for different classes of programming languages	- Practical evaluation during the semester. - Portfolio	60 %
10.6 Minimum performance standards			
➢ Attend 90% of lab activities during the semester ➢ At least grade 5 (from a scale of 1 to 10) at both the practical exam and laboratory work.			

Date	Signature of course coordinator	Signature of seminar coordinator
May 2022	Lect. Ph.D. Dan Cojocar	Lect. Ph.D. Dan Cojocar

Date of approval

Signature of the head of department

Prof. Ph.D. Laura Silvia Diosan

24.05.2022