Subject programme

1. Subject name / subject module: **Mobile Devices Programming**
2. Lecture language: English
3. The location of the subject in study plans:
   - Area or areas of the studies: **Computer Engineering and Mechatronics**
   - Degree of the studies: **1st degree studies**
   - Ftield or fields (implementation of effects standard): **Mechatronics**
4. Supervision of subject implementation:
   - The Institute / Another unit: **Institute of Informatics and Mechatronics**
   - The person responsible for the subject: **Skiba Grzegorz, mgr inż.**
   - People cooperating in the development of the programme of the subject:
5. The number of hours and forms of teaching for individual study system and the evaluation method:

Mode of study			Teaching activities with the tutor																		Total
			Form of classes																		
	SOW	ECTS	Laboratory work	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS
Full-time studies			27	36	2,5																2,5
Part-time studies																					
Credit rigor			Graded assignment																		

6. Student workload – ECTS credits balance:
   1 ECTS credit corresponds to 25-30 hours of student work needed to achieve the expected learning outcomes including the student's own work

Activity (please specify relevant work for the subject)	Hourly student workload (full-time studies/part-time studies)
Participation in lectures	-
Participation in laboratory classes	27
Preparation to laboratory classes	24
Independent study of the subject	10
Participation in an exam / graded assignment	2
Total student workload (TSW)	63
ECTS credits	2,5
* Student's workload related to trainings	63
Student's workload in classes requiring direct participation of academic teachers	27

7. Implementation notes: recommended duration (semesters), recommended admission requirements, relations between the forms of classes:
   - Recommended admission requirements – none.
   - Recommended duration of the subject is taken from the course plan.
8. Specific learning outcomes – knowledge, skills and social competence:

Specific learning outcomes for the subject		Form	Teaching method	Methods for testing of (checking, assessing) learning outcomes
Outcome symbol	Outcome description			
Knowledge				
K_W04	A student has basic knowledge in the field of mobile systems in mechatronics, necessary to apply this knowledge in practice by developing mobile systems and applications, especially for Android devices using appropriate system components, technologies and t	Laboratory work	Inquiry methods	Student learning activities.
K_W06	A student knows and understands selected specific issues related to programming in Java language and databases to be used in mobile applications for Android system and is able to apply the knowledge of components available for this system in real-life envir			
K_W10	A student has detailed knowledge of Java programming language, databases in web and mobile applications, using application programming interfaces that use PHP language, security issues related to mobile applications communicating through Internet and embedd			
Skills				
K_U09	A student is able to make a preliminary analysis, a simulation and a prototype of an application or mobile device using Android platform, taking into consideration the aspects of quality of the final product and an economic impact of the proposed solution.	Laboratory work	Inquiry methods	Student learning activities.

K_U15	Student is able to solve tasks related to mobile systems and devices in Mechatronics, especially those related to Android system, using appropriate methods and materials in order to provide a suitable solution.			

9. Assessment rules / criteria for each form of education and individual grades:

0% - 50%	ndst	80% - 86%	db
51% - 70%	dst	87% - 93%	db+
71% - 79%	dst+	94% - 100%	bdb

Activity	Grades	Calculation	To Final
Tasks done during laboratory classes	dst, db, bdb, db (3,4,5,4)	arithmetic mean (3,5,4,4)	4.0
Final result			4.0
Grade		4.0/5 = 80%	**db (4.0)**

10. The learning contents with the form of the class activities on which they are carried out:
(Laboratory work)

1. Using Android UI objects: Buttons; EditTexts; TextViews; Layouts; Views; Events;

2. Communication inside Android application: Saving and reading data; Shared Preferences, Intents;

3. Creating synchronous and asynchrous methods in Android;

4. Using HTTP protocol for communication with remote Application Programming Interface (API): RESTful Web services; JSON data format; GET and POST methods;

5. Long-running background operations: Service; AlarmManager;

6. Google Maps SDK for Android: Getting API Key; Configuration; Using markers with popups;

7. Configuring and developing notifications under certain conditions.

11. Required teaching aids:

a. Lecture - multimedia projector

b. Laboratory classes - specialist laboratory

12. Literature:
a. Basic literature:
- Jackson W.: Android Apps for Absolute Beginners, Springer, Lompoc, 2017.
- Hagos T.: Learn Android Studio 3, Springer, Apress, Berkeley, 2018.

b. Supplementary literature:
- Converse T., Park J., Morgan C., Kaczmarek D.: PHP5 and MySQL bible, Wiley Publishing, Inc., Indianapolis, 2004.

13. Available educational materials divided into forms of class activities (Author's compilation of didactic materials, e-learning materials, etc.)

14. Teachers implementing particular forms of education:

Form of education	Name and surname
1. Lecture	
2. Laboratory classes	Skiba Grzegorz, mgr inż.