Subject programme

1. Subject name / subject module: **HMI Design**
2. Lecture language: **English**
3. The location of the subject in study plans:
   - Area or areas of the studies: **Computer Control Systems Engineering**
   - Degree of the studies: **2nd degree studies**
   - Field or fields (implementation of effects standard): **Mechatronics**
4. Supervision of subject implementation:
   - The Institute / Another unit: **The Institute of Informatics and Mechatronics**
   - The person responsible for the subject: **Skiba Małgorzata, 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

Teaching activities with the tutor																						Total
Form of classes / Mode of study		SOW	ECTS	Laboratory work	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS
Full-time studies				22	28	2																**2**
Part-time studies																						
Credit rigor	...			Graded assigment																		

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 laboratory classes	**22**
Preparing a final project	**26**
Participation in an exam / graded assignment / final grading	**2**
Total student workload	**50**
ECTS credits	**2**
* Student's workload related to practical forms	**50**
Student's workload in classes requiring direct participation of academic teachers	**22**

7. Implementation notes: recommended duration (semesters), recommended admission requirements, relations between the forms of classes:

   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_W07	**A Student has structured and theoretically founded knowledge of creating a user interface in vector graphics editing software and Android Studio, covering key issues and selected issues in the field of advanced detailed knowledge, as well as the practical application of this knowledge in mechatronics through the use of appropriate methods and tools.**	**Laboratory work**	**Inquiry methods**	**Final project, Student learning activities**
Skills				
K_U02	**A student is able to use information and communication technologies (ICT) with particular emphasis on the development of project documentation and the use of engineering graphics for the implementation of projects and tasks in the field of mechatronics, especially in the field of creating user interfaces.**	**Laboratory work**	**Inquiry methods**	**Final project, Student learning activities**

Social competence				
K_K01	A student is ready to critically assess the acquired knowledge and received content, understands the need for continuous improvement of the substantive workshop, can set directions and areas of personal professional self-improvement, and inspire and organize the learning process of other people.	Laboratory work	Inquiry methods	Final project, Student learning activities

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

0% - 50%	ndst	**81% - 90%**	db
51% - 70%	dst	**91% - 93%**	db+
71% - 80%	dst+	**94% - 100%**	bdb

Activity	Grades	Calculation	To Final
Tasks done during laboratories	**bdb (5)**	**5*30%**	**1,5**
Attendance	**on 80% of all classes**	**0,80*5 -> 4,0*20%**	**0,8**
Final project	**dst, db, bdb (3,4,5)**	**3/4/5 * 50%**	**2,5**
Final result			**4, 8**

10. The learning contents with the form of the class activities on which they are carried out

(Laboratory work)

1. User Interface design: basics of vector graphic software; interfaces of mobile applications; designing for multiple devices and resolutions; preparing layouts for coding - cutting the layout into individual elements and exporting for different resolutions

2. Programming in Java for mobile devices: starting project in Android Studio; preparing Java classes and layouts in Android Studio; implementing graphic design into the Android Studio project; handling buttons, activities, switching between screens; role and uses of string.xml; preparing multiple language versions of mobile applications.

3. Adaptation of the application for various devices and resolutions: problems connected to dpi, ppi;

11. Required teaching aids

Laboratory classes - specialist laboratory

12. Literature:

a. Basic literature:

Wallace J., "Android Apps for Absolute Beginners", Springer, 2017

Leen Ammeraal, Kang Zhang, Computer Graphics for Java Programmers, Springer, 2017

a. Supplementary literature:

The official Affinity Designer Workbook

b. Internet sources:

https://affinity.serif.com/en-gb/tutorials/designer/desktop/, tutorials on how to use Affinity Designer

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. Laboratory classes	Skiba Małgorzata, mgr inż.