Subject programme

1. Subject name / subject module: **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**
   - Field 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: **Uniszkiewicz Cezary, mgr**
   - 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																						
Mode of study	Form of classes																					Total
		SOW	ECTS	Laboratory work	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS
Full-time studies				43	57	4																4
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 laboratory classes	**43**
Preparation to the practical test	**35**
Independent study of the subject	**20**
Participation in an exam / graded assignment / final grading	**2**
Total student workload (TSW)	**100**
ECTS credits	**4**
* Student's workload related to practical forms	**100**
Student's workload in classes requiring direct participation of academic teachers	**43**

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_W04	**Student has advanced knowledge in the field of technical informatics especially programming in C#, necessary to understand at an advanced level the complex dependencies of mechatronic systems and to apply this knowledge in practice through the use of appr**	**Laboratory work**	**inquiry methods**	**Practical test**
K_W06	**Student knows and understands basics issues in the field of technical computer science related to programming in C# language, as well as practical applications of this knowledge.**			

K_W10	Student has detailed knowledge related to the application of the following in mechatronics: methodology of structured programming in C# language.			
Skills				
K_U02	Student is able to use their programming knowledge to formulate and solve problems and perform tasks typical for professional activity in the mechatronics industry.	Laboratory work	inquiry methods	Practical test
K_U05	Student has sufficient skills to use the norms and standards appropriate for software design.			
K_U15	Student is able to assess the suitability and choose the appropriate methods and tools to solve a simple programming task in the field of Mechatronics.			

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
Practical test	**bdb (5)**	**5*50%**	**2,5**
Final result			**5**

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

(Laboratory work)

1. Visual Studio;

2. Anatomy of a Simple Program;

3. Compilation and Debugging ;

4. Creating Projects and Solutions;

5. Basic keywords;

6. Types of variables;

7. Arithmetical operations on variables;

8. Statements and Expressions;

9. Arrays (1-D, and 2-D);

10. Lists;

11. Structs;

12. Functions ;

13. Files and streaming

11. Required teaching aids

Laboratory classes - specialist laboratory

12. Literature:

a. Basic literature:

Microsoft Visual C#. Step by step., Sharp John, Redmond, 2015

a. Supplementary literature:

Beginning C# 2008, Christian Gross, New York, 2007

b. Internet sources:

https://docs.microsoft.com/

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	Uniszkiewicz Cezary, mgr