Subject programme

1. Subject name / subject module: **Elective Subject: Fundamentals of machine operation**
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: **Szczutkowski Marek, dr 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																						
Mode of study	Form of classes																					Total
	Exercises	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS
Full-time studies	11	14	1																			1
Part-time studies																						
Credit rigor																						

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 exercises	11
Preparation to exercises	4
Preparation to the final test	8
Participation in an exam / graded assignment	2
Total student workload (TSW)	25
ECTS credits	1
* Student's workload related to trainings	25
Student's workload in classes requiring direct participation of academic teachers	11

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_W16	**A student Student knows and understands selected specific issues in the field of maintenance engineering.**	**Classes**	**Inquiry methods**	**Final test**
Skills				
K_U15	**A student is able to choose the appropriate methods, tools and materials to solve simple problems in the field of maintenance engineering.**	**Classes**	**Inquiry methods**	**Final test**

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
Final test	bdb (5)	5 * 100%	5,0
Final result			5,0
Grade		5,0/5 = 100%	**bdb (5,0)**

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

(Classes)

1. Basic concepts and exploitation laws;
2. Machine operation systems;
3. Processes controlled and uncontrolled in operation - description of processes;
4. Ensuring serviceability, wear, damage;
5. Lubrication in the initial operation of cooperating elements, use of machines and repairs;
6. Operating documentation (DTR), virtual machine operation;
7. Connecting operation with the construction of machines and secretaries**.**

11. Required teaching aids

a. Lecture - multimedia projector.

b. Laboratory classes - specialist laboratory.

c. Exercises - a room adapted for conducting classes in the form of exercises / workshops, multimedia projector.

12. Literature:

a. Basic literature:

- Mobley K.R., Higgins L.R., Wikoff D.J., Maintenance Engineering Handbook, McGraw-Hill , 2008

b. Supplementary literature:

- Richardson, D. C., Plant Equipment and Maintenance Engineering Handbook, McGraw-Hill Education, 2014
- Smit K., Maintenance Engineering and Management, Delft Academic Press , 2014

c. Internet sources:

- http://www.gammaexplorer.com/wp-content/uploads/2014/03/Maintenance-Engineering-Handbook-7th-Edition.pdf, 12.2020
- https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-13890.pdf, 12.2020
- https://www.vssut.ac.in/lecture_notes/lecture1430512365.pdf, 12.2020

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	
3. Training	
4. Project classes	
5. Workshop classes	Szczutkowski Marek, dr inż.
6. Simulation game	
7. Language classes	