Subject programme

1. Subject name / subject module: **Mechanics**
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: **Soboczyńska Dominika, 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: Form of classes																					Total
	...	SOW	ECTS	...	SOW	ECTS	Workshop	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS
Full-time studies							15	35	2													**2**
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	15
Preparation to laboratory classes	25
Independent study of the subject	10
Participation in an exam / graded assignment	-
Total student workload (TSW)	50
ECTS credits	2
* Student's workload related to trainings	50
Student's workload in classes requiring direct participation of academic teachers	15

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_W03	**A student has knowledge of mathematics, physics, chemistry and other areas of science needed to formulate and solve problems related to mechanics**	**Workshop**	**Inquiry methods**	**Student learning activities.**
K_W07	**A student has a basic knowledge of the modelling of bodies in mechanics and the statics of bar systems (force reduction, equilibrium states of forces, internal forces in truss bars)**			
K_W11	**A student has an ordered, theoretically founded knowledge in the field of statics of statically determinate structures**			
Skills				
K_U02	**A student can use his knowledge and solve problems related to mechanics used in the construction of mechatronic machines and devices**	**Workshop**	**Inquiry methods**	**Student learning activities.**
K_U16	**A student can determine internal forces in statically determinate systems; is able to accept and interpret static diagrams of bar structures, is able to formulate and use static equilibrium equations**			
Social competence				
K_K02	**A student is aware of the responsibility for the consequences of the adopted engineering solutions**	**Workshop**	**Inquiry methods**	**Student learning activities.**

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
Correct solution for excercise no 1	**bdb** (91%-100%), db+ (81%-90%), db (71%-80%), dst+ (61%-70%), dst (51%-60%), ndst (0%-50%)	33,33% * 5	1,65
Correct solution for excercise no 2	**bdb** (91%-100%), db+(81%-90%), db (71%-80%), dst+ (61%-70%), dst (51%-60%), ndst (0%-50%)	33,33% * 5	1,65
Correct solution for excercise no 3	**bdb** (91%-100%), db+ (81%-90%), db (71%-80%), dst+ (61%-70%), dst (51%-60%), ndst (0%-50%)	33,34% * 5	1,70
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:

(Workshop)

1. Newtons Laws of Motion; Projectiles and Charged Particles;

3.Momentum and Angular Momentum;

4.Energy;

5. Oscillations;

6.Calculus of Variations;

7.Lagranges Equations;

8.TwoBody CentralForce Problems;

9.Mechanics in Noninertial Frames;

10.Rotational Motion of Rigid Bodies;

11.Coupled Oscillators and Normal Modes;

12. Nonlinear Mechanics and Chaos;

13. Hamiltonian Mechanics;

14. Collision Theory;

15. Continuum Mechanics.

11. Required teaching aids:

a. Lecture - multimedia projector

b. Laboratory classes/Workshop - specialist laboratory

12. Literature:

a. Basic literature:

- Hartsuijker, C., Welleman, J. W., Engineering Mechanics, Springer, 2006
- Gross, D., Hauger, W., Schröder, J., Wall W.A., Javier Bonet J., Engineering Mechanics 2, Springer, 2018
- Silva, V., D., Mechanics and Strength of Materials, Springer, 2006

b. Supplementary literature:

- Gross, D., Hauger, W., Schröder, J., Wall W.A., Javier Bonet J., Govindjee, S., Engineering Mechanics 3, Springer, 2014
- Goodno, B.J., Gere, M., J., Mechanics of Materials, Cengage Learning, UK, 2018

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	Soboczyńska Dominika, mgr inż
6. Simulation game	
7. Language classes	