Subject programme

1. Subject name / subject module: **Advanced Computer Aided 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: **Dudziak Piotr, 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																							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				45	55	4																	4
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	**45**
Preparing final project	**53**
Participation in an exam / graded assignment / final grading	**2**
Total student workload	**100**
ECTS credits	**4**
* Student's workload related to practical forms	**100**
Student's workload in classes requiring direct participation of academic teachers	**45**

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_W06	**Student has an in-depth knowledge and understanding of selected facts and phenomena, explaining the complex relationships between them, constituting advanced general knowledge in the field of advanced computer aided design related to designing parts, sheet metal parts as well as creating 2D and 3D documentation. Student knows how to apply selected software.**	**Laboratory work**	**Inquiry methods**	**Student learning activities**
Skills				
K_U02	**Student is able to use information and communication technologies (ICT) with particular emphasis on the development of**	**Laboratory work**	**Inquiry methods**	**Student learning activities**

	project documentation and the use of engineering graphics for the implementation of projects and tasks in the field of advanced computer aided design related to designing parts, sheet metal parts as well as creating 2D and 3D documentation. Student knows how to apply selected software.			
Social competence				
K_K01	**Student is ready to critically assess the acquired knowledge and received content, understands the need for continuous improvement of the substantive workshop in the field of advanced computer aided design related to designing parts, sheet metal parts as well as creating 2D and 3D documentation. Student knows how to apply selected software.**	**Laboratory work**	**Inquiry methods**	**Student learning activities**

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

0% - 60%	ndst	**81% - 90%**	db
61% - 70%	dst	**91% - 93%**	db+
71% - 80%	dst+	**94% - 100%**	bdb

Activity	Grades	Calculation	To Final
Performing tasks during classes	**bdb (5)**	**5*10%**	**0,5**
Attendance	**bdb (5)**	**5*10%**	**0,5**
Project	**bdb (5)**	**5*80%**	**4**
Final score			**5**

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

(Laboratory work)

1. Solid modeling: parts and sheet metal parts;

2. Creating 3D assembly documentation;

3. Creating 2D assembly documentation;

4. Creating 2D executive documentation;

5. Frames;

6. ERA;

7. Simulations (FEM);

8. Simulations (motors)

11. Required teaching aids

Laboratory classes - specialist laboratory

12. Literature:

a. Basic literature:

Lombard M.: Solid Edge with synchronous technology, Siemens AG, 2017.
Stroud I., Nagy H.: Solid Modelling and CAD Systems, Springer, 2011.

a. Supplementary literature:

White T., Nagy T., Dick B.: Siemens Engineering Design, Siemens Digital Industries Software, 2020.

b. Internet sources:

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	Dudziak Piotr, dr inż.