

Subject programme

1. Subject name / subject module: **Elective Subject: Fundamentals of machine component design**
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:

Mode of study	Teaching activities with the tutor																					Total ECTS	
	Form of classes																						
	...	SOW	ECTS	...	SOW	ECTS	Workshop	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	...	SOW	ECTS	ECTS	
Full-time studies							11	14	1														
Part-time studies									1														
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 exercises	11
Preparation to exercises	4
Independent study of the subject	-
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 is familiar with common machine elements such as shafts, fasteners, springs, bearings, and gears as well as various manufacturing processes.	Classes	Inquiry methods	Final test
Skills				
K_U15	A student is able to solve simple, open-ended design problems.	Classes	Inquiry methods	Final test

Subject programme

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. Welded joints
2. Welds and types of welds
3. Allowable stresses for welds, design cross-section of the weld
4. Tolerances and fits
5. Dimension tolerances and types of deviations
6. Bolted joints
7. Form-fit joints
8. Key and spline joints, bolt joints, clamping expansion joints, shaped machine shafts
9. Plain bearings,
10. Roller bearings
11. Belt transmissions
12. Geometric dependencies, tension in tendons and shaft loads
13. Gear transmissions
14. Springs.

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.

Subject programme

12. Literature:

a. Basic literature:

- Nisbett J.K., Budynas R., Shigley's Mechanical Engineering Design, MA: McGraw-Hill, 2011

b. Supplementary literature:

- Golenko A., Fundamentals of Machine Design, A Coursebook for Polish and Foreign Students, Politechnika Wroclawska, 2010
- Ulman D., The Mechanical Design Process, McGraw-Hill Education, 2009
- Nee A.Y.C., Handbook of Manufacturing Engineering and Technology,

c. Internet sources:

- http://mech.sharif.edu/~mechengdesign/Shigley%27s%20Mechanical%20Engineering%20Design_TextBook.pdf, 12.2020
- https://www.dbc.wroc.pl/Content/7154/Golenko_Fundamentals%20of%20Machine%20Design.pdf, 12.2020
- <https://nptel.ac.in/courses/112/105/112105124/>, 12.2020
- <https://www.youtube.com/channel/UCGuEneVKA467ZgBxIBeCkJA/videos>, 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	