# Subject programme

1. Subject name / subject module: **Diploma laboratory/ Diploma workshop**
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: **Szychta Elżbieta, prof. dr hab. 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 |
| | | SOW | ECTS | Laboratory work | SOW | ECTS | ... | SOW | ECTS | ... | SOW | ECTS | ... | SOW | ECTS | ... | SOW | ECTS | ... | SOW | ECTS | ECTS |
| Full-time studies | | | | 4 | 71 | 3 | | | | | | | | | | | | | | | | 3 |
| 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 | **4/0** |
| Preparation of technical documentation for engineering project | **60/0** |
| Independent study of the subject | **9/0** |
| Participation in an exam / graded assignment / final grading | **2/0** |
| Total student workload (TSW) | **75/0** |
| ECTS credits | **3** |
| * Student's workload related to practical forms | **75/0** |
| Student's workload in classes requiring direct participation of academic teachers | **4/0** |

7. Implementation notes: recommended duration (semesters), recommended admission requirements, relations between the forms of classes:

   Formulated topic of the engineering project

   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_W11** | **Student has basic knowledge of technical standards and norms as well as the life cycle of mechatronic devices, facilities and systems.** | **Laboratory work** | **inquiry methods,** | **Activity in class, Assessment of individual work with tasks, measurements, structures related to the implementation of an engineering project** |
| **Skills** | | | | |
| **K_U01** | **Student is able to obtain information (in Polish and English) through the selection of sources, integrate them, make their interpretation, critical analysis and synthesis, as well as draw conclusions and formulate opinions.** | **Laboratory work** | **inquiry methods,** | **Activity in class, Assessment of individual work with tasks, measurements, structures related to the implementation of an engineering project** |

| | | | | |
|---|---|---|---|---|
| K_U02 | Student is able to use their knowledge - to formulate and solve problems and perform tasks typical for professional activity in the mechatronics industry. | | | |
| K_U05 | Student has experience and skills to use the norms and standards applicable in the mechatronics industry. | | | |
| K_U07 | Student is able to use information and communication techniques with particular emphasis on the creation of project documentation, the use of engineering graphics (CAD software) for the purposes of implementing projects and smaller tasks in the fie | | | |
| K_U10 | Student is able to see and diagnose non-technical aspects, including legal, social, environmental and economic aspects in the context of the functioning of mechatronic systems at the stage of formulating and solving design, construction, implementa | | | |
| K_U13 | Student is able to evaluate the effectiveness, functionality and economics of existing devices and mechatronic systems. | | | |

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

Laboratory classes:

| Activity | Grades | Calculation | To Final |
|---|---|---|---|
| **Implementation of the content for engineering project** | **bdb (5)** | **5*50%** | **2,5** |
| **Ability to use standards** | **bdb (5)** | **5*10%** | **0,5** |
| **Preparation of technical documentation** | **bdb (5)** | **5*40%** | **2** |
| **Participation in the discussion** | **bdb (5)** | **5*10%** | **0,5** |
| **Final result** | | | **5** |

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

**Laboratory classes**

1. Implementation of the practical part of the diploma project;
2. Collection of measurement results, conducting experimental tests;
3. Preparation of documentation.

**11.** Required teaching aids

Laboratory classes - specialist laboratory

**12.** Literature:

**a.** Basic literature:


- Sowińska B., Graduate's guidebook, Bydgoszcz, 2012, ISBN 978-83-61036-62-3.
- Sowińska B., Rules for making footnotes, references and bibliography attached, Ed. 2 supplements and amendments, Bydgoszcz, 2012, ISBN 978-83-61036-548.


**b.** Supplementary literature:


- Kaczmarek T. T., A guide for students writing a bachelor's or master's thesis [online] 2009 [access: August 30, 2011], Available on the World Wide Web:
- Kawczyński S., The problem of plagiarism in higher education. Characteristic electronic anti-plagiarism system, "E-mentor" [online], No. 2 (19) / 2007 [access: 26 July 2011], Available on the World Wide Web:, ISSN 1731-7428.
- Maćkiewicz J., How to write scientific texts? Ed. 2 enlargement, Gdańsk, 1996, ISBN 83-7017- 694-1.
- Majchrzak J., Mendel T., Methodology of writing master's and diploma theses, ed. 3 Poznań, 1999, ISBN 83-87152-69-2.


**c.** 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 |
|---|---|
| 2. Laboratory classes | Szychta Elżbieta, prof. dr hab. inż. |