**SYLLABUS**

**regarding the qualification cycle FROM 2023TO 2024**

1. Basic Course/Module Information

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| --- | --- |
| Course/Module title | **Technical metrology** |
| Course/Module code \* |  |
| Faculty (name of the unit offering the field of study) | *College of Natural Sciences* |
| Name of the unit running the course | *Institute of Materials Engineering* |
| Field of study | **MECHATRONICS** |
| Qualification level  | FIRST-CYCLE STUDIES |
| Profile | *PRACTICAL* |
| Study mode | *FULL-TIME STUDIES* |
| Year and semester of studies | *YEAR 2, SEMESTER 3* |
| Course type | *LECTURES AND LABORATORIES* |
| Language of instruction | ENGLISH |
| Coordinator |  |
| Course instructor | *WOJCIECH ŻYŁKA, PhD, Eng.* |

\* - as agreed at the faculty

1.1.Learning format – number of hours and ECTS credits

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Semester(n0.) | Lectures | Classes | Colloquia | Lab classes | Seminars | Practical classes | Internships | others | **ECTS credits**  |
| 3 |  |  |  | 30 |  |  |  |  | 5 |

1.2. Course delivery methods

~~- conducted in a traditional way~~

Contact methods and techniques and distance education

1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)

pass with a grade

2. Prerequisites

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| Basic knowledge of technical drawing. He knows the concepts, laws and principles of physics and mathematics. |
| He can perform mathematical operations to solve given tasks. |

3. Objectives, Learning Outcomes, Course Content, and Instructional Methods

3.1. Course/Module objectives

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| --- | --- |
| O1 | Providing the student with the knowledge in the field of technical metrology of geometric quantities. Getting to know the method of measuring quantities and non-electric and the principles of measuring the results. |
| O2 | Acquiring the ability to use measuring instruments. |

3.2. Course/Module Learning Outcomes (to be completed by the coordinator)

|  |  |  |
| --- | --- | --- |
| Learning Outcome | The description of the learning outcome defined for the course/module | Relation to the degree programme outcomes |
| LO\_01 | KNOWLEDGE: The student has the knowledge that allows you to navigate at the level of the method, setting tools for inspecting the volume of production related to production. Classifies measurement errors. |  |
| LO\_02 | SKILLS: He can set up a measurement system using dedicated measuring instruments, as well as an environment of virtual measuring instruments. |  |
| LO\_03 | SOCIAL COMPETENCES: The student can define priorities for the implementation of tasks, and work in a group. |  |

**3.3. Course content (to be completed by the coordinator)**

Laboratories

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| Content outline  |
| Classification of measuring instruments. Measurements of hole diameters as well as roundness and cylindricity deviations. |
| Measurements of shaft diameters and deviations of roundness and cylindricity. |
| Measurement of threads, angles and arcs |
| DC voltage measurement |
| Resistance measurement |
| Oscilloscope |

3.4. Methods of Instruction

LABORATORY – run in a traditional way: WORK IN GROUPS, CONNECTING CIRCUITS AND TAKING MEASUREMENTS, ANALYSIS OF EXAMPLES, DISCUSSION.

4. Assessment techniques and criteria

4.1 Methods of evaluating learning outcomes

|  |  |  |
| --- | --- | --- |
| Learning outcome | Methods of assessment of learning outcomes (e.g. test, oral exam, written exam, project, report, observation during classes) | Learning format (lectures, classes,…) |
| LO-01 | *OBSERVATION DURING LABORATORIES* | LABORATORY |
| LO-o2 | *OBSERVATION DURING LABORATORIES, REPORT (TEST)* | LABORATORY |
| LO-o3 | *OBSERVATION DURING LABORATORIES, REPORT (TEST)* | LABORATORY |

4.2 Course assessment criteria

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| Laboratory: positive evaluation of tests and assessment of homework (reports) and activity during classes. |

5. Total student workload needed to achieve the intended learning outcomes

– number of hours and ECTS credits

*OBSERVATION DURING CLASSES*

|  |  |
| --- | --- |
| Activity | Number of hours |
| Scheduled course contact hours | 30 |
| Other contact hours involving the teacher (consultation hours, examinations) | 10 |
| Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.) | 80 |
| Total number of hours | 125 |
| Total number of ECTS credits | 5 |

\* One ECTS point corresponds to 25-30 hours of total student workload

6. Internships related to the course/module

|  |  |
| --- | --- |
| Number of hours |  |
| Internship regulations and procedures |  |

7. Instructional materials

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| Recommended reading list: * + - 1. Krawczyk M.: Metrologia i kontrola jakości. OWPRz. Rzeszów, 1995 - pozycja dostępna u prowadzącego zajęcia
			2. Chwaleba A., Poniński M., Siedlecki A.: Metrologia elektryczna. Wydawnictwa Naukowo-Techniczne, Warszawa, 2014
			3. Rylski A. Wojturski J.: Metrologia elektryczna. OWPRz. Rzeszów 2013 - pozycja dostępna u prowadzącego zajęcia
			4. Białas S.: Metrologia techniczna z podstawami tolerowania wielkości geometrycznych dla mechaników
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| Complementary reading: Materials sent by the teacher during the classes. |

Approved by the Head of the Department or an authorised person