# COURSE DESCRIPTION CARD

## Faculty of Electrical Engineering

**Field of study**

- Electrical and Electronics Engineering

**Degree level and programme type**

- Bachelor’s degree

**Specialization/ diploma path**

- Study profile

**Course name**

- Instrumentation and Measurements

**Course code**

- IS-FEE-10047S

**Course type**

- elective

**Forms and number of hours of tuition**

- L: 15, C: 30, LC: 30, P: 0, SW: 0, FW: 0, S: 0

**Semester**

- summer

**No. of ECTS credits**

- 5

**Entry requirements**

- -

**Course objectives**

- To understand the basic working principles of electrical and electronic measuring instruments. To receive the skills to managing and operating analogue and digital instruments for a particular application. To learn the ways of presenting and interpreting results. To calculate the uncertainty of the direct and indirect single and multiple measurements.

**Course content**

- Introduction to metrology and measuring instruments; errors and uncertainties; instrument transformers and their applications; resistance, voltage and current measurements; power and energy measurements; impedance measurement; frequency measurement; analog-to-digital converters; digital oscilloscope.

**Teaching methods**

- lecture, laboratory classes

**Assessment method**

- lecture - written exam; laboratory classes - evaluation of written report, assessment of preparation to do exercises, evaluation of completing a measurement task.

**Symbol of learning outcome**

**Learning outcomes**

**Reference to the learning outcomes for the field of study**

- LO1: interprets the results of measurements and presents them in an appropriate form
- LO2: performs proper measurements of electrical quantities
- LO3: calculates limiting errors and uncertainties
- LO4: applies appropriate methods to measure basic electrical quantities
- LO5: implements and operates appropriate equipment in a measuring experiment

**Symbol of learning outcome**

**Methods of assessing the learning outcomes**

**Type of tuition during which the outcome is assessed**

- LO1: passing short tests before laboratory classes, making a report, passing an exam
  - L, LC
- LO2: making a report about laboratory exercise, completing a measurement task
  - LC
- LO3: making a report, passing an exam
  - L, LC
<table>
<thead>
<tr>
<th>LO4</th>
<th>evaluation of completing a measurement task, passing an exam</th>
<th>L,LC</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO5</td>
<td>evaluation of completing a measurement task, making a report</td>
<td>LC</td>
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### Student Workload (in hours) | No. of hours |
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<tbody>
<tr>
<td>Calculation</td>
<td></td>
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<tr>
<td>lecture attendance</td>
<td>15</td>
</tr>
<tr>
<td>participation in classes, laboratory classes, etc.</td>
<td>30</td>
</tr>
<tr>
<td>preparation for classes, laboratory classes, projects, seminars, etc.</td>
<td>30</td>
</tr>
<tr>
<td>working on projects, reports, etc.</td>
<td>20</td>
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<tr>
<td>participation in student-teacher sessions related to the classes/seminar/project</td>
<td>10</td>
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<tr>
<td>implementation of project tasks</td>
<td>0</td>
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<tr>
<td>preparation for and participation in exams/tests</td>
<td>20</td>
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<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>125</strong></td>
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### Quantitative Indicators | HOURS | No. of ECTS credits |
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<tr>
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<tbody>
<tr>
<td>Student workload – activities that require direct teacher participation</td>
<td>57</td>
<td>2</td>
</tr>
<tr>
<td>Student workload – practical activities</td>
<td>90</td>
<td>3</td>
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### Basic References

### Supplementary References

### Organisational Unit Conducting the Course
- Department of Electrotechnics, Power Electronics and Power Engineering

### Date of Issuing the Programme
- 20.01.2020

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW – field work, S – seminar