Course: Process Measurement and Control

Language: English

Lecturer: Prof. Nenad Bolf, Ph. D.

<table>
<thead>
<tr>
<th>TEACHING</th>
<th>WEEKLY</th>
<th>SEMESTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>Laboratory</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Seminar</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td><strong>Overall:</strong></td>
<td><strong>90</strong></td>
<td></td>
</tr>
</tbody>
</table>

**ECTS:** 7

**E-LEARNING:**
Electronic educational materials and distance learning will be available using Moodle programming tool. The teaching process will be combined partially via Internet wherein the teacher will take over the role of mentor, partly in the classroom. Remote control application for distance processes approach will be demonstrate during laboratory work.

**PURPOSE:**
To teach students modern methods of process control, measurements and diagnostics, metrology and metrological infrastructure.

**THE CONTENTS OF THE COURSE:**


Measuring and testing; conception, principles and theoretical foundations. Measuring sensor, transducer and instruments characteristics.

Calibration and traceability, measuring error and uncertainty. Reliability, repeatability and reproducibility of measurements.


Controllers. On-off control. Proportional, integral and derivative control. PID controller.


Cascade control. The concept of cascade control. Simple applications. Complex examples. Guiding principles for implementing cascade control.


**GENERAL AND SPECIFIC COMPETENCE:**

Acquiring knowledge on modern methods of process measurement and control, control systems, diagnostics, modelling and computer simulations. Using of process measurement and control equipment.

**KNOWLEDGE TESTING AND EVALUATION:**

Written and oral exams.

**MONITORING OF THE COURSE QUALITY AND SUCCESSFULNESS:**

Student’s survey

**LITERATURE:**

Course material, presentations and simulations on the course web page.


Smith, C.L. *Advanced Process Control*, Wiley-AIChe, 2010