Module 620 Automation Systems

1 Module Code

<table>
<thead>
<tr>
<th>1</th>
<th>Module Code</th>
<th>Degree Program / Target Group(s)</th>
<th>Semester</th>
<th>Starts in</th>
<th>Duration</th>
<th>Module Type</th>
<th>Workload (h)</th>
<th>ECTS Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>620</td>
<td>WNB</td>
<td>4</td>
<td>Winter T.</td>
<td>1 Semester</td>
<td>Mandatory</td>
<td>150</td>
<td>5</td>
</tr>
</tbody>
</table>

2 Courses

<table>
<thead>
<tr>
<th>2</th>
<th>Courses</th>
<th>Type of Instruction / Form of Learning</th>
<th>Language of Instruction</th>
<th>Contact Time (weekly</th>
<th>Self Study (h)</th>
<th>ECTS Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>a)</td>
<td>Automation systems</td>
<td>Lecture</td>
<td>English</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>b)</td>
<td>Automation systems laboratory</td>
<td>Laboratory</td>
<td>English</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

3 Table of Qualifications

<table>
<thead>
<tr>
<th>3</th>
<th>Table of Qualifications</th>
<th>Expertise</th>
<th>Methodological Skills</th>
<th>Personal &amp; Social Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Knowledge &amp; Understanding</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>3</td>
<td>Applying Knowl. &amp; Understanding</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>3</td>
<td>Making Judgements &amp; Analyzing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3</td>
<td>Creating &amp; Extending Knowledge</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

4 Learning Outcomes and Competences

On completion of the module the students are expected to be able to:

**Knowledge and Understanding (Knowledge)**
- The importance of control engineering in production automation
- The fundamental terms and engineering standards of industrial control techniques
- The methods of displaying control tasks
- The structure and mode of operation of programmable logic controls (PLC)
- The programming languages Kontaktplan (KOP), Funktionsplan (FUP), and instrucions list (Anwendungsliste AWL) according to IEC 61131
- Handle SPC (stored program control) programming systems

**Applying Knowledge and Understanding (Skills)**
- Planning of control tasks systematically according to a device-related description using different methods
- Transforming and testing of systematically displayed control tasks to “KOP”, “FUP” and “AWL” according to IEC 61131

**Making Judgements and Analyzing (Competences)**
- Gathering of complex control tasks, programming of a modular control program according to a systematic description respecting the aspects of reusability of software modules
- Analyzing and evaluating of a given program in a team. Students learn to discuss objectively in controversial situations.

**Creating and Extending Knowledge (Competences)**

5 Syllabus/Contents

- System design
- Motion control
- Systems and components in automation and production engineering
- Industrial communication and web-technologies
- Digital picture processing
- Power engines
- Software-Engineering and real-time operating systems

6 Prerequisites

According to the Examination Regulations (Studien- und Prüfungsordnung):
- None

Recommended:
- None

7 Type of Assessment (Examinations) and Requirements for Credits

- written exam (90 minutes)
# Module 620 Automation Systems

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 8 | **Module can be used in the following Degree Programs**  
WNB |
| 9 | **Module Director and other Lecturers involved**  
Prof. Dr.-Ing. Ulrich Nepustil |
| 10 | **Recommended Reading**  
- Berger, H.: Automating with STEP 7 in LAD and FBD, Publicis Corporate Publishing, 2005 |
| 11 | **Contribution of the Module to the Educational Aims of the Degree Program** |
| 12 | **Date of last Modifications**  
11.07.2016 |