## Scientific Programming with Matlab in Engineering

<table>
<thead>
<tr>
<th>Rota</th>
<th>Duration</th>
<th>Semester</th>
<th>SWS</th>
<th>Credit Points</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>annually WS</td>
<td>1 Semester</td>
<td>1st (Semester)</td>
<td>3 SWS</td>
<td>3</td>
<td>90 h</td>
</tr>
</tbody>
</table>

### 1 Modul Structure

<table>
<thead>
<tr>
<th>Course (Abbreviation)</th>
<th>Type/ SWS</th>
<th>Presence</th>
<th>Self Study</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Scientific Programming with Matlab in Engineering (SPM)</td>
<td>Lab/ 3 SWS</td>
<td>35 h</td>
<td>55 h</td>
<td>3</td>
</tr>
</tbody>
</table>

### 2 Language

English

### 3 Content

1. Matlab Basics, Programming, Visualization
2. Symbolic Computing
3. Statistics
4. Numerical Optimisation
5. Control System Design
6. Simulink
7. Robotics

**Literature:**
Matlab documentation

### 4 Competencies

The course qualifies the students to solve scientific programming and engineering problems with Matlab. The students acquire deeper knowledge in the design and application of control systems and robotics.

### 5 Examination Requirements

Successful completion of 75% of programming assignments and successful completion of 50% of quizzes.

The course grading is pass or fail.

### 6 Formality of Examination

- ☐ Module Finals
- ☐ Accumulated Grade

### 7 Module Requirements (Prerequisites)

### 8 Allocation to Curriculum:

Mandatory Course
Program: Automation & Robotics

### 9 Responsibility/ Lecturer

*apl. Prof. Dr. F. Hoffmann /apl. Prof. Dr. F. Hoffmann*