# HARDWARE SOFTWARE CODESIGN

<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 SS</td>
<td>1 Semester</td>
<td>2nd (Semester)</td>
<td>3 SWS</td>
<td>5</td>
<td>150 h</td>
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## 1 Course 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) Hardware Software Codesign</td>
<td>Lecture/ 3 SWS</td>
<td>35 h</td>
<td>50 h</td>
<td>3</td>
</tr>
<tr>
<td>b) Hardware Software Codesign</td>
<td>Tutorial/ 1 SWS</td>
<td>15 h</td>
<td>50 h</td>
<td>2</td>
</tr>
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## 2 Language

English

## 3 Content

Design of mixed Hardware/Software solutions for embedded systems,
Understanding of system-level design paradigms,
HW/SW partitioning, optimization and evaluation of design quality,
Modeling and Performance analysis of safety-critical and real-time embedded systems.

**Literature:**


## 4 Competencies

By attending this course, students will learn the design of complex electronic systems at high level of abstractions. This includes the optimized partitioning, scheduling and evaluation of mixed hardware and software design solutions dedicated to embedded systems. The tutorial sessions will present advanced related topics in HW/SW codesign and performance analysis for safety-critical and real-time embedded systems.

## 5 Examination Requirements

Oral exam (max. 40 minutes) or written exam (max. 180 minutes)
All students are required to successfully complete 2 out of 4 special assignments in order to be admitted to the final exam.

## 6 Formality of Examination

- Module Finals
- Accumulated Grade

## 7 Module Requirements (Prerequisites)

Basic knowledge of computer architectures, basic knowledge of C programming language.

## 8 Allocation to Curriculum:

Program: Automation & Robotics, Field of study: **Cognitive Systems**

## 9 Responsibility/ Lecturer

Prof. Dr.-Ing. Selma Saidi