

## Course Description – Winter 2022/23

<b>Title</b>	<b>Microelectronic Technologies</b>
<b>Faculty</b>	Electrical Engineering
<b>Professor</b>	Prof. Dr.-Ing. Roy Knechtel
<b>ECTS</b>	5 Credit Points (2.5 Credit Points) <sup>1</sup>
<b>Level</b>	Bachelor study
<b>Requirements</b>	Bachelor student in electrical engineering
<b>Add. Information</b>	Lectures
<b>Content</b>	<ol style="list-style-type: none"> <li>1. Introduction: the role of semiconductor, microelectronic and MEMS processes, general development trends, Moors law, micro sensors</li> <li>2. Clean rooms and modern semiconductor fabs</li> <li>3. Raw wafer manufacturing</li> <li>4. Semiconductor Process Steps <ol style="list-style-type: none"> <li>4.1 Lithography</li> <li>4.2 Deposition of dielectric layers</li> <li>4.3 Deposition of metal layers</li> <li>4.4 Doping and ion Implantation</li> <li>4.5 Etching and cleaning processes</li> </ol> </li> <li>5. Full microelectronic and MEMS Technologies as combination of the in 4. introduced process steps (technological realization of transistors, resistors, capacitors diodes, sensors and other primitive devices as well as their combination to high density integrated electronic circuits)</li> </ol>

<sup>1</sup> so far half a module with 2.5 credit points, its planned to be extend to a full module with 5.0 credit points