

<b>Modulnumber</b>	<b>Module Name</b>	<b>Lecturer in Charge</b>
ET-12 08 06	Neuromorphic VLSI Systems	Prof. Dr.-Ing. habil. C. Mayr
<b>Content and Objectives</b>	<p>Content of the module:</p> <ul style="list-style-type: none"> <li>- Methods for design and sizing of integrated analogue CMOS circuits</li> <li>- Neuromorphic VLSI systems: neurobiological fundamentals, common abstraction models, and application in science and technology, e.g. in brain machine interfaces and for signal processing</li> <li>- Fundamentals, concepts and methods of design and analysis of analogue and neuromorphic CMOS circuits using the design framework Cadence DF2</li> </ul> <p>The module consists of lectures on fundamentals of neuromorphic systems and on CMOS circuit design, as well as accompanying computer exercises using the corresponding VLSI design tools.</p> <p>Objectives: After completing the module, students are literate in the field of neural networks from neurobiological principles up to applications. They are able to use industrial design tools (Cadence DF2, Spectre), to design and size CMOS circuits, to verify parameters and constraints by simulation and to design circuit layouts.</p>	
<b>Methods of Teaching and Learning</b>	4 hours per week lectures, 2 hours per week exercises, and self-study	
<b>Prerequisites</b>		
<b>Usability</b>	The module is an elective module in the master's program Nanoelectronic Systems.	
<b>Requirements for Acquiring Credit Points</b>	Credit points are awarded on passed module assessments. The module assessment consists of an assignment paper and a presentation.	
<b>Credit Points and Grades</b>	7 credit points can be obtained by the module. The module grade is the weighted mean of the grades from the assignment paper weighted by 2/3 and the grade of the presentation weighted by 1/3.	
<b>Frequency</b>	The module is offered every summer semester.	
<b>Work Load</b>	The total effort is 210 hours.	
<b>Duration</b>	1 semester	