Hochschule München University of Applied Sciences

Courses in English
Course Description

Department	06 Applied Sciences and Mechatronics
Course title	**Semiconductor and Thin Film Technology**
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	Related to the generic educational objectives of the degree program, this module intensifies the engineering knowledge in engineering physics with focus on the most important fabrication processes in modern semiconductor technology. Students gain the ability to understand, describe, and evaluate correlations between the fabrication processes of semiconductor devices. They gain practical experience with typical fabriaction tools. After completing this module, students can plan the fabrication process for a target device, they can recognize failures in thin film systems, and they can develop improved processes.
Prerequisites	
Recommended reading	S.M. Sze, Semiconductor devices, physics and technology, John Wiley & sons R. Waser, Nanoelectronics and Information Technology: Materials, Processes, Devices, Wiley-VCH Moodle-course with videos
Teaching methods	lecture, exercises, lab class
Assessment methods	75% Written: 90'; 25% Lab Class
Language of instruction	English
Name of lecturer	Prof. Christina Schindler
Email	christina.schindler@hm.edu
Link	https://www.fb06.fh-muenchen.de/fbalt/forms/fachbeschreibungen.php?lang_nr=1&
Course content	- Introduction '-- historical review '-- short intorduction to semiconductor physics '-- silicon as base material '-- properties of thin films '-- semiconductor fabrication '-- clean room technology '- Structuring '-- lithography '-- etching technology '- Thin film fabrication ´-- oxidation, diffusion, implantation '-- PVD processes (physical vapor deposition) '-- CVD processes (chemical vapor depostion) '- Analytics '-- thickness measurement '-- surface characterization '-- analysis of interfaces '- Application: memory devices '-- DRAM '-- Flash '-- Memristor Lab class: fabrication and characterization of a diode Experiments to the above mentioned topics
Remarks	