

Module title		SM Code
Electronic Product Engineering		EPE
Module lecturer	Faculty	
Prof. Dr. Rainer Holmer	Electrical Engineering and Information Technology	
Module language	Number of SWS / WSH	ETCS credits
English	4 SWS / WSH	5
Teaching format		
Seminar-based teaching in subject-specific elective modules		

Semester according to the study plan	
1 st , 2 nd semester (Master)	
Attendance/classroom hours	Additional independent study
60 hours	Preparation and follow-up work: 90 hours
Type of examination / Requirements for the award of the credit points	
Written exam: 90 minutes	

Teaching content
<ul style="list-style-type: none"> • Fundamental aspects of the semiconductor industry (technology, product design, front-end/back-end production, testing, quality, logistics) • Key performance indicators in the semiconductor industry • Product development: analog/digital circuitry, physical layout, reuse, use of libraries/macros, design for manufacturability (DfM) • Test development: test concept, test time and test costs, design for testability (DfT), built-in self-test (BIST) • From development (prototype) to high-volume production – production start and ramp-up • Methods for optimizing (in terms of key performance indicators) product, technology, production

- High-volume production: production yield, process stability; dealing with deviations, malfunctions; dealing with changes, updates – change management; traceability

Learning objective: Professional competence**After successfully completing this module, students will be able to**

- interpret fundamental relationships between semiconductor product design, semiconductor production processes, and semiconductor testing, including their stability, variations, and deviations (3)
- interpret key performance indicators in the semiconductor industry, such as "time to market", costs, production yield, and production quality (3)
- describe specific requirements of semiconductor production and relevant methods and procedures (1)
- apply methods for analyzing production data (parameters, electrical test results, etc.) and statistical process control (2)
- apply methods for optimizing product design, process technology, and testing in a targeted manner (2)
- correctly assess problems and the resulting optimization potential in the semiconductor industry (3) and make decisions based on this assessment (3)
- deal with unexpected changes and problems appropriately and competently (3)

The numbers in brackets indicate the levels to be achieved: (1)-know | (2)-can | (3)-understand and apply