| Module Name | Embedded Controller |
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| **Module Number** | EuI-MT-E-EMC |
| **Responsible Lecturer** | Prof. Dr.-Ing. B. Bäker<br>LV_EMC@tu-dresden.de |
| **Qualification Objectives** | Students understand the interactions of different architectural concepts of controller cores with peripheral units in overall system design. They are capable of identifying and evaluating the potential of various concepts, designing systems with embedded controllers, and programming embedded controllers with their coupling to external components. |
| **Contents** | The module covers computer architecture and instruction set architecture; coupling with technical processes; efficient and portable programming of data structures and algorithms in a typed procedural language, such as C; as well as advanced knowledge of principles, applications, and use cases of embedded controller architectures. |
| **Teaching and Learning Forms** | 2 hours per week of lectures, 1 hour per week of exercises, 1 hour per week of practical sessions, and self-study. |
| **Prerequisites for Participation** | The competencies to be acquired in the module Software Engineering Bssics are required. |
| **Usability** | The module is one of four elective modules in the elective area "Mechatronics Specialized Knowledge" in the main study program of the diploma program Mechatronics, of which three must be selected. It creates the prerequisites for the modules that list this module under "Prerequisites for Participation." |
| **Prerequisites for the Award of Credit Points** | Credit points are awarded when the module examination is passed. The module examination consists of a written exam lasting 120 minutes and an ungraded portfolio with a workload of 20 hours. |
| **Credit Points and Grades** | 5 credit points can be earned through the module. The module grade is determined in accordance with § 15 paragraph 1 sentences 5 and 6 of the examination regulations, based on the unweighted average of the grades of the individual examination components. |
| **Frequency of the Module** | The module is offered every summer semester. |
| **Workload** | The total workload is 150 hours. |
| **Duration of the Module** | The module lasts one semester. |