

<b>Module title</b>		<b>Abbreviation</b>
Fundamentals and Programming of Avionics		10-I-MEC-172-m01
<b>Module coordinator</b>		<b>Module offered by</b>
holder of the Chair of Computer Science VIII		Institute of Computer Science
<b>ECTS</b>	<b>Method of grading</b>	<b>Only after succ. compl. of module(s)</b>
10	numerical grade	--
<b>Duration</b>	<b>Module level</b>	<b>Other prerequisites</b>
1 semester	undergraduate	--
<b>Contents</b>		
Fundamental principles of data processing, especially for aerospace applications. What is information? Guidance for reliable systems, analogue, digital, FPGAs, radiation effects, micro programming, CPUs, DMAs, memory, memory organisation, system architecture, input and output, sensors and actuators, energy systems, reliability, fault tolerance. Programming of embedded systems in C++.		
<b>Intended learning outcomes</b>		
Understanding of analogue and digital data processing in embedded systems. Structure of hardware and programming. Embedded programming in C++, knowledge about common sensors and actuators as well as input and output systems.		
<b>Courses</b> (type, number of weekly contact hours, language – if other than German)		
V (4) + Ü (2) + P (2)		
<b>Method of assessment</b> (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 120 minutes) and practical examination (approx. 6 programming exercises approx. 4 hours each), weighted 1:1 creditable for bonus		
<b>Allocation of places</b>		
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<b>Additional information</b>		
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<b>Workload</b>		
300 h		
<b>Teaching cycle</b>		
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<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)		
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<b>Module appears in</b>		
Bachelor' degree (1 major) Aerospace Computer Science (2017) Bachelor' degree (1 major) Aerospace Computer Science (2020) Bachelor' degree (1 major) Computer Science und Sustainability (2021)		