

Faculty	Faculty 5: Nature and Engineering
Course Title	Unmanned Aerial Vehicles
Number of ECTS credits	6
Hours per week (SWS)	4 + 8
Required Semester	3 rd year students from exchange partners (upon request and check) and Master students
Time	Fall semesters
Course objective	<p><i>Building on the knowledges acquired in the Mechatronics modules 1 and 2 in the mechanical engineering bachelor's degree, knowledges and skills on the interpretation, development and manufacture of self- controlled (partially autonomous) systems are gained. One focus is the practical implementation of such systems based on ongoing projects from the research and development division of the Institute for Aerospace Technology in the technical field of Mechanical Engineering.</i></p> <p><i>After the event, the students are capable to develop, calculate and to technically implement self-controlled mechatronic systems. This includes adapting to the conditions of use and types of these systems. They are capable to execute self-directed application-oriented projects in the context of self - controlled (partially autonomous) systems, to integrate knowledges and to deal with complexity.</i></p> <p><i>They also have the ability to share information, ideas, problems and solutions with technical representatives and laypeople on a scientific level.</i></p>
Prerequisites	Experience with aerospace basics: math, physics, thermodynamics
Recommended reading	Will be given before the lectures.
Teaching methods	Seminars and self-study
Assessment methods	Examination according to examination regulations
Language of instruction	English
Name of lecturer	<u>Prof. Dr.-Ing. Olaf Frommann</u>
Email	Olaf.Frommann@hs-bremen.de
Link	http://www.fbm.hs-bremen.de/modul/beschreibung.aspx?modul_id=a72c76ea-a35f-4649-9227-24016c998bd4
Course content	<ol style="list-style-type: none"> 1. Introduction to the integrated mechanical and electronic systems 2. Theoretical and experimental design 3. Dynamics of moving systems 4. Modelling and design of mechanical components 5. Modelling and design of electrical drives 6. Modelling and design of systems 7. System design of autonomous systems <ul style="list-style-type: none"> o Sensor technology o Actuator technology

	<ul style="list-style-type: none">○ <i>Microcontroller technology</i>○ <i>Software</i>8. <i>Completed systems</i><ul style="list-style-type: none">○ <i>Satellites and sondes</i>○ <i>Transportation systems</i>9. <i>IAT in-house research and development activities</i>
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