

Faculty	Faculty 5: Nature and Engineering
Course Title	Design and Modelling of Space Propulsion Systems
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	<i>Ability to analyse, model and optimize space propulsion systems and their components</i>
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	<u>Olaf.Frommann@hs-bremen.de</u>
Link	<u>http://www.fbm.hs-bremen.de/modul/beschreibung.aspx?modul_id=834fe6cd-e5da-44c5-ad0e-3bed509a8c31</u>
Course content	<ol style="list-style-type: none"> 1. <i>Space Propulsion System Design</i> <ul style="list-style-type: none"> ○ <i>Components of Space Propulsion Systems</i> ○ <i>Propellants and their Characteristics</i> ○ <i>Materials</i> ○ <i>Performance Parameters</i> 2. <i>Component Analysis and Modelling</i> <ul style="list-style-type: none"> ○ <i>Tanks</i> ○ <i>Valves and Lines</i> ○ <i>Turbines and Pumps</i> ○ <i>Injectors</i> ○ <i>Ignition Systems</i> ○ <i>Combustors</i> ○ <i>Nozzles</i> 3. <i>Propulsion System Dynamics</i> <ul style="list-style-type: none"> ○ <i>Steady Flow Operations</i> ○ <i>Transient Behaviour</i>