

Department	09 Engineering and Management
Course title	Physics
Course number	
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	<p>Competence Level 1 „Know“:</p> <ul style="list-style-type: none"> • The students know the basic laws of physics. • The students understand the importance of physics as the scientific basis for the work of an engineer. <p>Competence Level 3 „Apply“:</p> <ul style="list-style-type: none"> • The students can solve physical problems by calculations. • The students are able to investigate optional technical innovations in view of physical laws. <p>Competence Level 4 „Analyse“:</p> <ul style="list-style-type: none"> • The students can systematically analyse physical-technical problems by recognizing, formulation and application of basic laws and transformation into mathematical language.#
Prerequisites	Basic knowledge of differential and integral calculus, as well as vector algebra
Recommended reading	<p>HALLIDAY, D., RESNICK, R. und WALKER, J., 2018. Physics, 11th edition. John Wiley and Sons. ISBN 978-1-119-28624-0</p> <p>WILHELMS G. und CERBE, G., 2017: Technische Thermodynamik: Theoretische Grundlagen und praktische Anwendungen, 18. Auflage. München: Carl Hanser Verlag GmbH & CO. KG. ISBN: 978-3-446-45119-3</p>
Teaching methods	Seminar-like lecture / 4 SWS
Assessment methods	<p>Written Exam</p> <p>Duration: 90 minutes</p>
Language of instruction	English
Name of lecturer	Alexander Herzog
Email	alexander.herzog@hm.edu
Link	https://moodle.hm.edu/course/view.php?id=3684&section=8
Course content	<p>Mechanics:</p> <ul style="list-style-type: none"> • kinematics of a point mass • free fall and inclined throw • motion in 3 dimensions • cyclic motion • dynamics of a point mass – Newton´s laws • momentum and conservation of momentum • forces • work • energy and energy conservation • power • dynamics of rigid bodies <p>Thermodynamics:</p> <ul style="list-style-type: none"> • the ideal gas model • laws of thermodynamics • enthalpy and useful work • entropy • ideal cyclic processes of ideal gases • real gases, example: water • gas-vapour mixtures, example: moist air
Remarks	none