

Department	VII – Electronics – Mechatronics - Optometry / <i>Elektrotechnik - Mechatronik – Optometrie</i>
Degree level	Master's
Degree program	Information and Communications Engineering / <i>Information and Communications Engineering</i>
Type of instruction	Seminar plus laboratory training
Credits	5
Availability	Summer semester
Hours/week	4

Module Number	WP07
English/German Title	<b>Machine Learning / <i>Maschinelles Lernen</i></b>
Credit Points	5 credits
Workload	150 hours: <ul style="list-style-type: none"> <li>• Class attendance 4 h/w during the semester lecture period: 68 hours</li> <li>• Independent study: 82 hours</li> </ul>
Subject Coverage	Subject-specific specialization
Learning Objectives / Outcomes	Students acquire an overview of machine learning methods and can assess their usability for a certain application. They can implement simple machine learning solutions using freely available software tools.
Prerequisites	Recommendation: Principles of Set Theory, Linear Algebra, Signals and Systems (incl. Fourier, Laplace, and z-transform)
Level	1 <sup>st</sup> /2 <sup>nd</sup> semester
Type of Module	Seminar plus laboratory training
Status	Required-elective module
Semester when Offered	Summer semester
Method of Assessment / Type(s) of Examination	The method of assessment / type of examination must be defined by the lecturer within the deadline determined in §19 (2) RSPO. Should the deadline pass without determination of the form of assessment in the module, the following method of assessment / type of examination applies: Written examination 50%, Written laboratory report of the laboratory group with consultation 50%.
Determination of the Grade	See study and examination regulations
Equivalent Modules	Modules with comparable contents
Contents	<ul style="list-style-type: none"> <li>• Review of mathematical foundations</li> <li>• Overview of machine learning methods and applications</li> <li>• Linear regression</li> <li>• K-means clustering</li> <li>• Neural networks</li> <li>• Hidden Markov models</li> <li>• Freely available machine learning software tools</li> </ul>
Reading List	Haykin: Neural Networks and Learning Machines, Prentice Hall International.
Further Information	This module is offered in English.