Department	08 Geoinformatics
Course title	**Advanced Remote Sensing Methods**
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	After attending this course, students understand the basic methods of classifying remote sensing data. They are capable of addressing the key issues of remote sensing in a wider geoinformation context. They are able to work in a team.
Prerequisites	Basic knowledge in statistics Mathematics: linear algebra, analysis Programming skills in Matlab
Recommended reading	Heijden, F. van der, Duin, R.P.W., Ridder, D. de and Tax, D.M.J., 2004, Classification, parameter estimation and state estimation – An engineering approach using MATLAB. John Wiley & Sons Ltd, The Attrium, southern Gate, Chichester, West Sussex PO19 8SQ, England Duda, R.O., Hart, P.E., Stork, D.K., Pattern Classification, 2nd ed., Wiley Interscience, 2000
Teaching methods	Praktikum; Seminaristischer Unterricht
Assessment methods	Mündliche Prüfung
Language of instruction	English/German, Teaching materials in English
Name of lecturer	Prof. Dr. Peter Krzystek
Email	peter.krzystek@hm.edu
Link	https://www.geo.hm.edu/kontakt/prof/krzystek/index.de.html
Course content	The lecture deals with modern statistical methods as well as approaches for the preprocessing, segmentation, and classification of objects as they find use in pattern recognition and remote sensing. Results from current research projects are included. The content: linear and non-linear image filters; feature analysis; segmentation approaches (watershed, normalized cuct, graph cut, mean shift); classification methods (maximum likelihood, expectation maximization, support vector machines); multi-variate statistics; multiple regression; principal component analysis; discriminance analysis (linear and non-linear)
Remarks	