Georg-August-Universität Göttingen	6 C
Universität Kassel/Witzenhausen	4 VVLH
Module M.SIA.I14M: GIS and remote sensing in agriculture	
Learning outcome, core skills: GIS: A broad overview of basic GIS functions and related background knowledge should enable students to explore GIS-Software for relevant commands and prepare functional strategies for spatial data management and analysis. Lecture and exercise examples have predominantly agricultural reference. Remote Sensing The lecture will introduce physical principles (reflectance, transmittance, and absorption), sensor techniques (passive and active sensors, satellites, field spectrometer) and methods of analysis (calibration, validation) in remote sensing applications. This technical framework is presented using agricultural examples, as e.g. the generation of maps for crop yield and protein, assessment of species composition in mixed vegetation (e.g. grassland), like legume content for a calculation of residual nitrogen and crop rotation effects.	Workload: Attendance time: 56 h Self-study time: 124 h
Course: M.SIA.I14M.Lec-2 Remote sensing in agriculture (Lecture) Contents: The lecture will introduce physical principles (reflectance, transmittance, and absorption), sensor techniques (passive and active sensors, satellites, field spectrometer) and methods of analysis (calibration, validation) in remote sensing applications. This technical framework is presented using agricultural examples, as e.g. the generation of maps for crop yield and protein, assessment of species composition in mixed vegetation (e.g. grassland), like legume content for a calculation of residual nitrogen and crop rotation effects.	2 WLH
Course: M.SIA.I14M.Lec-1 GIS (Lecture) <i>Contents</i> : The course gives an introduction to Geographical Information Systems (GIS). Starting from geodetical background information, a wide range of different GIS- methods and - functions are presented using agricultural examples (e.g. data import, georeferencing, aggregation, (re)classification, interpolation, overlays and image analysis). The students have the opportunity to carry out exercises on the computer themselves for some important GIS-procedures. A special focus is given on data capturing using maps and field data survey with GPS as well as the spatial analysis of site conditions. Finally a particular view on GIS in organic farm management and Precision Farming is given.	2 WLH
 Examination: Oral examination (approx. 30 minutes) M.SIA.I14M.Mp: GIS and remote sensing in agriculture Examination requirements: Knowledge about basic GIS functions and the preparations of functional strategies for spatial data management. Knowledge of physical principles, methods of analysis and 	6 C

sensor techniques.		
Admission requirements:	Recommended previous knowledge:	
none	none	
Language:	Person responsible for module:	
English	Dr. Jayan Wijesingha	
Course frequency:	Duration:	
each winter semester; Witzenhausen	1 semester[s]	
Number of repeat examinations permitted:	Recommended semester:	
twice		
Maximum number of students:		
20		
Additional notes and regulations:		
Literature:		
Principles of Geographical Information Systems		
by Peter A. Burrough and Rachael A. McDonnell (2015)		
Introduction to Remote Sensing		
by James B. Campbell andRandolph H. Wynne (2011)		