

<b>Georg-August-Universität Göttingen</b> <b>Module M.FES.719: Remote sensing image processing with open source software</b>	6 C 4 WLH
<b>Learning outcome, core skills:</b> This combined lecture and lab makes the student familiar with basic principles, techniques and applications of remote sensing. The students learn skills in digital image processing and information extraction using open source software on own laptops.	<b>Workload:</b> Attendance time: 56 h Self-study time: 124 h
<b>Course: M.FES.719.C Remote sensing image processing with open source software</b> (Lecture, Exercise) <i>Contents:</i> The course introduces the theories (via lectures and literature) and applications (including computer exercises) of remote sensing workflows. Remote sensing data from different sensors (cameras, LiDAR scanners, RADAR) and platforms (satellites, aircrafts and unmanned aerial systems (UAS)) are used to develop analysis workflows for forestry and environmental monitoring applications. Common steps and methods of remote sensing analysis such as preprocessing, image enhancement, sampling of reference data, automated classification and estimation and map validation are presented. In the practical labs, students deepen their knowledge and skills with small projects such as land cover classification, individual tree detection, biomass estimation and change detection using open source technologies.	4 WLH
<b>Examination: Oral exam (approx. 15 minutes, 80%) and practical exam (approx. 15 minutes, 20%)</b> M.FES.719.Mp: Remote Sensing Image Processing with Open Source Software	6 C
<b>Examination requirements:</b> The students should know and manage and understand and have insights into all topics that are covered in the module that consists of lectures and predominantly on labs where the students learn image analysis on their own notebooks: the exam requirements include: <ul style="list-style-type: none"> <li>• Bases of electromagnetic radiation and its interactions with the atmosphere and terrestrial land cover types;</li> <li>• Basic techniques of remote sensing image acquisition, pre-processing, enhancement and classification – as covered in the lectures and labs;</li> <li>• Knowledge and skills regarding application of the software as used in the practical labs;</li> <li>• Options of remote sensing integration into forest monitoring regarding both mapping and estimation;</li> <li>• Assessing quality of remote sensing products, including accuracy analysis.</li> </ul>	
<b>Admission requirements:</b> none	<b>Recommended previous knowledge:</b> Good command of forest mensuration and forest inventory, including calculation skills regarding analyses of inventory data.

<b>Language:</b> English	<b>Person responsible for module:</b> Prof. Dr. Christoph Kleinn
<b>Course frequency:</b> each winter semester	<b>Duration:</b> 1 semester[s]
<b>Number of repeat examinations permitted:</b> cf. examination regulations	<b>Recommended semester:</b>
<b>Maximum number of students:</b> not limited	