

Georg-August-Universität Göttingen		4 C 3 WLH
Module M.Agr.0178: Soil Biogeochemistry in Agricultural and Forest Ecosystems		
Learning outcome, core skills: <ul style="list-style-type: none"> • Understanding underlying process of C, N, P, S and Fe cycle in agroecosystems • Understanding the impact of agricultural management on these element cycles • Quantification of C-, N- and P-fluxes via isotope based methods (labeling experiments such as pulse labeling, FACE experiments, C-3 and C-4 vegetation changes, autoradiography) • Formation of soil organic matter from plant and microbial residues: Disentangling the composition of SOM by biomarker methods <p>Theoretical basics shall be thought and their application shall be demonstrated at distinct examples from literature. After this course, students will be able to understand complex biogeochemical studies published and evaluate potentials and pitfalls of applied methods.</p>		Workload: Attendance time: 45 h Self-study time: 75 h
Course: Soil Biogeochemistry of Agroecosystems (Lecture, Seminar) <i>Contents:</i> In the framework of this module, biogeochemical processes of C, N, P, S and Fe cycle in agro- and forest ecosystems shall be demonstrated and their microbial and molecular basics will be unraveled. It will be shown how land use, forest and agricultural management practices (crop sequences, tillage, fertilization, etc.) will impact the element cycles. Analytical biogeochemical methods to assess these effects on element fluxes and cycles will be explained in detail. Isotope-based examples and experiments to assess formation and turnover of soil organic matters as will be explained. The module consists of a lecture (3 SWS) and a seminar (1 SWS) in which a methodological focus will be set where one study of interest will be presented by the students, and training study will be implemented		3 WLH
Examination: Oral examination (approx.20 minutes, 75%), presentation (approx. 15 minutes, 25%) Examination requirements: Understanding of biogeochemical cycles in agroecosystems and their drivers as well as the impact of agricultural management on them. Ability to choose, evaluate and discuss about various biogeochemical, molecular and microbiological methods to study element cycles and their drivers in soils.		4 C
Admission requirements: This course and M.Agr.0115 "Biogeochemie agrarisch genutzter Böden" are mutually exclusive	Recommended previous knowledge: Basics in soil science and biology and chemistry	
Language: English	Person responsible for module: UnivProf.Dr. Martin Maier	
Course frequency: each winter semester	Duration: 1 semester[s]	

Number of repeat examinations permitted: twice	Recommended semester:
Maximum number of students: 16	