GEO 77 – Geomorphologie und Bodenlandschaftsmodellierung / Geomorphology and Soil-Landscape Modelling

GEO 77
Tuesday 8-12 h and 13-17 h (until January)
Final presentation Tue, 07.02.2023, 10-12 h
first date 18.10.2022
all info and documents on ILIAS: GEO77 (password: SoilScience)

Module Coordination: Prof. Dr. Thomas Scholten
Lecturers: Prof. Dr. Thomas Scholten, Dr. Steffen Seitz, Dr. Peter Kühn
Dr. Ruhollah Taghizadeh-Mehrjardi, Mathias Bellat

Lecture/seminar in presence or online, exercise Computerpool Geography

Note components
Cooperation in the seminar / Presentation in the exercise (1/2 of the mark each)

1. timetable and floorplan (timetable and floorplan)

Jahr/Year	2022								2023
Datum/Date	18.10.	25.10.	08.11.	15.11.	22.11.	29.11.	06.12.	13.12	07.02.
Dozent/Lecturer	T. Scholten, S. Seitz, R. Tagizadeh, P. Kühn, M. Bellat								10 Uhr
Raum/Room	W400 / CIP1_2								
Wochentag/Day	Dienstag/Tuesday								
8-10 h	**1 Lecture**								
10-12 h	**2 Seminar (literature review, impulse presentations and discussion)**								
12-13 h	Mittagspause / Lunchbreak								
13-17 h	**3 Joint development of the basics BLM**		**3 Basics Machine Learning**		**3 Exercise Soil Landscape Modeling with ML (in R)**				

Abschlusspräsentation

2. Inhalte und Dozenten *(content and lecturers)*

Datum / Date	Art / Type	Thema / Topic	Dozent / Lecturer
18.10.	V	**Introduction / Presentation**	S. Seitz
	S	**Geomorphodynamics and soil landscapes**	T. Scholten
	Ü	**Soil Landscape Modeling**	T. Scholten
25.10.	V	**Geomorphological basics**	S. Seitz
	S	**Geomorphodynamics and soil landscapes**	T. Scholten
	Ü	**Soil Landscape Modeling**	T. Scholten
08.11.	V	**Soil science basics**	S. Seitz
	S	**Geomorphodynamics and soil landscapes**	T. Scholten
	Ü	**Basics Machine Learning**	R. Tagizadeh
15.11.	V	**Geomorphology and soils**	S. Seitz
	S	**Geomorphodynamics and soil landscapes**	T. Scholten
	Ü	**Basics Machine Learning**	R. Tagizadeh
22.11	V	**Soil classification and soil response**	S. Seitz
	S	**Soil, relief and climate**	T. Scholten
	Ü	**Working with R**	M. Bellat
29.11.	V	**Soil erosion**	S. Seitz
	S	**Soil, relief and climate**	T. Scholten
	Ü	**Working with R**	M. Bellat
06.12.	V	**Loess landscapes and paleosols**	P. Kühn
	S	**Soil, relief and climate**	T. Scholten
	Ü	**Working with R / Soil Landscape Modeling**	M. Bellat / R. Tagizadeh
13.12.	V	**Colluvial deposits and regolith**	P. Kühn
	S	**Soil Landscape Modeling**	T. Scholten
	Ü	**Working with R / Soil Landscape Modeling**	M. Bellat / R. Tagizadeh
20.12.	Ü	**Disposal date**	S. Seitz
07.02.	Ü	**Final presentation of the results**	Alle Dozenten

3. Literaturauswahl *(selected textbooks and papers)*

Ahnert F 2015. Einführung in die Geomorphologie. UTB
Anderson RS and Anderson SP 2010. Geomorphology: The Mechanics and Chemistry of Landscape. Cambridge UP
Behrens T et al. 2006. Digital soil mapping in Germany – a review. Journal of Plant Nutrition and Soil Science 169: 434-443
Birkeland PW 1999. Soils and Geomorphology. Oxford UP
Gerrard AJ. 2008. Soil Geomorphology – An Integration of Pedology and Geomorphology. Springer
Jenny H 1941. Factors of Soil Formation: A System of Quantitative Pedology. McGraw-Hill
Leopold M, Völkel J 2007. Colluvium: definition, differentiation, and possible suitability for reconstructing Holocene climate data. Quaternary International 162-163: 133-140
McBratney A et al. 2003. On digital soil mapping. Geoderma 117: 3-52
Montgomery DR 2012. Dirt: The Erosion of Civilization. UCP
Padarian J et al. 2019. Machine learning and soil science: a review. SOIL 6: 35-52
Schaetzl RJ and Thompson ML 2015. Soils: Genesis and Geomorphology. Cambridge UP
Scheffer/Schachtschabel 2018. Lehrbuch der Bodenkunde. Springer
Scott KM, Pain C 2007. Regolith Science. Springer