Wahlpflichtmodule

lök100 - Data Modelling

Module label	Data Modelling
Modulkürzel	lök100
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Peppler-Lisbach, Cord (module responsibility) • Peppler-Lisbach, Cord (Module counselling) • Peppler-Lisbach, Cord (Prüfungsberechtigt) • Greskowiak, Janek (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	• Basic methods of explorative statistics and adequate application of statistical tests relevant to ecological data. • To learn, interpret and apply methods of habitat modelling • To understand the fundamentals of spatial explicit analysis of species-environment relationships as well as the fundamentals of spatial prediction of environmental requirements in species • To adequately analyse measured and observed spatial data applying methods of spatial statistics and geostatistics, respectively • To learn and to understand relevant methods of multivariate analysis of vegetation data • To be able to interpret and to assess the results obtained as well as the relevant literature • To be able to apply the treated methods independently • To learn and to improve skills in using the statistics software R
Module contents	Part 1: Introduction to statistical analysis of ecological data NN (NN) • Experimental design • Explorative data analysis • Distribution tests, data transformation • Chi² test • Anova, Kruskal-Wallis test • t & U test • Multiple comparisons, post-hoc tests Part 2: Habitat modelling and spatial statistics (Biedermann) • Linear (OLS) regression • GLM (logistic regression, Poisson regression) • Spatial explicit modelling, GIS integration • Spatial statistics Part 3: Multivariate analysis of vegetation ecological data (Peppler-Lisbach) Classification: • Cluster analysis • Statistical degrees of fidelity Ordination: • Indirect procedures: PCA, CA, DCA • Canonical procedures: RDA, CCA
Literaturempfehlungen	Crawley, M.J. (2007): The R Book. 942 S. Wiley & Sons, Chichester.

	Additional literature will be announced during the course.	
Links	https://www.uni-oldenburg.de/en/landeco/	
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	jährlich	
Module capacity	unlimited	
Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the course	Assignment

Lehrveranstaltungsform	Exercises
SWS	6
Frequency	WiSe
Workload Präsenzzeit	84 h

lök110 - Ecology

Module label	Ecology
Modulkürzel	lök110
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• a N., (module responsibility) • Kiel, Ellen (Prüfungsberechtigt) • Albach, Dirk Carl (Prüfungsberechtigt) • Zotz, Gerhard (Prüfungsberechtigt) • Zotz, Gerhard (Module counselling)
Prerequisites	Knowledge of phytosociology, zoo-ecology, pedology and ecology, comparable to the corresponding modules of BSc. Environmental Sciences
Skills to be acquired in this module	Qualification imparted to students: Upon successful completion of the module the students will gain: • a thorough knowledge of environmental conditions and biological mechanisms enabling plant species to survive in landscapes • a thorough knowledge of the eco-physiology of plants in landscapes • a thorough knowledge of the environmental conditions and biological mechanisms enabling animals to survive in landscapes Ranking/position of the module within the course of studies: In the initial phase of the Master programme, this module imparts theories and models of the conditions of survival in plant and animals species as well as of the abiotic/biotic interdependencies in heterogenous landscapes. In combination with other compulsory modules it serves to give students a survey of the special field of Landscape Ecology and to enable them to competently select advanced modules in the following semesters.
Module contents	Ecology of plants in landscapes Eco-physiology of plants in landscapes Ecology of animals in landscapes
Literaturempfehlungen	Literature will be announced during the course.
Links	https://www.uni-oldenburg.de/en/landeco/
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	a) Written examination (33 %) b) Written examination (33 %) c) Written examination (33 %)

Lehrveranstaltungsform	Lecture
SWS	3
Frequency	
Workload Präsenzzeit	42 h

lök120 - Geoecological Processes

Module label	Geoecological Processes
Modulkürzel	lök120
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Massmann, Gudrun (module responsibility) • Massmann, Gudrun (Module counselling) • Freund, Holger (Prüfungsberechtigt) • Kalinina, Olga (Prüfungsberechtigt) • Massmann, Gudrun (Prüfungsberechtigt) • Maurischat, Philipp (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Upon successful completion of the module the students will gain: - advanced skills in analysing a landscape unit - a thorough knowledge of geological, pedological, hydrological, hydrogeological, and botanical relationships within an ecosystem - a thorough knowledge of the genesis and properties of Northwest German soils - a thorough knowledge of hydrological and hydrogeological properties of Northwest Germany - a fundamental knowledge of national and international soil systematics - the qualification to ecologically record and assess soils (including humus form) - the ability to perform soil ecological interpretations
Module contents	Landscape unitSpiekeroog (EX/E) Special Pedology (L) Special Hydrogeology (L) Pedological field work (E)
Literaturempfehlungen	Literature will be announced during the lecture.
Links	https://uol.de/ibu
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	30

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Writtenexamination

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2		28
Exercises (mit Exkursion)		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

lök130 - Environmental Planning

Module label	Environmental Planning
Modulkürzel	lök130
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Schaal, Peter (module responsibility) • Schaal, Peter (Module counselling) • Kalinina, Olga (Prüfungsberechtigt) • Lecke-Lopatta, Thomas (Prüfungsberechtigt) • Schaal, Peter (Prüfungsberechtigt) • Prinz, Markus (Prüfungsberechtigt) • Hübotta, Lisa (Prüfungsberechtigt)
Prerequisites	Basic knowledge of environmental planning. Students who have not gained such basic knowledge during the Bachelor course please contact the persons responsible for the module in order to evaluate possibilities for catching up relevant knowledge.
Skills to be acquired in this module	The students will • gain advanced knowledge into the formal and informal organization of spatial developmental processes in a combination of disciplinary and interdisciplinary concepts; • get to know the system of privileged planning combined with cross-section planning as well as investigate and assess possible deductions for concrete decision making; • elaborate case studies and typical planning problems in seminar papers and develop their own positions regarding the instruments; • get to know assessment methods for all important ecosystem compartments and gain the skills to deduce ecosystem services from ecosystem functions. Ranking and position of the module within the course of studies: The module offers fundamental and advanced knowledge in the first semester on the basis of which planning exercises can be performed during the Master courses
Module contents	a) Development of models and assessment of ecosystem functions for environmental planning: Presentation of theoretical concepts and practicable methods applied to assess ecosystem functions b) Actor-oriented planning instruments: Presentation of aims, forms and mechanisms of formal and informal instruments of area and environmental planning considering participative forms of the actor in different frameworks c) Special planning: Presentation of legal grounds, organization, instruments and practical methods of planning institutions including negative or positive impacts on the environmental quality for humans and nature. Possibilities of influencing the planning results from the point of view of precautionary environmental protection d) Conservation and Evaluation of Soils: Presentation of legal grounds, practical methods and opportunities for soil protection and soil evaluation in regional and environmental planning.
Literaturempfehlungen	Akademie für Raumforschung und Landesplanung (ed.): Handwörterbuch der Raumordnung, Hannover 1995. Benz, A.: Governance. Regieren in komplexen Regelsystemen. Eine Einführung. 2nd edition.Wiesbaden 2010. Grundwasserbewirtschaftungsplan Hessisches Ried. Darmstadt 1999. Moseley, M.J. (Ed.): Local Partnerships for Rural Development. The European Experience. Cambridge 2003. Pütz, M.; Buchholz, K.-H. (2003): Anzeige- und Genehmigungsverfahren nach dem Bundes-Immissionsschutzgesetz. 7th edition. Berlin. Wikipedia: http://de.wikipedia.org/wiki/Fachplanung Additional literature will be announced during the lectures.
Links	https://www.uni-oldenburg.de/en/landeco/
Language of instruction	German

Duration (semesters)	1 Semester	
Module frequency	jährlich	
Module capacity	unlimited	
Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Seminar paper
Lehrveranstaltungsform	Seminar	
SWS	6	
Frequency		
Workload Präsenzzeit	84 h	

lök140 - Geographical Information Systems - Applications in Landscape Ecology

Module label	Geographical Information Systems - Applications in Landscape Ecology
Modulkürzel	lök140
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Schaal, Peter (module responsibility) • Schaal, Peter (Module counselling) • Aden, Christian (Module counselling) • Schaal, Peter (Prüfungsberechtigt) • Aden, Christian (Prüfungsberechtigt)
Prerequisites	Grundlegende GIS-Kenntnisse (Basiswissen). Studierende, die diese im Bachelor-Studiengang nicht erhalten haben, wenden sich bitte an die Dozenten, die mit ihnen Möglichkeiten für das Nachholen der Kenntnisse festlegen.
Skills to be acquired in this module	Vermittelte Qualifikation: Mit diesem Modul werden im Masterstudium Basiskompetenzen zur Analyse von raumbezogenen Daten und zur Modellierung von landschaftsökologischen Aufgabenstellungen ausgebildet. Die Kenntnisse sind sowohl im Bereich der Vektordatenanalyse als auch im Bereich der Rasterdatenanalyse angesiedelt und umfassen das Spektrum der Anwendungen der ArcGIS-Toolbox. Stellenwert/Verortung Modul im Studiengang Das Modul bietet im ersten Semester grundlegende und vertiefende Kenntnisse, auf denen das Master - Folgemodul „GIS Datenmanagement und geostatistische Analysen“ aufbaut. + Erkennen und analysieren komplexer ökologischer Interdependenzen und Zusammenhänge im Rahmen eines landschaftsökologischen Systemverständnisses ++ Befähigung zum Transfer, d.h. Übertragen, Anpassen und Erweitern von erlerntem Wissen auf neue Problemstellungen und Kompetenz zur Problemlösung ++ Erlernen und selbständiges, zielgerichtetes Anwenden von Methoden-kenntnissen in wissenschaftlichen Forschungsarbeiten: Erfassungs-, Mess-, Auswertungs-, Modellierungs-, Bewertungs- und Planungsmethoden + Befähigung zur (auch englischsprachigen) fachlichen und fachübergreifenden Präsentation und Kommunikation von Arbeitsergebnissen gegenüber unterschiedlichen Adressatengruppen + Soziale und interkulturelle Kompetenz zur Zusammenarbeit in Teams unterschiedlicher Zusammensetzung ++ Verantwortungsvolles Anwenden der erlernten Kompetenzen, Fähigkeiten und Fertigkeiten in verschiedenen Feldern der landschaftsökologischen Berufspraxis
Module contents	• a) Praktisches Arbeiten mit GIS (Ü) Die Studierenden erlernen die Entwicklung von Geodatenbanken sowie die Nutzung komplexerer geographischer Analysewerkzeuge im Bereich der Vektor- und Rasteranalyse. • b) Analysen und Modelle (Se/Ü) Die Studierenden werden dazu befähigt, raumbezogene bzw. landschaftsökologische Fragestellungen anhand von komplexen GIS-Analysen (Erosionsmodelle, Routenplanung) zu beantworten und in die räumliche Modellierung von Daten einzusteigen.
Literaturempfehlungen	GI Geoinformatik GmbH (Hrsg.) ArcGIS 10.3: Das deutschsprachige Handbuch für ArcGIS for Desktop Basic und Standard mit Funktionen von ArcGIS Online für Desktopanwender– 2015 Law, Michael; Collins, Amy: Getting to Know ArcGIS (Englisch), 2015. Liebig, W.; Mummenthey, R.-D.: ArcGIS-ArcView. Band 2 ArcGIS-Analysen. Norden. 2005. Liebig, W.: ArcGIS-ArcView 9 - Personal Geodatabase. Norden. 2006. Bill, R.: Grundlagen der Geo-Informationssysteme. Band 2. Analysen, Anwendungen und neue Entwicklungen. 5. Aufl. Heidelberg. 2010. Albertz, J.: Einführung in die Fernerkundung. 3. Aufl. Darmstadt. 2007. Haverkamp, Wegener: Methodenentwicklung zur GIS-gestützten Modellierung des Landschaftswasserhaushaltes. Gießen. 2000. Berkhoff, K.: GIS-basierte Modellierung der Grundwasserempfindlichkeit in einer agrarischen Intensivregion. 2008.
Links	
Language of instruction	German

Duration (semesters)		1 Semester	
Module frequency		jährlich	
Module capacity		30	
Examination	Prüfungszeiten		Type of examination
Final exam of module	Veranstaltungsende		Ü
Lehrveranstaltungsform	Exercises		
SWS	4		
Frequency	SoSe oder WiSe		
Workload Präsenzzeit	56 h		

lök145 - Geographical Information Systems - Data Management and Geostatistical Analysis

Module label	Geographical Information Systems - Data Management and Geostatistical Analysis
Modulkürzel	lök145
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Schaal, Peter (module responsibility) • Schaal, Peter (Module counselling) • Aden, Christian (Prüfungsberechtigt) • Schaal, Peter (Prüfungsberechtigt)
Prerequisites	Wer in seinem Bachelorstudium keine vertiefenden GIS-Kenntnisse erworben hat, sollte das vorlaufende Modul „lök140 GIS-Anwendungen in der Landschaftsökologie“ absolviert haben.
Skills to be acquired in this module	Vermittelte Qualifikation: Basiswissen über die Ziele und Nutzen von Geodateninfrastrukturen und internationalen Standards für Geodaten und Geodatendienste Implementieren und Anwenden von Standards für die Publikation von Geodaten und Geodatendiensten (WMS, WPS, CSW) Einsatz von Geodatenbanken für das Management von Geodaten und deren Analyse Verwendung geostatistischer Verfahren und GIS-Analysen mittels GIS und Statistik-Software Stellenwert/Verortung Modul im Studiengang Das Modul baut auf dem vorlaufenden Master - Modul „GIS-Anwendungen in der Landschaftsökologie“ auf. ++ An aktuellen Forschungsfragen orientierte sowie theoriegestützte Vertiefung von Grundlagenwissen sowie Aneignung von Detailwissen in den Einzeldisziplinen der Landschaftsökologie ++ Erkennen und analysieren komplexer ökologischer Interdependenzen und Zusammenhänge im Rahmen eines landschaftsökologischen Systemverständnisses ++ Befähigung zum Transfer, d.h. Übertragen, Anpassen und Erweitern von erlerntem Wissen auf neue Problemstellungen und Kompetenz zur Problemlösung ++ Erlernen und selbständiges, zielgerichtetes Anwenden von Methoden-kenntnissen in wissenschaftlichen Forschungsarbeiten: Erfassungs-, Mess-, Auswertungs-, Modellierungs-, Bewertungs- und Planungsmethoden + Befähigung zur (auch englischsprachigen) fachlichen und fachübergreifenden Präsentation und Kommunikation von Arbeitsergebnissen gegenüber unterschiedlichen Adressatengruppen + Soziale und interkulturelle Kompetenz zur Zusammenarbeit in Teams unterschiedlicher Zusammensetzung ++ Verantwortungsvolles Anwenden der erlernten Kompetenzen, Fähigkeiten und Fertigkeiten in verschiedenen Feldern der landschaftsökologischen Berufspraxis
Module contents	a) WebGIS und Datenmanagement (Ü) Einführung in Geodateninfrastrukturen, Web Mapping, WebGIS und internationale Standards Arbeiten mit (Geo-)Datenbanken für Vektor- und Rasterdaten Aufbereitung, Integration und Vorhaltung von Geodaten in verschiedenen Formaten und Geodatenbanken Gezielte Abfragen von Vektordaten und Einbindung von GIS-Analysen mit der Structured Query Language (SQL) und PostGIS-Funktionen Einsetzen von MapClients in Webseiten, Erfassen von Geodaten mit Hilfe von Formularen und digitalen Karten sowie Speicherung der Daten in Geodatenbanken Herstellen und Abbilden von Karten in MapClients und interoperablen GIS auf Basis von Standards des Open Geospatial Consortiums (OGC), einschl. Symbologie, Labels, Charts, Datenabfragen, ... b) Rasteranalysen und Geostatistik (Se/Ü) Geostatistische Verfahren und Herstellung von Rasterdaten Rastermanagement (Aufbereitung, Integration und Vorhaltung in Geodatenbanken, Export von Rasterformaten) Verarbeitung und Analyse von Rasterdaten mit Hilfe von • PostGIS (Rasterstatistiken und Manipulation) • GRASS GIS (Surface-Analysen und Interpolationen analog zu ArcGIS) • R for Statistics (Integration von Rasterdaten, Reklassifizieren, Clip/Mask, zonale Statistiken, Habitatmodellierung) • Web Processing Services (Einbindung von Funktionen aus R und GRASS GIS in Python-Skripte, webbasierte Ansprachen von Funktionen unter Beachtung von Standards des Open Geospatial Consortiums (OGC))
Literaturempfehlungen	KORDUAN, P. & ZEHNER, M. L. (2008): Geoinformation im Internet. Technologien zur Nutzung raumbezogener Informationen im WWW, Wichmann, Heidelberg. KRESSE, W. & FADAIE, K. (2004): ISO Standards for Geographic Information, Springer, Berlin. MITCHELL, T. (2008): Web Mapping Illustrated: Using Open Source GIS Toolkits. O´Reilly, Sebastopol, CA. PENG,

		Z.-R. & TSOU, M.-H. (2003): Internet GIS: Distributed Geographic Information Services for the Internet and Wireless Networks, Wiley, Hoboken, NJ. PEREZ, A. S. (2012): OpenLayers Cookbook. Packt Publishing. OBE, R. O. & HSU, L. (2014): PostGIS in Action. Manning Publications. FISCHER-STABEL, P. (2013): Umweltinformationssysteme: Grundlegende	
Links			
Language of instruction		German	
Duration (semesters)		1 Semester	
Module frequency		jährlich	
Module capacity		30	
Examination	Prüfungszeiten		Type of examination
Final exam of module	Veranstaltungsende		Ü
Lehrveranstaltungsform	Exercises		
SWS	4		
Frequency	SoSe oder WiSe		
Workload Präsenzzeit	56 h		

lök210 - Practice of Nature Conservation

Module label	Practice of Nature Conservation
Modulkürzel	lök210
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule • Master's Programme Sustainability Economics and Management (Master) > Additional Modules • Master's Programme Water and Coastal Management (Master) > Science
Zuständige Personen	• Mose, Ingo (module responsibility) • Mose, Ingo (Module counselling) • Buchwald, Rainer (Prüfungsberechtigt) • Dörfler, Inken (Prüfungsberechtigt) • Mose, Ingo (Prüfungsberechtigt) • Fartmann, Thomas (Prüfungsberechtigt) • Janßen, Hans-Joachim, Dipl.-Ing. (Prüfungsberechtigt)
Prerequisites	Completed ecology-oriented Bachelor course
Skills to be acquired in this module	With the successful completion of the module the students will gain a general and advanced knowledge of crucial approaches and instruments of nature conservation in Germany and Europe, especially of the implementation of large protected areas (NSG, biosphere reserve, national park etc.), of maintenance/management projects and measures as well as of approaches to their integration into nature conservation and regional development strategies (via agriculture, tourism etc.) in co-operation with national park administrative authorities and other relevant actors. Additionally, the module gives basic skills in developing ecological connectivity systems (example dragonflies) as well as in developing and implementing approaches to ecological planning inside and outside the nature reserves. Ranking/position of the module within the course of studies: The module focuses on problems, methods, results, and analyses relevant to nature conservation and refers to corresponding issues of modules in Bachelor courses as well as of basic modules in Master courses of Landscape Ecology.
Module contents	a) Seminar "Protected areas and regional development": Survey of the most important types of large protected areas in Europe as well as current concepts of integrating the purposes of conservation with the tasks of regional development especially in peripheral rural areas b) Seminar "Introduction to the German Nature Conservation Law": This course deals with some parts of the Nature Conservation Law of Germany and Lower Saxony and discusses their relevance to the actual Nature Conservation policy in Northwest-Germany. **this seminar takes place in the winter term** c) Field course “Habitat connectivity": Theory of ecological connectivity including causes and impacts of fragmentation and isolation in nature-near biotopes; investigation of migration and dispersal behaviour in selected dragonfly species of ditch systems d) Excursion "Protected areas": Presentation of a selected large protected area in Germany or Europe especially considering geographical, floristic, faunistic, historical, agricultural, and nature conservation aspects as well as aspects of landscape and economics
Literaturempfehlungen	Amler, K. et al. (1999): Populationsbiologie in der Praxis. Stuttgart. Corbet, Ph. S. (1999): Dragonflies: Behaviour and ecology of Odonata. Chichester. Hammer, T. (ed., 2003): Großschutzgebiete - Instrumente nachhaltiger Entwicklung. München. Jedicke, E. (1990): Biotopverbund. Stuttgart. Jessel, B. & K. Tobias (2002): Ökologisch orientierte Planung. Stuttgart. Köppel, J. et al. (1998): Praxis der Eingriffsregelung. Stuttgart. Mose, I. (ed., 2007): Protected areas and regional development in Europe. Aldershot. Sternberg, K. & R. Buchwald (1999/2000): Die Libellen Baden-Württembergs; 2 volumes. Stuttgart.
Links	https://www.uni-oldenburg.de/vegetationskunde/
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	35

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	6 CP = Paper (in the course of a seminar) or excursion report or assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1		14
Exercises		1		14
Seminar		2		28
Study trip		3		42
Präsenzzeit Modul insgesamt				98 h

lök211 - Practice of Nature Conservation

Module label	Practice of Nature Conservation
Modulkürzel	lök211
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Mose, Ingo (module responsibility) • Mose, Ingo (Module counselling) • Dörfler, Inken (Prüfungsberechtigt) • Fartmann, Thomas (Prüfungsberechtigt) • Mose, Ingo (Prüfungsberechtigt) • Janßen, Hans-Joachim, Dipl.-Ing. (Prüfungsberechtigt)
Prerequisites	Completed ecology-oriented Bachelor course
Skills to be acquired in this module	With the successful completion of the module the students will gain a general and advanced knowledge of crucial approaches and instruments of nature conservation in Germany and Europe, especially of the implementation of large protected areas (NSG, biosphere reserve, national park etc.), of maintenance/management projects and measures as well as of approaches to their integration into nature conservation and regional development strategies (via agriculture, tourism etc.) in co-operation with national park administrative authorities and other relevant actors. Additionally, the module gives basic skills in developing ecological connectivity systems (example dragonflies) as well as in developing and implementing approaches to ecological planning inside and outside the nature reserves. Ranking/position of the module within the course of studies: The module focuses on problems, methods, results, and analyses relevant to nature conservation and refers to corresponding issues of modules in Bachelor courses as well as of basic modules in Master courses of Landscape Ecology.
Module contents	a) Seminar "Protected areas and regional development": Survey of the most important types of large protected areas in Europe as well as current concepts of integrating the purposes of conservation with the tasks of regional development especially in peripheral rural areas b) Seminar "Introduction to the German Nature Conservation Law": This course deals with some parts of the Nature Conservation Law of Germany and Lower Saxony and discusses their relevance to the actual Nature Conservation policy in Northwest-Germany. **this seminar takes place in the winter term** c) Fieldcourse “Habitat connectivity": Theory of ecological connectivity including causes and impacts of fragmentation and isolation in nature-near biotopes; investigation of migration and dispersal behaviour in selected dragonfly species of ditch systems d) Excursion "Protected areas": Presentation of a selected large protected area in Germany or Europe especially considering geographical, floristic, faunistic, historical, agricultural, and nature conservation aspects as well as aspects of landscape and economics
Literaturempfehlungen	Amler, K. et al. (1999): Populationsbiologie in der Praxis. Stuttgart. Corbet, Ph. S. (1999): Dragonflies: Behaviour and ecology of Odonata. Chichester. Hammer, T. (ed., 2003): Großschutzgebiete - Instrumente nachhaltiger Entwicklung. München. Jedicke, E. (1990): Biotopverbund. Stuttgart. Jessel, B. & K. Tobias (2002): Ökologisch orientierte Planung. Stuttgart. Köppel, J. et al. (1998): Praxis der Eingriffsregelung. Stuttgart. Mose, I. (ed., 2007): Protected areas and regional development in Europe. Aldershot. Sternberg, K. & R. Buchwald (1999/2000): Die Libellen Baden-Württembergs; 2 volumes. Stuttgart.
Links	https://www.uni-oldenburg.de/vegetationskunde/
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	35

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	9 CP = graded oral examination (Mose/Buchwald), additionally active participation in both seminars

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1		14
Exercises		1		14
Seminar		2		28
Study trip		3		42
Präsenzzeit Modul insgesamt				98 h

lök215 - Ornithological population estimates

Module label		Ornithological population estimates	
Modulkürzel		lök215	
Credit points		6.0 KP	
Workload		180 h	
Verwendbarkeit des Moduls		• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule	
Zuständige Personen		• Schmaljohann, Heiko (module responsibility) • Schmaljohann, Heiko (Module counselling) • Schmaljohann, Heiko (Prüfungsberechtigt)	
Prerequisites			
Skills to be acquired in this module			
Module contents			
Literaturempfehlungen			
Links			
Language of instruction		German	
Duration (semesters)		1 Semester	
Module frequency		Sommersemester	
Module capacity		unlimited	
Examination	Prüfungszeiten		Type of examination
Final exam of module			2 Prüfungsleistungen: - Hausarbeit (70%) - Referat (30%)
Lehrveranstaltungsform	VA-Auswahl		
SWS	4		
Frequency	SoSe oder WiSe		
Workload Präsenzzeit	56 h		

lök225 - Peatland Ecology

Module label	Peatland Ecology
Modulkürzel	lök225
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Massmann, Gudrun (module responsibility) • Massmann, Gudrun (Module counselling) • Caspers, Gerfried (Prüfungsberechtigt) • Massmann, Gudrun (Prüfungsberechtigt) • Peppler-Lisbach, Cord (Prüfungsberechtigt) • Maurischat, Philipp, Dr. (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Ziel des Moduls ist es, den Studierenden ökosystemare Zusammenhänge im Moor aus pedologischer, hydrologischer und vegetationskundlicher Sicht zu vermitteln. Zu Beginn des Moduls werden die Grundlagen zur Moorökologie im Seminar vermittelt. In fünf eintägigen Exkursionen werden verschiedene Moore besucht und durch die Einbeziehung von externen Moorfachleuten unter verschidensten Gesichtspunkten beleuchtet. Studierende besitzen nach erfolgreichem Besuch des Moduls • vertiefte theoretische Kenntnisse über das Ökosystem Moor • vertiefte bodenkundlich-hydrologische-vegetationsökologische Kenntnisse • vertiefte Kenntnisse ökosystemarer Prozessabläufe • vertiefte Kenntnisse bezüglich aktueller Forschungsthemen [nop] ++ An aktuellen Forschungsfragen orientierte sowie theoriegestützte Vertiefung von Grundlagenwissen sowie Aneignung von Detailwissen in den Einzeldisziplinen der Landschaftsökologie ++ Erkennen und analysieren komplexer ökologischer Interdependenzen und Zusammenhänge im Rahmen eines landschaftsökologischen Systemverständnisses ++ Einordnung und Reflexion landschaftsökologischer Kenntnisse in inter-(und trans-)disziplinären Zusammenhängen + Befähigung zum Transfer, d.h. Übertragen, Anpassen und Erweitern von erlerntem Wissen auf neue Problemstellungen und Kompetenz zur Problemlösung ++ Erlernen und selbständiges, zielgerichtetes Anwenden von Methoden-kenntnissen in wissenschaftlichen Forschungsarbeiten: Erfassungs-, Mess-, Auswertungs-, Modellierungs-, Bewertungs- und Planungsmethoden ++ Befähigung zur (auch englischsprachigen) fachlichen und fachübergreifenden Präsentation und Kommunikation von Arbeitsergebnissen gegenüber unterschiedlichen Adressatengruppen ++ Soziale und interkulturelle Kompetenz zur Zusammenarbeit in Teams unterschiedlicher Zusammensetzung ++ Verantwortungsvolles Anwenden der erlernten Kompetenzen, Fähigkeiten und Fertigkeiten in verschiedenen Feldern der landschaftsökologischen Berufspraxis [/nop]
Module contents	• Applied Peat Ecology (Ex) • Ecology of Peatlands (S)
Literaturempfehlungen	Literatur wird je nach Entwicklung des Forschungsfeldes im Rahmen der Vorbereitung zum Seminar bekannt gegeben.
Links	https://uol.de/hydrogeologie/
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	24

Examination	Prüfungszeiten	Type of examination
Final exam of module	Veranstaltungsende	PS

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar		2	SoSe und WiSe	28
Study trip		2	SoSe und WiSe	28
Präsenzzeit Modul insgesamt				56 h

lök229 - Soil Ecology and Soil Landscapes

Module label	Soil Ecology and Soil Landscapes
Modulkürzel	lök229
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Kalinina, Olga (module responsibility) • Kalinina, Olga (Module counselling) • Massmann, Gudrun (Module counselling) • Kalinina, Olga (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	The objectives of the module: - to learn the field and laboratory methods of soil investigation in relation to the scientific objectives; - to analyse the field and laboratory data and to apply modern statistical methods; - to learn the soil evaluation on the basis of field and laboratory data - to apply the field and laboratory data for the landscape analyse; - to analyse ecological processes in the soil-plant-system; - to analyse the ecological interrelation within an landscape; - to work on scientific questions on your own; - to communicate in team to solve a problem.
Module contents	Field exercises: soil inverstigation in the context of landscape and soil simpling in relation to a focus of study; humus form as indication a dynamics of the ecosystem Laboratory exercises: Analytical procedures for soil characterization in relation to a focus of study, calculation of laboratory data. Seminar: Analyse the field and laboratory data; apply modern statistical methods; critical discussion of the field and laboratory data, evaluation of landscape and ecosystem using the field and laboratory data.
Literaturempfehlungen	Scheffer & Schachtschabel (2018): Lehrbuch der Bodenkunde, Spektrum-Verlag. AD-HOC-AG Bodenkunde (2005): Bodenkundliche Kartieranleitung. Schweizerbartsche Verlagsbuchhandlung. Schlichting, Blume, Stahr (1995); Bodenkundliches Praktikum, Blackwell. NIBIS Kartenserver see StudIP.
Links	https://nibis.lbeg.de/cardomap3/#
Language of instruction	German
Duration (semesters)	2 Semester
Module frequency	WiSe and SoSe

Module capacity	8 (2 hrs/w exercise SoSe 3 hrs/w exercise WiSe 1 hrs/w seminar Wise)
Reference text	 associated with the following modules: lök120: Geoecological Processes lök280/lök285: Special Vegetation Ecology
Type of module	Wahlpflicht / Elective
Module level	MM (Mastermodul / Master module)
Teaching/Learning method	2 hrs/w Übung/exercise 3 hrs/w Übung/exercise 1 hrs/w Seminar/seminar
Previous knowledge	Vegetation Ecology, geology, chemistry, ecology, soil science

Examination	Prüfungszeiten	Type of examination
Final exam of module	Veranstaltungsende	HA

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar		4	SoSe und WiSe	56
Exercises		2	SoSe und WiSe	28
Präsenzzeit Modul insgesamt				84 h

lök230 - Aquatic Ecology

Module label	Aquatic Ecology
Modulkürzel	lök230
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Kiel, Ellen (module responsibility) • Kiel, Ellen (Module counselling) • Kiel, Ellen (Prüfungsberechtigt)
Prerequisites	Gewässerökologische Grundkenntnisse (entsprechend den Angeboten B.Sc. UWI)
Skills to be acquired in this module	The prior goals and themes of this module are: - To learn about important parameter and ecological processes of specific aquatic habitats; - learn about threats and important disturbance factors; - work independently on scientific question; - learn methods and learn how to apply specific methods in field and in the laboratory experiments; - start to development methods on your own; - analyse the field and laboratory data, and apply modern statistical methods; - start critical analysis and discussion of field and laboratory data; - learn to develop mapping and assessment methods; - study principles of typology and models describing selected systems; - learn how to deal with nature conservation conflicts by referring to experimental field and laboratory data.
Module contents	3 courses: 1. Lowland Waters (3 CP); 2. Bioassessment (3 CP); 3. Field Experiments (3 CP)
Literaturempfehlungen	Relevant literature will be made available in advance via StudIP and during the course.
Links	https://www.uni-oldenburg.de/en/biology/aquatic-ecology-and-nature-conservation/
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	20

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	1 assignment (English, publication form)

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Exercises		2	SoSe	28
Seminar		2	SoSe	28
Präsenzzeit Modul insgesamt				84 h

bio675 - Molecular Ecology

Module label	Molecular Ecology
Modulkürzel	bio675
Credit points	12.0 KP
Workload	360 h
Verwendbarkeit des Moduls	• Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Nolte, Arne (module responsibility) • Gerlach, Gabriele (Module counselling) • Nolte, Arne (Prüfungsberechtigt) • Gerlach, Gabriele (Prüfungsberechtigt) • Dennenmoser, Stefan (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	The field of molecular ecology strives to identify relationships between species genotypes, phenotypes and ecological factors. It addresses questions about how organisms adapt and explains patterns of distribution and biodiversity. During the course, participants will get to know the biological background to design an experiment in the field of molecular ecology. We will discuss the state of the art according to literature. Participants will perform sampling and conduct steps of the analysis. The course will cover field methods (sampling) and lab methods (behavior experiments, genetic analyses, phenotypic analyses) as well as computer based analyses. ++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills + interdisciplinary thinking + critical and analytical thinking + independent searching and knowledge of scientific literature ++ ability to perform independent biological research ++ data presentation and discussion (E) (written and spoken) + statistics & scientific programming
Module contents	Lecture: AN/GG - Molecular ecology background of specific study systems. The lectures will introduce a study system that will be analyzed during the course (study systems may vary from year to year). It is the goal of the lecture to provide students with background information to develop an experimental design of a field study during the practical. Excercise: AN/GG - Mixed course with laboratory and field exercises. Samples will be collected in the field. One goal of the course is to apply modern analyses to understand how organisms are distributed. Another aspect is the application of molecular markers to analyze behavioral experiments.
Literaturempfehlungen	will be announced during the course
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	summer term
Module capacity	15
Reference text	associated with bio890 Current Topics of Biology (Seminar)
Type of module	Wahlpflicht / Elective
Module level	MM (Mastermodul / Master module)
Teaching/Learning method	Lecture, Exercise
Previous knowledge	Reading English literature and presenting seminar topics in English. Basic knowledge of working in a gene laboratory and with a computer.

Examination	Prüfungszeiten	Type of examination
Final exam of module	during the module	Presentations (50%), Portfolio (50%). Regular participation is a prerequisite to pass in the module.

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Exercises		6	SoSe	84

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Präsenzzeit Modul insgesamt				112 h

bio770 - Field Methods in Organismal Biology

Module label	Field Methods in Organismal Biology
Modulkürzel	bio770
Credit points	15.0 KP
Workload	450 h
Verwendbarkeit des Moduls	• Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Zotz, Gerhard (module responsibility) • Gerlach, Gabriele (Module counselling) • Albach, Dirk Carl (Module counselling) • von Hagen, Klaus Bernhard (Module counselling) • Mouritsen, Henrik (Module counselling) • Nolte, Arne (Module counselling) • Schmaljohann, Heiko (Module counselling) • Zotz, Gerhard (Prüfungsberechtigt) • Gerlach, Gabriele (Prüfungsberechtigt) • Albach, Dirk Carl (Prüfungsberechtigt) • Will, Maria (Prüfungsberechtigt) • von Hagen, Klaus Bernhard (Prüfungsberechtigt) • Mouritsen, Henrik (Prüfungsberechtigt) • Nolte, Arne (Prüfungsberechtigt) • Khan, Gulzar (Prüfungsberechtigt) • Schmaljohann, Heiko (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills + interdisciplinary thinking ++ critical and analytical thinking ++ independent searching and knowledge of scientific literature ++ ability to perform independent biological research + data presentation and discussion (E) (written and spoken) ++ project and time management ++ statistics & scientific programming The molecule aims at enabling students to apply theoretical knowledge to practical, hypothesis-based field studies within the scope of a seminar. The data derived from the individual projects performed are then to be documented and discussed in the form of a written laboratory course report oriented by a scientific publication and to be written in English. Several teachers cooperate to enable interdisciplinary approaches (e.g. botanical-zoological approaches).
Module contents	S: Biogeographic and ecological classification and characterization of a biome (e.g. Mediterranean region, moist tropics, boreal zone), independent identification and treatment of scientific questions, presentation of scientific results in a “mini symposium” subsequent to the field studies. E: Planning and performing a field study project, data analysis, written report in the form of a scientific publication
Literaturempfehlungen	Varies with topic and field locality
Links	www.uni-oldenburg.de/fun_eco/
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	annually in summer term
Module capacity	21
Type of module	Wahlpflicht / Elective
Module level	MM (Mastermodul / Master module)
Teaching/Learning method	Seminar, exercise

Examination	Prüfungszeiten	Type of examination
Final exam of module		2 Presentations (30 %) Laboratory course report on project work (70 %) PLEASE NOTE: Additional conditions regarding attendance and ungraded activities as determined by the persons responsible for the module will apply.

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Exercises		10	SoSe	140
Seminar		2	SoSe	28
Seminar (Pflichtveranstaltung für Erstsemester OHNE bisherige Belehrung)			WiSe	0
Präsenzzeit Modul insgesamt				168 h

lök250 - Functional Ecology of Plants

Module label	Functional Ecology of Plants
Modulkürzel	lök250
Credit points	15.0 KP
Workload	450 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Zotz, Gerhard (module responsibility) • Zotz, Gerhard (Module counselling) • Einzmann, Helena (Prüfungsberechtigt) • Zotz, Gerhard (Prüfungsberechtigt) • Hoeber, Vincent (Prüfungsberechtigt) • Will, Maria (Prüfungsberechtigt)
Prerequisites	none
Skills to be acquired in this module	Lecture: Special subjects of Functional Ecology of Plants are dealt with in detail giving the students a general idea of recent research in the field. Seminar: Giving seminar papers based on own or other people´s research allows the improvement of presentation skills. Practical work: Project work including independent planning, performance, analysis, and presentation will familiarize students with the scientific method.
Module contents	L: ”Scaling“: Physiological Ecology from individual organ to ecosystem SE: Recent studies in experimental ecology E: Independent research project
Literaturempfehlungen	von Willert, D. J., R. Matyssek and W. Herppich (1995). Experimentelle Pflanzenökologie. Stuttgart, Thieme Verlag Lambers, H., F. S. Chapin III and T. L. Pons (2008). Plant Physiological Ecology. New York, Springer. Schulze, E. D., E. Beck and K. Müller-Hohenstein (2002). Pflanzenökologie. Berlin, Springer. Additional literature will be announced during the module and is contingent on the latest developments in the research field.
Links	https://www.uni-oldenburg.de/en/biology/functional-ecology/
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Reference text	http://www.uni-oldenburg.de/fun_eco/

Examination	Prüfungszeiten	Type of examination
Final exam of module		Two seminar papers (30%) Project report (70%)

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	--	28
Exercises		10	--	140
Seminar		2	--	28
Präsenzzeit Modul insgesamt				196 h

lök260 - Restoration of terrestrial Ecosystems

Module label	Restoration of terrestrial Ecosystems
Modulkürzel	lök260
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Balke, Thorsten (module responsibility) • Balke, Thorsten (Prüfungsberechtigt)
Prerequisites	Basic knowledge in Ecology, Vegetation Science, and Zoology, comparable to the respective Bachelor modules in Environmental Sciences
Skills to be acquired in this module	The participants will become acquainted with the possibilities and limits of renaturation and restoration projects in terrestrial ecosystems. This implies an extensive knowledge in autecology and population ecology of selected species on the one hand; on the other hand, monitoring by means of hydrological and/or pedological parameters as well as based on the vegetation and selected animal groups is crucial for evaluating such projects. In cooperation with the respective project management, student groups will contribute to the evaluation and advancement of the respective project as well as similar project(s) by performing individual records, analyses and assessments. Ranking/position of the module within the course of studies: The module is closely related to the Master modules “Practice of Nature Conservation“, “Special Ecology“ and “Ecology of Soil-Water-Plant Systems“ and comprises questions of scientific and applied nature conservation.
Module contents	Theory and Practice of Restoration Ecology (L): The lecture deals with the fundamentals of Restoration Ecology and exemplarily with the biotope systems fen and bog, grassland and heath. Restoration of Terrestrial Ecosystems (LC): The participants collect data contributing to the evaluation of current restoration projects (Hudewald, mesophilic grassland, heath, oligotrophic stagnant waters).
Literaturempfehlungen	Bakker, J.P.: Nature management by grazing and cutting. Dordrecht 1989. Van Andel, J., Bakker, J.P., Snaydon, R.: Disturbance in grasslands. Dordrecht 1987. Zerbe, S. & Wiegleb, G. (Hrsg.): Renaturierung von Ökosystemen in Mitteleuropa. Heidelberg 2009. Schopp-Guth, A.: Renaturierung von Moorlandschaften. Bonn 1999. Nick, K.J. et al.: Moorregeneration im Leegmoor/Emsland nach Schwarztorfabbau und Wiedervernässung. Bonn 2001. Wheeler, B.D.. et al.: Restoration of temperate wetlands. Baffins Lane u.a. 1995. Perrow, M.R. & Davy, A.J.: Handbook of ecological restoration; 2 volumes. Cambridge 2002. Additional literature will be announced during the course, if necessary.
Links	https://www.uni-oldenburg.de/vegetationskunde/
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Seminar paper or assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Vorlesung und Seminar		2	--	28
Exercises		2	--	28
Präsenzzeit Modul insgesamt				56 h

lök270 - Landscape Management Support Planning

Module label	Landscape Management Support Planning
Modulkürzel	lök270
Credit points	15.0 KP
Workload	450 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• a N., (module responsibility)
Prerequisites	
Skills to be acquired in this module	The landscape management support plan aims at compensating for any project-related impacts on the environment. The mitigation and compensation plan is the outcome of a planning process which will be trained in this course. Upon successful completion of the module students will gain: • Technical skills in mapping plants and animals in landscapes: Records, sorting of records for preparing mapping keys; field mapping. • Technical skills in landscape management support planning including GIS analysis, evaluation of the compensation of environmental impacts on selected ecosystem compartments, and planning of compensation and mitigation Ranking/position of the module within the course of studies: This module imparts both action-oriented and theoretical knowledge required for landscape management support planning.
Module contents	Mapping results obtained in the field study are fed into GIS, compensation and mitigation measures are planned, and finally the impacts are balanced by the compensation measures.
Literaturempfehlungen	Relevant literature will be announced during the preparatory course and is contingent on the latest developments in the research field. Additionally, a script for the exercise will be handed over to the participants.
Links	https://www.uni-oldenburg.de/en/landeco/
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Reference text	Medienformen: Geländearbeit, GIS-Arbeit, Präsentation der Inhalte über Beamer, Folie und Tafel, Selbstudium mit dem e-learning System www.GIMOLUS.de,

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Specialized practical exercise

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Exercises		10	SoSe	140
Seminar		1	SoSe und WiSe	14
Präsenzzeit Modul insgesamt				154 h

lök280 - Special Vegetation Ecology

Module label	Special Vegetation Ecology
Modulkürzel	lök280
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Peppler-Lisbach, Cord (module responsibility) • Buchwald, Rainer (Prüfungsberechtigt) • Dörfler, Inken (Prüfungsberechtigt) • Peppler-Lisbach, Cord (Prüfungsberechtigt)
Prerequisites	Completed Bachelor studies with ecological orien-tation
Skills to be acquired in this module	The module qualifies the participants to extend their knowledge acquired in their ecologically oriented Master studies of Landscape Ecology. This comprises advanced knowledge of the flora and vegetation types in Central Europe as well as the acquisition of additional methods in vegetation ecology
Module contents	In the summer term, the module (6 CP) includes a one-week field course in a selected Central European natural landscape focussing on floristic, vegetation ecological, phytosociological (syntaxonomical) aspects as well as on aspects of biocoenology and nature conservation.
Literaturempfehlungen	Dierschke, H. (1994): Pflanzensoziologie. Grundlagen und Methoden. UTB Große Reihe; Stuttgart. Ellenberg, H. & Leuschner, C. (2010): Vegetation Mitteleuropas mit den Alpen in ökologischer, dynamischer und historischer Sicht. 6th edition; Stuttgart. Frey, W. & Lösch, R. (2010): Lehrbuch der Geobotanik. 3rd edition, Stuttgart and others. Pott, R. (1995): Die Pflanzengesellschaften Deutschlands. 2nd edition; Stuttgart. Van der Maarel, E. (ed.) (2005): Vegetation Ecology; Malden. Wilmanns, O. (1998): Ökologische Pflanzensoziologie. 6th edition; Heidelberg.
Links	https://www.uni-oldenburg.de/vegetationskunde/
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Reference text	The field course in this module is also part of the 9CP module lök285 "Special Vegetation Ecology". Therefore, it is not possible to register for the modules lök280 and lök285 simultaneously.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Assignment

Lehrveranstaltungsform	Exercises
SWS	4
Frequency	
Workload Präsenzzeit	56 h

lök285 - Special Vegetation Ecology

Module label	Special Vegetation Ecology
Modulkürzel	lök285
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Peppler-Lisbach, Cord (module responsibility) • Buchwald, Rainer (Prüfungsberechtigt) • Peppler-Lisbach, Cord (Prüfungsberechtigt)
Prerequisites	Completed Bachelor studies with ecological orientation
Skills to be acquired in this module	The module qualifies the participants to extend their knowledge acquired in their ecologically oriented Master studies of Landscape Ecology. This comprises advanced knowledge of the flora and vegetation types in Central Europe as well as the acquisition of additional methods in vegetation ecology.
Module contents	Exercise: In the summer term, the module includes, as a compulsory component (6 CP), a one-week field work in a selected Central European natural landscape focussing on floristic, vegetation ecological, phytosociological (syntaxonomical) aspects as well as on aspects of biocoenology and nature conservation. Lecture: Additionally, the lecture "Vegetation Ecology" (3 CP) is offered in the winter term, imparting the fundamentals of development, dynamics, dispersal, site conditions, floristic composition as well as protection of decisive Central European vegetation and biotope types, respectively.
Literaturempfehlungen	Dierschke, H. (1994): Pflanzensoziologie. Grundlagen und Methoden. UTB Große Reihe; Stuttgart. Ellenberg, H. & Leuschner, C. (2010): Vegetation Mitteleuropas mit den Alpen in ökologischer, dynamischer und historischer Sicht. 6th edition; Stuttgart. Frey, W. & Lösch, R. (2010): Lehrbuch der Geobotanik. 3rd edition, Stuttgart and others. Pott, R. (1995): Die Pflanzengesellschaften Deutschlands. 2nd edition; Stuttgart. Van der Maarel, E. (ed.) (2005): Vegetation Ecology; Malden. Wilmanns, O. (1998): Ökologische Pflanzensoziologie. 6th edition; Heidelberg.
Links	https://www.uni-oldenburg.de/vegetationskunde/
Language of instruction	German
Duration (semesters)	2 Semester
Module frequency	jährlich
Module capacity	unlimited
Reference text	The field work is also part of the 6 CP module lök280 "Special Vegetation Ecology". Therefore, it is not possible to register for the modules lök280 and lök285 simultaneously.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Oral examination or assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2		28
Exercises		4		56
Präsenzzeit Modul insgesamt				84 h

lök310 - Group Project: Sustainable Spatial Development

Module label	Group Project: Sustainable Spatial Development	
Modulkürzel	lök310	
Credit points	9.0 KP	
Workload	270 h	
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule	
Zuständige Personen	• Mose, Ingo (module responsibility) • Mose, Ingo (Module counselling) • Schaal, Peter (Module counselling) • Mose, Ingo (Prüfungsberechtigt) • Schaal, Peter (Prüfungsberechtigt)	
Prerequisites	Participation in the module Environmental Planning	
Skills to be acquired in this module	Upon successful completion of the module the students will have gained various skills in the independent use and application of planning methods to develop appropriate solutions to selected problems in spatial planning and regional development, additionally experiences will be gained in organizing group work and the successful integration of individual tasks in a wider project context	
Module contents	Review of theoretical knowledge in spatial and environmental planning based on a specific planning task reflecting or integrating practical requirements.	
Literaturempfehlungen	Literature will be announced during the lectures.	
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	jährlich	
Module capacity	unlimited	
Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Special exercise (70%) und presentation (30%)
Lehrveranstaltungsform	Seminar und Übung	
SWS	6	
Frequency	SoSe	
Workload Präsenzzeit	84 h	

lök320 - Sustainable Spatial Development in Europe

Module label	Sustainable Spatial Development in Europe
Modulkürzel	lök320
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule • Master's Programme Sustainability Economics and Management (Master) > Additional Modules • Master's Programme Water and Coastal Management (Master) > Planning
Zuständige Personen	• Mose, Ingo (module responsibility) • Mose, Ingo (Module counselling) • Mose, Ingo (Prüfungsberechtigt) • Klenke, Thomas (Prüfungsberechtigt) • Kramer, Nadine (Prüfungsberechtigt) • Schaal, Peter (Prüfungsberechtigt)
Prerequisites	Good command of English
Skills to be acquired in this module	Presentation and critical reflection of crucial demands of a sustainable spatial development in selected fields of activities especially considering rural development. Comparison of suitable case studies in a European context. Knowledge into central control instruments of structural, regional, and agricultural policy on a national as well as on a European level. Considering specific demands of spatial development in the context of political and social processes of Europeanization.
Module contents	SE/EX Multifunctionality and rural development (3 CP) V Topical issues of agriculture and nutrition (1.5 CP) SE/EX Sustainable tourism (3 CP) SE/EX Renewable energy planning (3 CP) V Colloquium on sustainable spatial development (1.5 CP) SE Special subject job market: Job market and inequality in Europe (3 CP) – This course (1.07.211 / FK I) takes place in the summer semester. Multifunctionality and rural development Survey of the multifunctionality of rural areas, especially the importance of agriculture and forestry, tourism and recreational activities, habitation, and protection of nature as well as the demands on spatial planning and regional development involved under the conditions of sustainability. Illustration by means of selected examples in a European context. Agriculture and agricultural policy Survey of EU agricultural policy programmes and their strategic-instrumental implementation as well as of selected topics of current developments in agriculture presented by various guest lecturers. Sustainable tourism Presentation of various concepts of sustainable tourism and its realization from the viewpoint of offer and demand. Illustration by means of selected examples in a European context. Renewable energy planning Survey of different forms of renewable energy and related demands on spatial development seen from a mainly planning and actor-orientated point of view. Illustration by means of selected examples in a European context. Colloquium on sustainable spatial development Survey of up-to-date theoretical approaches, concepts, instruments as well as practical fields of activities in sustainable spatial development in a national and European context. Special subject job market: Job market and inequality This course (1.07.211 / FK I) takes place in the summer semester. Three one-day excursions with varying emphasis will be performed in the vicinity of Oldenburg as an integral part of the module seminars.
Literaturempfehlungen	Akademie für Raumforschung und Landesplanung (Hrsg.): Handwörterbuch der Raumordnung. Hannover 2017. Cloke, P.; Marsden, T.; Mooney, P.H. (eds.): Handbook of rural studies. London 2006. Ermann, U. et al.: Agro-Food Studies. Eine Einführung. Köln 2018 Fischer, A.: Sustainable Tourism. Bern 2014.

	Grabski-Kieron, U.; Mose, I.; Reichert-Schick, A.; Steinführer, A. (eds.): European rural peripheries revalued. Governance, actors, impacts. Münster 2016. Küster, H.: Die Entdeckung der Landschaft. Einführung in eine neue Wissenschaft. München 2012. Lossau, J.; Freytag, T.; Lippuner, R. (Hrsg.): Schlüsselbegriffe der Kultur- und Sozialgeographie. Stuttgart 2014 Schmied, D. (ed.): Winning and losing. The changing geography of Europe´s rural areas. Additional literature will be announced in the seminars.
Links	https://www.uni-oldenburg.de/en/geo/
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	6 CP = Report or assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	--	28
Seminar		3	--	42
Study trip		1	--	14
Präsenzzeit Modul insgesamt				84 h

lök321 - Sustainable Spatial Development in Europe

Module label	Sustainable Spatial Development in Europe
Modulkürzel	lök321
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Mose, Ingo (module responsibility) • Mose, Ingo (Module counselling) • Klenke, Thomas (Prüfungsberechtigt) • Kramer, Nadine (Prüfungsberechtigt) • Mose, Ingo (Prüfungsberechtigt) • Schaal, Peter (Prüfungsberechtigt)
Prerequisites	Good command of English
Skills to be acquired in this module	Presentation and critical reflection of crucial demands of a sustainable spatial development in selected fields of activities especially considering rural development. Comparison of suitable case studies in a European context. Knowledge into central control instruments of structural, regional, and agricultural policy on a national as well as on a European level. Considering specific demands of spatial development in the context of political and social processes of Europeanization.
Module contents	SE/EX Multifunctionality and rural development (3 CP) V Topical issues of agriculture and agricultural policy (1.5 CP) SE/EX Sustainable tourism (3 CP) SE/EX Renewable energy planning (3 CP) V Colloquium on sustainable spatial development (1.5 CP) SE Special subject job market: Job market and inequality in Europe (3 CP) – This course (1.07.211 / FK I) takes place in the summer semester. Multifunctionality and rural development Survey of the multifunctionality of rural areas, especially the importance of agriculture and forestry, tourism and recreational activities, habitation, and protection of nature as well as the demands on spatial planning and regional development involved under the conditions of sustainability. Illustration by means of selected examples in a European context. Agriculture and agricultural policy Survey of EU agricultural policy programmes and their strategic-instrumental implementation as well as of selected topics of current developments in agriculture presented by various guest lecturers. Sustainable tourism Presentation of various concepts of sustainable tourism and its realization from the viewpoint of offer and demand. Illustration by means of selected examples in a European context. Renewable energy planning Survey of different forms of renewable energy and related demands on spatial development seen from a mainly planning and actor-orientated point of view. Illustration by means of selected examples in a European context. Colloquium on sustainable spatial development Survey of up-to-date theoretical approaches, concepts, instruments as well as practical fields of activities in sustainable spatial development in a national and European context. Special subject job market: Job market and inequality This course (1.07.211 / FK I) takes place in the summer semester. Three one-day excursions with varying emphasis will be performed in the vicinity of Oldenburg as an integral part of the module seminars.
Literaturempfehlungen	Cloke, P.; Marsden, T.; Mooney, P.H. (eds.): Handbook of rural studies. London 2006. Schmied, D. (ed.): Winning and losing. The changing geography of Europe´s rural areas. Additional literature will be announced in the seminars.
Links	https://www.uni-oldenburg.de/en/geo/
Languages of instruction	German, English
Duration (semesters)	1 Semester

Module frequency		jährlich		
Module capacity		unlimited		
Examination		Prüfungszeiten	Type of examination	
Final exam of module		Before the end of the module	9 CP = Report or assignment or oral examination (extended version)	
Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2		28
Seminar		6		84
Study trip		2		28
Präsenzzeit Modul insgesamt				140 h

lök345 - Advanced Limnology

Module label	Advanced Limnology
Modulkürzel	lök345
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Kiel, Ellen (module responsibility) • Kiel, Ellen (Module counselling) • Kiel, Ellen (Prüfungsberechtigt)
Prerequisites	Basic knowledge of taxonomy + determination of mainly invertebrates, basic skills in faunistic field methods, L Animal Ecology
Skills to be acquired in this module	Special Aquatic Ecology The module imparts general and special knowledge of the ecology of typical floodplain water systems with special emphasis on floodplain dynamics and the resulting processes related to those water systems. Floodplain development and (faunistic) biodiversity are further main topics comprising e.g. the explanation of ecological conditions and colonisation processes and referring to questions of nature protection, examining the habitat preference of selected species and describing the population development of typical floodplain species. E Special Aquatic Ecology Familiarization with the course of a planning process on the basis of an exemplary project in Northwest Germany; independent development of a concept of methods for assessing the faunistic actual state and subsequent realization in the field; scientific documentation and ecologically relevant assessment of the situation in the project area using selected indicator groups (scientific determination of selected taxa); preparation of final expert opinions on the project
Module contents	L Special Aquatic Ecology Ecology of typical floodplain water systems (mainly oxbow lakes bodies and temporary water bodies); description of the decisive processes in floodplain and water system dynamics as well as the expres-sivity of the (faunistic) biodiversity; description of the ecological conditions and colonisation process-es relevant to questions of nature protection, aspects of biodiversity as well as habitat preference and population development of typical floodplain species. E Special Aquatic Ecology Description of legal and planning procedures based on a case study; development and realization of a concept of methods for assessing the faunistic current status; scientific documentation (determination of taxa), analysis (determination and classification of species-related characteristics of the taxa rele-vant to the planning) and ecologically relevant assessment of the situation in the project area; final expert opinion on the project
Literaturempfehlungen	See announcements in StudIP
Links	https://www.uni-oldenburg.de/en/biology/aquatic-ecology-and-nature-conservation/
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Reference text	The courses of this module are integrated into lök350 "Special Animal Ecology" (9 CP). Students graduating in Special Animal Ecology cannot graduate in Special Aquatic Ecology.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module.	Special exercise or Assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1		14
Exercises		3		42
Präsenzzeit Modul insgesamt				56 h

lök350 - Advanced Animal Ecology

Module label	Advanced Animal Ecology
Modulkürzel	lök350
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Kiel, Ellen (module responsibility) • Kiel, Ellen (Prüfungsberechtigt) • Kiel, Ellen (Module counselling)
Prerequisites	Basic knowledge of taxonomy + determination of mainly vertebrates, basic skills in faunistic field methods, L Animal Ecology
Skills to be acquired in this module	L Special Aquatic Ecology The module imparts general and special knowledge of the ecology of typical floodplain water systems with special emphasis on floodplain dynamics and the resulting processes related to those water sys-tems. Floodplain development and (faunistic) biodiversity are further main topics comprising e.g. the expla-nation of ecological conditions and colonisation processes and referring to questions of nature protec-tion, examining the habitat preference of selected species and describing the population development of typical floodplain species. E Special Aquatic Ecology Familiarization with the course of a planning process on the basis of an exemplary project in North-west Germany; independent development of a concept of methods for assessing the faunistic actual state and subsequent realization in the field; scientific documentation and ecologically relevant as-sessment of the situation in the project area using selected indicator groups (scientific determination of selected taxa); preparation of final expert opinions on the project L Applied Animal Ecology Qualification for preparing a professional zooecological contribution within the scope of an expert opinion; familiarization with the most important faunistic indicator groups for scientific objectives relevant to a project
Module contents	L Special Aquatic Ecology Ecology of typical floodplain water systems (mainly old water bodies and temporary water bodies); de-scription of the decisive processes in floodplain and water system dynamics as well as the expressivi-ty of the (faunistic) biodiversity; description of the ecological conditions and colonisation processes rele-vant to questions of nature protection, aspects of biodiversity as well as habitat preference and popula-tion development of typical floodplain species. E Special Aquatic Ecology Description of legal and planning procedures based on a case study; development and realization of a concept of methods for assessing the faunistic current status; scientific documentation (determination of taxa), analysis (determination and classification of species-related characteristics of the taxa rele-vant to the planning) and ecologically relevant assessment of the situation in the project area; final expert opin-ion on the project L Applied Animal Ecology Importance of professional zooecological contributions within the scope of ecologically relevant plan-ning; legal and qualified arguments; regulations for the conservation of species under national and international law; faunistic indication: complex of problems related to vicarious species, well-founded selection of indicator groups Principles of developing a concept of sampling and of performing field work; description of standard methods of sampling and analysis, essential aspects of a professional zooecological contribution for an expert opinion on a project; detailed description of the most important faunistic indicator groups for scientific objectives relevant to a project
Literaturempfehlungen	See announcements in StudIP
Links	
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited

Reference text	Special Animal Ecology (9 CP) integrates the courses of the module Special Aquatic Ecology (6 CP). Students graduating in Special Animal Ecology cannot graduate in Special Aquatic Ecology.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Special exercise or Assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		3		42
Exercises		3		42
Präsenzzeit Modul insgesamt				84 h

lök360 - Special Abiotic Factors (Soil/Water)

Module label	Special Abiotic Factors (Soil/Water)
Modulkürzel	lök360
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Greskowiak, Janek (module responsibility) • Greskowiak, Janek (Module counselling) • Kalinina, Olga (Module counselling) • Massmann, Gudrun (Module counselling) • Greskowiak, Janek (Prüfungsberechtigt) • Kalinina, Olga (Prüfungsberechtigt) • Massmann, Gudrun (Prüfungsberechtigt) • Maurischat, Philipp (Prüfungsberechtigt)
Prerequisites	Basic knowledge of Soil Science, Hydrogeology and Hydrochemistry
Skills to be acquired in this module	E: Applied modelling of water and solute transport in groundwater: Impartment of knowledge into quantitative hydrogeology (hydraulics and advection-dispersion). Qualification to develop simple groundwater flow and transport models. E: Hydrochemical modelling of water-rock interactions using PHREEQC: Impartment of knowledge into quantitative hydrogeochemistry and skills in hydrogeochemical modelling. L: Major Soils of the World and excursion to the World Soil Museum in Wageningen (The Netherlands): Impartment of knowledge into distribution, properties and classification of soils of the world. Qualification to apply the World Reference Base for Soil Resources (WRB) and to identify the soils of the world. E: Special soil science field and laboratory exercises: Impartment of knowledge into specific field and laboratory methods. Qualification to select and apply specific field and laboratory methods as well as to analyse and interpret results.
Module contents	E: Applied modelling of water and solute transport in groundwater: Performance of a sandbox experiment. Numerical modelling of groundwater flow and solute transport using PMWIN (http://www.simcore.com): Model setup, parameterization and numerical solution of the groundwater flow and advection-dispersion equations. E: Hydrochemical modelling of water-rock interactions using PHREEQC: Modelling of hydrogeochemical processes (speciation reactions and mineral reactions, pyrite oxidation, oxidation of organic matter, redox reactions, ion exchange, equilibrium reactions and reaction kinetics) using the software PHREEQC (http://wwwbrr.cr.usgs.gov/projects/GWC_coupled/phreeqc/) L: Major Soils of the World and excursion to the World Soil Museum in Wageningen (The Netherlands): Application of the international soil classification system "WRB", step-wise familiarization with soils and their properties as well as with the related landscapes and catenas (from polar to tropical soils), study of varnished profiles of globally distributed soils. E: Special soil science field and laboratory exercises: Selection of current scientific objectives, construction of a sampling and investigation design, performance of field studies (preferably abroad) and laboratory analysis, analysis and interpreation of results.
Literaturempfehlungen	-Appelo, C.A.J. & Postma, D. (2005): Geochemistry, groundwater and pollution.- 2nd edition, A.A. Balkema. -Kinzelbach, W. und Rausch, R. (1995): Grundwassermodellierung - Eine Einführung mit Übungen, Gebrüder Borntraeger Berlin. • Zech, W. & Hintermaier-Erhard, G. (2002): Böden der Welt. Spektrum Akademischer Verlag, Heidelberg, Berlin. • IUSS Working Group WRB. 2014. World Reference Base for Soil Resources 2014. International soil classification system for naming soils and creating legends for soil maps.

	World Soil Resources Reports No. 106. FAO, Rom; www.fao.org/3/a-i3794e.pdf -see also announcements in StudIP
Links	
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	15
Reference text	The module can be taken as a 6 CP or a 9 CP module. For the 6 CP module, 2 of the 4 courses offered must be attended, for the 9 CP module, 3 of the 4 courses

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Oral examination or assignment

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1	--	14
Exercises		3	--	42
Präsenzzeit Modul insgesamt				56 h

lök365 - Special Abiotic Factors (Soil/Water)

Module label	Special Abiotic Factors (Soil/Water)
Modulkürzel	lök365
Credit points	9.0 KP
Workload	270 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Greskowiak, Janek (module responsibility) • Greskowiak, Janek (Module counselling) • Kalinina, Olga (Module counselling) • Massmann, Gudrun (Module counselling) • Greskowiak, Janek (Prüfungsberechtigt) • Kalinina, Olga (Prüfungsberechtigt) • Massmann, Gudrun (Prüfungsberechtigt) • Maurischat, Philipp (Prüfungsberechtigt)
Prerequisites	Basic knowledge of Soil Science, Hydrogeology and Hydrochemistry
Skills to be acquired in this module	E: Applied modelling of water water and solute transport in groundwater: Performance of a sandbox experiment. Numerical modelling of groundwater flow and solute transport using PMWIN (http://www.simcore.com): Model setup, parameterization and numerical solution of the groundwater flow and advection-dispersion equations. E: Hydrochemical modelling of water-rock interactions using PHREEQC: Modelling of hydrogeochemical processes (speciation reactions and mineral reactions, pyrite oxidation, oxidation of organic matter, redox reactions, ion exchange, equilibrium reactions and reaction kinetics) using the software PHREEQC (http://wwwbrr.cr.usgs.gov/projects/GWC_coupled/phreeqc/) L: Major Soils of the World and excursion to the World Soil Museum in Wageningen (The Netherlands): Impartment of knowledge into distribution, properties and classification of soils of the world. Qualification to apply the World Reference Base for Soil Resources (WRB) and to identify the soils of the world. E: Special soil science field and laboratory exercises: Impartment of knowledge into specific field and laboratory methods. Qualification to select and apply specific field and laboratory methods as well as to analyse and interpret results.
Module contents	E: Applied modelling of water and substance transfer in ground water: Performance of a box corer experiment. Numerical modelling of groundwater currents and substance transfer using PMWIN (http://www.simcore.com): Model setup, parameterization and numerical solution of groundwater current and advection dispersion equations. E: Hydrochemical modelling of water-rock interactions using PHREEQC: Modelling of hydrogeochemical processes (speciation reactions and mineral reactions, pyrite oxidation, oxidation of organic substances, redox reactions, ion exchange, balance reactions and reaction kinetics) using the software PHREEQC (http://wwwbrr.cr.usgs.gov/projects/GWC_coupled/phreeqc/) L: Major Soils of the World and excursion to the World Soil Museum in Wageningen (The Netherlands): Application of the international soil classification system "WRB", step-wise familiarization with soils and their properties as well as with the related landscapes and catenas (from polar to tropical soils), study of varnished profiles of globally distributed soils. E: Special soil science field and laboratory exercises: Selection of current scientific objectives, construction of a sampling and investigation design, performance of field studies (preferably abroad) and laboratory analysis, analysis and interpreation of results.
Literaturempfehlungen	-Appelo, C.A.J. & Postma, D. (2005): Geochemistry, groundwater and pollution.- 2nd edition, A.A. Balkema. -Kinzelbach, W. und Rausch, R. (1995): Grundwassermodellierung - Eine Einführung mit Übungen, Gebrüder Borntraeger Berlin. • Zech, W. & Hintermaier-Erhard, G. (2002): Böden der Welt. Spektrum Akademischer Verlag, Heidelberg, Berlin. • IUSS Working Group WRB. 2014. World Reference Base for Soil

	Resources 2014. International soil classification system for naming soils and creating legends for soil maps. World Soil Resources Reports No. 106. FAO, Rom; www.fao.org/3/a-i3794e.pdf -see also announcements in StudIP.
Links	
Languages of instruction	German, English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	15
Reference text	The module can be taken as a 6 CP or a 9 CP module. For the 6 CP module, 2 of the 4 courses offered must be attended, for the 9 CP module, 3 of the 4 courses.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Before the end of the module	Oral examination or housework

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1.5	--	21
Exercises		4.5	--	63
Präsenzzeit Modul insgesamt				84 h

lök370 - Ornithology in theoretical Concepts

Module label	Ornithology in theoretical Concepts
Modulkürzel	lök370
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Liedvogel, Miriam (module responsibility) • Liedvogel, Miriam (Module counselling) • Bouwhuis, Sandra (Prüfungsberechtigt) • Köppl, Christine (Prüfungsberechtigt) • Langemann, Ulrike (Prüfungsberechtigt) • Liedvogel, Miriam (Prüfungsberechtigt) • Mouritsen, Henrik (Prüfungsberechtigt) • Schmaljohann, Heiko (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	The module imparts advanced knowledge on different aspects of ornithology. The students acquire: • An extended knowledge of morphological and physiological fundamentals and the resulting ecological and behaviour-biological consequences in birds • Knowledge, presentation and discussion of relevant English literature from various fields of ornithology
Module contents	Lecture “Ecology and Physiology of Birds”: This lecture consolidates special aspects of systematics, morphology, physiology, migration, orientation, population biology, communication and behavioural ecology in birds.
Literaturempfehlungen	Bairlein F (1996) Ökologie der Vögel. G. Fischer, Stuttgart. Bennett PM, Owens IPF (2002) Evolutionary Ecology of birds: Life histories, mating systems, and extinction. Oxford Berthold P (1996) Control of bird migration. Chapman & Hall, London. Brooke M, Birkhead T (1991) The Cambridge Encyclopedia of Ornithology. Cambridge UP, Cambridge. Carey C (1996) Avian energetics and nutritional ecology. Chapman & Hall, New York. Catchpole CK, Slater PJB (1995) Bird song. Cambridge UP, Cambridge. Danchin E, Giraldeau L-A, Cezilly F (2008) Behavioural Ecology. Oxford Farner DS, King JR (eds., 1971-1993) Avian Biology. Vol. I-IX. Academic Press, New York. Furness RW, Monaghan P (1987) Seabird Ecology. Blackie, Glasgow. Gill FB (1990) Ornithology. Freeman, New York. Newton I (2008) The Migration Ecology of Birds. Academic Press, Amsterdam. Podulka S, Rohrbaugh RW, Bonney R (2004) Handbook of Bird Biology. Cornell Lab of Ornithology, Ithaca. Scanes CG (2015) Sturkie's Avian Physiology, 6th edition. Academic Press Scott G (2010) Essential Ornithology. Oxford University Press, Oxford
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	30

Examination	Prüfungszeiten	Type of examination
Final exam of module	Written exam in the last week of the term	Written examintaion

Lehrveranstaltungsform	Lecture
SWS	4
Frequency	WiSe
Workload Präsenzzeit	56 h

lök375 - Ornithology in Practice

Module label	Ornithology in Practice
Modulkürzel	lök375
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Liedvogel, Miriam (module responsibility) • Liedvogel, Miriam (Module counselling) • Liedvogel, Miriam (Prüfungsberechtigt) • Bouwhuis, Sandra (Prüfungsberechtigt) • Langemann, Ulrike (Prüfungsberechtigt) • Schmaljohann, Heiko (Prüfungsberechtigt) • Vedder, Oscar Herman (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	++ broad and in depths biological expertise ++ in depths knowledge of biological working methods ++ data analysis skills + interdisciplinary thinking + critical and analytical thinking ++ independent searching and knowledge of scientific literature ++ data presentation and discussion in German and English (written and spoken) + teamwork + project and time management + statistics and scientific programming The aim of the module is to consolidate various aspects of ornithology as well as to impart up to date methods applied in ornithological research.
Module contents	The module comprises four required elective courses (6 CP each), one of which needs to be chosen. *Required elective course 1*: Laboratory course and seminar "Ecology of Colonial Seabirds" (6 CP) The Institute of Avian Research safeguards a long-term individual-based study on common terns: colonially breeding, migratory, piscivorous seabirds. Students spend a week at the colony (located at the Banter See in Wilhelmshaven) to ask a scientific question (e.g. about foraging behaviour, coloniality or courtship behaviour) and collect data to answer it, then spend a week analysing the data statistically, writing a short report in Biology Letters format and presenting their results to their peers. Students receive one mark for the report and one for the presentation and the final mark for the course will be the average of these two marks. *Required elective course 2*: Laboratory course and seminar “Communication in Birds” (6 CP). Original recordings from bird songs will be used to generate new data sets for the practical. From these recordings we will prepare spectrograms and analyze the waveforms and frequency spectra. Techniques and statistical method that allow to classify song types from individuals or from populations will be introduced and applied. For example, cluster analysis and discriminant analysis are statistical methods to assess the dissimilarity between "objects" or

song type characteristics. The theoretical background for the practical is provided by the seminar using a standard text book on bird song Catchpole & Slater 2008).

Required elective course 3: Laboratory course and seminar “Japanese Quail” (6 CP). Observations and investigations of behaviour in relation to reproductive activity of male and female Japanese quail, at the Institute of Avian Research. Students will learn about theory regarding pace of life and exploration behaviour and develop predictions for inter-individual differences in exploration behaviour in relation to sex and reproductive activity. These predictions will be tested with standardized behavioural observations and measurements of food intake in the quail. The data will be analysed and discussed in the broader context of life-history theory.

Required elective course 4: Laboratory course and seminar “Scientific research in field ornithology, incl. identification of birds” (6 CP) This course has three teaching objectives. Firstly, to impart knowledge of the local bird community. This is conveyed through practical courses, work on bird specimens, and lectures. Secondly, learning and getting to know some standard methods of field ornithology, e.g. breeding survey, waterbird counts, radio telemetry, mist netting. Both teaching objectives form the basis for the third teaching objective. In this, the students independently conduct a scientific ornithological study. The data are analysed in the course under supervision. The results are summarised in a two-page scientific publication. At the end of the course, a kind of scientific conference takes place, in which all scientific projects are presented and discussed. The final grade is made up of the grades for the presentations and the scientific publication.

Literaturempfehlungen

Required elective course 1:

Becker PH, Frank D, Südman SR (1993) Temporal and spatial pattern of common tern (Sterna Hirundo) foraging in the Wadden Sea. Oecologia 93: 389-393.

González-Solís J, Sokolov E, Becker PH (2001) Courtship feedings, copulations and paternity in common terns Sterna hirundo. Animal Behaviour 61: 1125-1132

Required elective course 2:

Catchpole CK & Slater PJB (2008), "Bird Song, Biological themes and variations", Cambridge University Press, 2nd Edition

Required elective course 3:

Reale, D., Garant, D., Humphries, M.M., Bergeron, P., Careau, V., Montiglio, P.O. (2010) Personality and the emergence of the pace-of-life syndrome concept at the population level. Phil. Trans. R. Soc. B, 365, 4051–4063.

Required elective course 4:

Bibby, Burgess, Hill (1995) Methoden der Feldonrithologie

Jonsson (1999) Die Vögel Europas und des Mittelmeerraumes

Südbeck, Andretzke, Fischer, Gedeon, Schiko-re, Schröder, Sudfeld (2012) Methodenstandards zur Erfassung der Brutvögel Deutschlands

Sutherland, Newton, Green (2004) Bird Ecology and Conservation: A Handbook of Techniques

Svensson, Mullarney, Zetterström (2011) Der Kosmos Vogelführer: Alle Arten Europas, Nord-afrikas und Vorderasiens

Links			
Languages of instruction		German, English	
Duration (semesters)		1 Semester	
Module frequency		jährlich	
Module capacity		12	
Examination	Prüfungszeiten		Type of examination
Final exam of module			PT
Lehrveranstaltungsform	Exercises		
SWS	4		
Frequency	SoSe		
Workload Präsenzzeit	56 h		

lök390 - Experimental designs in ecological field studies

Module label	Experimental designs in ecological field studies
Modulkürzel	lök390
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• a N., (module responsibility)
Prerequisites	• Basic courses of Ecology (1st and 2nd semesters LÖK) • Skills in determining aquatic organisms, e.g. via Bachelor modules o Knowledge of forms o Running water ecology o Aquatic habitats o Master course in the module “Aquatic Ecology“ o Comparable courses at other universities
Skills to be acquired in this module	- Qualification to independently plan field experiments suitable for answering current ecological questions (individuals, populations, communities) - Methodological competence/independence in performing field experiments - Qualification to independently analyse the experiments in the laboratory guided by hypotheses and using adequate methods, materials and statistical methods - Competence in presenting results on a scientific level (scientific report presenting and discussing the method; scientific publication; both in English) - Impartment of manifold methodological skills in the field of aquatic ecology, experimental field research (autecological, population-ecological and synecological research approaches) - Impartment of extended expertise in planning experiments in general and their analysis in the field of animal ecology (application and linking of acquired skills; generalisable knowledge) - Practical experience in analysing field experiments in general (comprising laboratory phases, access to literature and databases, preparation of scientific publications) - Preparation of Master and Ph.D. theses requiring skills in experimental field research
Module contents	1st course phase (theoretical preparation and planning) - Picking up current ecological research topics related to aquatic habitats, e.g. in streams and ditches (the respective system is selected prior to the start of the course and should change) - Specification of questions and frame conditions by the course lecturer concerning current research questions in the fields of autecology, population ecology, and synecology - Instructions for literature research and the respective analysis by students - Summary and presentation of the current standard of knowledge (structured brief reviews presented to the course participants by students and commented by the lecturer as well as preparation of a synopsis as part of the term paper or the oral examination (see below)) - Concrete formulation of questions and working hypotheses based on literature research 2nd course phase (practical preparation and planning; laboratory and field work) - Preparatory inspection of the investigation area accompanied by the lecturer - Independent development of a concept of methods (advised by the lecturer) - Presentation of the planned experiment and of the analysis (treatment of samples, data processing etc.) - Independent practical preparation of experiments (calibrate equipment, prepare solutions, prepare trapping jars, determine aquatic data etc.), analysis steps (e.g. prepare laboratory equipment), and logistics (transportation, entry permissions etc.) - Description of methods for all working steps in writing - Independent realization of planning (advised by lecturer) - Report on all procedures including reflection 3rd course phase (further development and application of acquired knowledge; theoretical phase) - Common discussion about the possibilities of and limits to applying the procedure to concrete questions concerning other habitats, other animal associations etc.
Literaturempfehlungen	Hauer, F. Richard & Lamberti, Gary A. (2007): Methods in Stream Ecology (Elsevier Inc.) Methods in Ecology and Evolution (British Ecological Society):

	http://www.methodsinecologyandevolution.org/view/0/index.html TIEE: http://www.esa.org/tiee/misc/about.html Additional scientific publications and materials with examples of relevant research work will be made available via StudIP as an E-reserve of reference literature prior to the start of the course.
Links	https://www.uni-oldenburg.de/en/biology/aquatic-ecology-and-nature-conservation/
Language of instruction	English
Duration (semesters)	2 Semester
Module frequency	jährlich
Module capacity	unlimited
Reference text	Independent literature research on specific questions and methods by students.

Examination	Prüfungszeiten	Type of examination
Final exam of module	as agreed	Oral examination or housework 1) oral or written presentation of the method design 2) documentation of experimental procedure, data analysis and data processing 3) oral or written subject-specific analysis of the planning in respect of the relevant questions and elaborated hypotheses 4) interdisciplinary analysis of the experiments (oral or in writing)

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		1		14
Exercises		3		42
Präsenzzeit Modul insgesamt				56 h

mar456 - Coastal Holocene

Module label	Coastal Holocene
Modulkürzel	mar456
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule • Master's Programme Marine Environmental Sciences (Master) > Mastermodule
Zuständige Personen	• Freund, Holger (module responsibility)
Prerequisites	Keine
Skills to be acquired in this module	Die Studierenden verstehen die geologischen, sedimentologischen und landschaftsprägenden Transport- und Ablagerungsprozesse im nordwestdeutschen Tiefland (fluviatiler, äolischer, mariner und glazigener Transport) sowie die Verknüpfung dieser Prozesse mit den wichtigsten Vegetationstypen (Wälder, Moore, Trockenlebensräume, Küstenlebensräume) dieser Region.
Module contents	**VL Nordwestdeutsches Küstenholozän – Geologie, Vegetation und Biostratigraphie** Die Vorlesung vermittelt Kenntnisse der Materialaufbereitung und –umlagerung auf der Erdoberfläche, geomorphologischer Formungsprozesse und der Landschaftsdynamik am Beispiel der nordwestdeutschen Tiefebene. Behandelt werden kalt- und warmzeitliche Ablagerungszyklen und deren Ursachen, Meerespiegelfluktuationen und die daran gekoppelte Vegetationsdynamik. Die wichtigsten Vegetationsformen Nordwestdeutschlands werden exemplarisch vorgestellt (Wälder, Moore, Trockenlebensräume und Küstenvegetation). **PR/Ü Biologische Methoden der Faziesansprache von Küstenablagerungen – Pollen- und Diatomeenanalyse** In der Übung werden Kenntnisse der Palynologie (Pollen- und Sporenkunde) und der Diatomologie praktisch vermittelt. Einsatzmöglichkeiten dieser Methoden werden an Fallbeispielen erläutert. Die Studierenden lernen die wichtigsten Pollen –und Sporentypen sowie die wichtigsten benthischen Diatomeen der Nordsee kennen. Anhand von Bohrkernen erarbeiten die Studierenden wie sich mit Hilfe von Mikrofossilien paläoökologische Fragestellungen beantworten bzw. die Rekonstruktion von Landschafts- und/oder Ökosystemveränderungen durchgeführt werden können. In einem Forschungsbericht dokumentieren die Studierenden ihre Ergebnisse der Bohrkernanalyse.
Literaturempfehlungen	Bahlburg, H. & Breitkreuz, C. (2008): Grundlagen der Geologie. Spektrum Ehlers, J. (2011): Das Eiszeitalter. Spektrum Lang, G. (1994): Quartäre Vegetationsgeschichte Europas. Fischer Moore,P.D., Webb, J.A. & Collinson, M.E. (1991): Pollen Analysis. Oxford Pott, R. (1996): Biotoptypen: Schützenswerte Lebensräume Deutschlands und angrenzender Regionen. Ulmer Schäfer, A. (2005): Klastische Sedimente – Fazies- und Sedimentstratigraphie. Elsevier Weitere Literatur wird in den Veranstaltungen angegeben.
Links	
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich

Module capacity	20 (20 Personen im Praktikum Fazieskunde, Verfahren siehe StudIP)

Examination	Prüfungszeiten	Type of examination
Final exam of module	Abgabe des Berichts bis Ende des Semesters	**1 benotete Prüfungsleistung** Bericht zum Praktikum Fazieskunde oder Protokoll **Aktive Teilnahme** Aktive Teilnahme umfasst z.B. die regelmäßige Abgabe von Übungen, Anfertigung von Lösungen zu Übungsaufgaben, die Protokollierung der jeweils durchgeführten Versuche bzw. der praktischen Arbeiten, die Diskussion von Seminarbeiträgen oder Darstellungen von Aufgaben bzw. Inhalten in der Lehrveranstaltung in Form von Kurzberichten oder Kurzreferat. Die Festlegung hierzu erfolgt durch den Lehrenden zu Beginn des Semesters bzw. zu Beginn der Veranstaltung.

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Übung oder Praktikum		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

mar458 - Aquatic Ecology

Module label	Aquatic Ecology
Modulkürzel	mar458
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	• Master's Programme Environmental Modelling (Master) > Mastermodule • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule • Master's Programme Marine Environmental Sciences (Master) > Mastermodule
Zuständige Personen	• Brinkhoff, Thorsten Henning (module responsibility) • Garcia, Sarahi Lorena (Module counselling)
Prerequisites	Keine
Skills to be acquired in this module	Studierende können nach erfolgreichem Besuch der Veranstaltungen die Bedeutung von Schwebstoffen für die Ökologie und Biogeochemie und die Gefährdung von Gewässern einschätzen und beurteilen, da sie sich vertieftes Wissen über folgende Gebiete angeeignet haben: **VL Grundlagen des Gewässerschutzes:** Störungen und Gefährdung natürlicher Gewässer, Eutrophierung, Phosphor- und Stickstoffbelastung natürlicher Gewässer, Saprobiensysteme, Gewässerversauerung, hygienische Belastung, Trinkwasseraufbereitung, Abwasserklärung, hormonell wirksame Substanzen **VL Biologische Bedeutung von Schwebstoffen** Herkunft, Klassifizierung und Verteilung in Gewässern, Analytik, Transport und Sedimentation, Aggregation und Aggregatbildungsmechanismen, Fallbeispiele von Aggregationsereignissen, mikrobielle Besiedlung, mikrobielle Stoffumsatzaktivität, Strukturanalyse von aggregatassoziierten Bakteriengemeinschaften.
Module contents	**VL Grundlagen des Gewässerschutzes** Allgemeine Grundlagen zum Verständnis von Gewässern (Seen, Flüsse, Grundwasser, Ästuare, Küstenmeere) für deren Gefährdungspotenzial. Eutrophierung und Sanierung von Gewässern, Bedeutung von Phosphor- und Stickstoffverbindungen für die Nährstoffbelastung von Gewässern, chemische und biologische Charakterisierung und Klassifizierung von Gewässern, Ursachen und Folgen der Gewässerversauerung, hygienische Belastung, Trinkwasserversorgung und –aufbereitung, mechanische, biologische und chemische Abwasserklärung, hormonell wirksame Substanzen **VL Biologische Bedeutung von Schwebstoffen** Herkunft, Klassifizierung und Verteilung von Schwebstoffen in Gewässern, Analytik der Zusammensetzung von Schwebstoffen, Transport und Sedimentation von Schwebstoffen, Aggregation von Primärpartikeln und Aggregatbildungsmechanismen, Fallbeispiele von Aggregationsereignissen, mikrobielle Besiedlung von und mikrobielle Stoffumsatzaktivität auf Schwebstoffen, Strukturanalyse von Schwebstoff-assoziierten Bakteriengemeinschaften.
Literaturempfehlungen	**VL Grundlagen des Gewässerschutzes** Skript vorhanden, wird auf Stud.IP hochgeladen. Dokulil, M., Hamm, A., Kohl, J.G. Ökologie und Schutz von Seen. Facultas Universitätsverlag, Wien 2001. Fent K., Ökotoxikologie, Thieme Verlag, Stuttgart 1998.

Frimmel, F.H., Wasser und Gewässer, ein Handbuch, Spektrum Verlag, Heidelberg 1999.
Gunkel, G., Bioindikation in aquatischen Ökosystemen, Gustav Fischer Verlag, Jena 1994.
Gunkel, G., Renaturierung kleiner Fließgewässer, Gustav Fischer Verlag, Jena 1996.
Lozan, J.L. et al., Warnsignale aus der Nordsee, Paul Parey Verlag, Hamburg 1990.
Lozan, J.L. et al., Warnsignale aus der Ostsee, Paul Parey Verlag, Hamburg 1996.
Mudrack, K., Kunst, S., Biologie der Abwasserreinigung, Gustav Fischer Verlag 1991.
Rohmann, U., Sontheimer, H., Nitrat im Grundwasser, Engler-Bunte-Institut, Universität Karlsruhe 1985.
Schulze, E., Hygienisch-mikrobiologische Wasseruntersuchungen, Gustav Fischer Verlag, Jena 1996.
Schwoerbel, J., Einführung in die Limnologie, Gustav Fischer Verlag, 8. Auflage, Jena 1999.

VL Biologische Bedeutung von Schwebstoffen

Skript vorhanden, wird auf Stud.IP hochgeladen.

Weitere Literatur wird zu Beginn der VL bereitgestellt.

Links		
Languages of instruction	German, English	
Duration (semesters)	2 Semester	
Module frequency	jährlich	
Module capacity	unlimited	
Examination	Prüfungszeiten	Type of examination
Final exam of module	Nach Ende der Vorlesungszeit	**1 benotete Prüfungsleistung** mündliche Prüfung oder 1 Klausur mit folgenden Optionen: 1. 100% der Fragen aus einer der beiden VL 2. 50% der Fragen aus je einer der beiden VL (2 Teilklausuren) (Bestanden bei Erreichen von 50% der Notenpunkte insgesamt oder aus je einer der beiden Teilklausuren)

Lehrveranstaltungsform	Lecture
SWS	4
Frequency	SoSe und WiSe
Workload Präsenzzeit	56 h

bio703 - Basic Concepts in Plant Sciences

Module label	Basic Concepts in Plant Sciences
Modulkürzel	bio703
Credit points	12.0 KP
Workload	360 h
Verwendbarkeit des Moduls	• Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Zotz, Gerhard (module responsibility) • Albach, Dirk Carl (Module counselling) • von Hagen, Klaus Bernhard (Module counselling) • Zotz, Gerhard (Prüfungsberechtigt) • Albach, Dirk Carl (Prüfungsberechtigt) • von Hagen, Klaus Bernhard (Prüfungsberechtigt) • Will, Maria (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Communicating deeper knowledge in ecology, phylogeny, evolution and genetics of plants Communicating scale- and method-overarching thinking Communicating deeper theoretic concepts of ecology, evolution and genetics of plants. ++ deepened biological expertise + deepened knowledge of biological working methods + data analysis skills + interdisciplinary thinking ++ critical and analytical thinking ++ independent searching and knowledge of scientific literature + ability to perform independent biological research ++ data presentation and discussion in English (written and spoken) + teamwork ++ ethics and professional behaviour
Module contents	V: Biodiversity of plants (2 SWS) V: Resource acquisition and use by plants (1 SWS) V: Gene expression in plants (1 SWS) S: Phylogeny of plants (2 SWS) S: Interactions of plants with environmental parameters (2SWS)
Literaturempfehlungen	Kadereit, J.W., Körner, C., Kost, B., Sonnewald, U., 2014, Strasburger Lehrbuch der Botanik. Springer Spektrum Verlag, Heidelberg. Lambers H, Chapin III FS, Pons TL. 2008. Plant Physiological Ecology. New York: Springer.
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	annually, winter term
Module capacity	12
Reference text	associated with bio765 (Current Methods in Plant Science) (recommended)
Type of module	Wahlpflicht / Elective
Module level	MM (Mastermodul / Master module)
Teaching/Learning method	Lecture, seminar
Previous knowledge	Ecology, flora, genetics

Examination	Prüfungszeiten	Type of examination
Final exam of module		1 Portfolio

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		4	WiSe	56
Seminar		4	WiSe	56
Präsenzzeit Modul insgesamt				112 h

bio765 - Current Methods in Plant Sciences - Ecology, Phylogeny and Molecular Biology

Module label	Current Methods in Plant Sciences - Ecology, Phylogeny and Molecular Biology
Modulkürzel	bio765
Credit points	12.0 KP
Workload	360 h
Verwendbarkeit des Moduls	• Master's Programme Biology (Master) > Background Modules • Master's Programme Biology (Master) > Background Modules • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Albach, Dirk Carl (module responsibility) • Zotz, Gerhard (Module counselling) • Will, Maria (Module counselling) • Khan, Gulzar (Module counselling) • von Hagen, Klaus Bernhard (Module counselling) • Will, Maria (Prüfungsberechtigt) • Albach, Dirk Carl (Prüfungsberechtigt) • Zotz, Gerhard (Prüfungsberechtigt) • Khan, Gulzar (Prüfungsberechtigt) • von Hagen, Klaus Bernhard (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Acquaintance and practicing ecological, phylogenetic and molecular methods Communication of scale- and method-overarching thinking and project planning Knowledge of current methods and questions in plant science Capacity for teamwork, project- and time management ++ deepened biological expertise ++ deepened knowledge of biological working methods ++ data analysis skills ++ interdisciplinary thinking + critical and analytical thinking + independent searching and knowledge of scientific literature + ability to perform independent biological research + data presentation and discussion (written and spoken) + teamwork + statistics & scientific programming
Module contents	Current Methods in Plant Science. Subject to annual change. The specific topics for the coming semester will be presented at the module introduction during the orientation week, please check the community-Forum: 5.02.InfoB Informationen MSc Biology for the schedule: https://elearning.uni-oldenburg.de/dispatch.php/course/details?sem_id=d35edd08df0fb5c6a8ae3a81ea738b88&again=yes
Literaturempfehlungen	
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	annually, winter term
Module capacity	12
Reference text	associated with bio703 (Basic Concepts in Plant Sciences) (recommended)
Type of module	Wahlpflicht / Elective
Module level	MM (Mastermodul / Master module)
Teaching/Learning method	Exercise
Previous knowledge	Ecology, flora, genetics

Examination	Prüfungszeiten	Type of examination
Final exam of module		Portfolio

Lehrveranstaltungsform	Exercises
SWS	8
Frequency	WiSe
Workload Präsenzzeit	112 h

lök240 - Functional ecology of communities in heterogeneous landscapes

Module label	Functional ecology of communities in heterogeneous landscapes
Modulkürzel	lök240
Credit points	15.0 KP
Workload	450 h
Verwendbarkeit des Moduls	• Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Kleyer, Michael (module responsibility) • Kleyer, Michael (Prüfungsberechtigt) • Kleyer, Michael (Module counselling)
Prerequisites	
Skills to be acquired in this module	Upon successful completion of the module students will gain: • Technical skills in ecological field experiments, determination of plants in the field, phytosociological records, soil inventories, biomass determination and determination of biological characteristics - Technical skills in laboratory work, statistics • Skills in mapping plants and animals, application of GIS, spatial statistics • Advanced knowledge of spatial ecology and the conditions of survival in heterogeneous landscapes as well as knowledge of functional ecology; assessment of academic voids between theory and empiricism • Skills in independently dealing with ecological literature and information, respectively Ranking/position of the module within the course of studies: The module imparts action-oriented and theoretical knowledge of the conditions of survival in plant and animal species in heterogeneous landscapes. It serves the prognosis of impacts on the biodiversity caused by environmental changes. This represents a crucial qualification for environmental planning and habitat restitution projects.
Module contents	• Practical training in the field and in the laboratory, practical training in statistics • Functional ecology of communities in spatio-temporally heterogeneous landscapes: Literature analyses • Functional plant ecology: Biological characteristics related to disturbances and soil resources (laboratory analyses, statistical analysis)
Literaturempfehlungen	Literature will be announced during the preparatory course and is contingent on the latest developments in the research field.
Links	https://www.uni-oldenburg.de/en/landeco/
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited

Examination	Prüfungszeiten	Type of examination
Final exam of module	Veranstaltungsende	a) Seminar paper (weighting 20 %) b) Specialized practical exercise (weighting 80 %)

Lehrveranstaltungsform	Comment	SWS	Frequency	Workload of compulsory attendance
Exercises		8		112
Seminar		2		28
Präsenzzeit Modul insgesamt				140 h

bio890 - Current Topics in Biology

Module label	Current Topics in Biology
Modulkürzel	bio890
Credit points	3.0 KP
Workload	90 h
Verwendbarkeit des Moduls	• Master's Programme Biology (Master) > Skills Modules • Master's Programme Biology (Master) > Skills Modules • Master's Programme Landscape Ecology (Master) > Wahlpflichtmodule
Zuständige Personen	• Gerlach, Gabriele (module responsibility) • Gerlach, Gabriele (Prüfungsberechtigt) • Laakmann, Silke (Prüfungsberechtigt) • Beutelmann, Rainer (Prüfungsberechtigt) • Bartölke, Rabea (Prüfungsberechtigt) • Fleischmann, Pauline (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	+ biological knowledge + biologically relevant, natural / mathematical scientific basic knowledge ++ interdisciplinary knowledge and thinking ++ abstract, logical, and analytical thinking ++ expanded knowledge in a specific biological field ++ presentation of results and factual discussion, both written and spoken ++ (scientific) communication skills To develop skills in the critical analysis and interpretation of results and themes in diverse areas of modern biology, including (but not limited to) evolutionary biology, population genetics, biodiversity, ecology, genomics, ornithology, and neurobiology.
Module contents	Discussion and interpretations of one or more themes in modern biology. The themes and exact content will be provided by the instructor(s) at the beginning of the course. The module bio890 may be taken more than once as long as the content covered in the seminars differ substantially.
Literaturempfehlungen	Varies with chosen topic (will be provided by the instructor(s) at the beginning of the course)
Links	
Language of instruction	English
Duration (semesters)	1 Semester
Module frequency	Summer and winter term
Module capacity	unlimited
Type of module	Wahlmodul / Opportunity
Module level	MM (Mastermodul / Master module)
Teaching/Learning method	Seminar

Examination	Prüfungszeiten	Type of examination
Final exam of module	open	Final exam of module: 1 Portfolio. Components vary in the seminars. They are specified in Stud.IP in the respective seminar.

Lehrveranstaltungsform	Seminar
SWS	2
Frequency	SoSe und WiSe
Workload Präsenzzeit	28 h

Abschlussmodul

mam - Master´s Degree Module

Module label		Master´s Degree Module	
Modulkürzel		mam	
Credit points		30.0 KP	
Workload		900 h	
Verwendbarkeit des Moduls		• Master's Programme Landscape Ecology (Master) > Abschlussmodul	
Zuständige Personen		• der Landschaftsoekologie, Lehrende (Prüfungsberechtigt)	
Prerequisites			
Skills to be acquired in this module		Successful completion of the Master module demonstrates that students are able to work on a problem in the field of Landscape Ecology within a fixed period applying scientific methods.	
Module contents		E: Preparing the Master thesis SE: Active participation in the seminar of the research group, in which the Master thesis is written.	
Literaturempfehlungen		Supervisors may supply an initial reading list with important literature. The students are expected to find and use further literature as needed.	
Links			
Languages of instruction			
Duration (semesters)		1 Semester	
Module frequency		semiannual	
Module capacity		unlimited	
Examination	Prüfungszeiten		Type of examination
Final exam of module			Master's Thesis (80%) Oral examination (20%)
Lehrveranstaltungsform	Seminar		
SWS	2		
Frequency			
Workload Präsenzzeit	28 h		