Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Subdivided Module Catalogue
for the Subject

Keine PO-STG-Zuordnung vorhanden

Responsible: JMU Würzburg

Course of Studies - Contents and Objectives

The Faculty of Biology at the Julius Maximilian University of Würzburg offers the English-speaking interdisciplinary, consecutive master's degree program Global Challenges for Sustainability with a Master of Science degree, which usually follows a Bachelor degree programm.
The aim of the Master's program in Global Challenges for Sustainability, which can be studied both on-site and via distance learning at JMU, is to familiarize students with various aspects of sustainability and its relevance in a transdisciplinary environment and to enable them to conduct independent research in this field after successful completion of the program. The Master of Science degree represents another professional or research-oriented degree.

Abbreviations used

Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASPO2015

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

12-Feb-2025 (2025-6)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Compulsory Courses (60 ECTS credits)				
Subfield 1 "Preparatory Phase" (30 ECTS credits)				
07-MGCS-SI-252-m01	Social Innovation	10	NUM	26
07-MGCS-S-252-m01	Sustainability	10	NUM	24
07-MGCS-TR-252-m01	Transdisciplinary Research	10	NUM	28
Subfield 2 "Internship Phase" (30 ECTS credits)				
07-MGCS-IPM-252-m01	Internship Preparation Module	5	NUM	17
07-MGCS-I-252-m01	Internship	20	NUM	16
07-MGCS-CPM-252-m01	Capstone Preparation Module	5	NUM	6
Compulsory Electives "Flexible Phase" (30 ECTS credits)				
Sub field 1 „Water" (30 ECTS credits)				
07-MGCS-W-EX-252-m01	Extremes in the Water Cycle and Their Complex Consequences	10	NUM	31
07-MGCS-W-AD-252-m01	Adaptation Measures and Strategies in Water Management	10	NUM	30
07-MGCS-W-RC-252-m01	Resilient Cities: Water in Urban Environments	10	NUM	32
Sub field 2 „Life and Health" (30 ECTS credits)				
07-MGCS-LH-RE-252-m01	Life and Health - Research on Health Challenges & Solutions	10	NUM	23
07-MGCS-LH-DE-252-m01	Life and Health - designing policies for health and wellbeing	10	NUM	21
07-MGCS-LH-BE-252-m01	Life and Health - behavior interventions for healthy lives and wellbeing	10	B/NB	19
Sub field 3 „Food" (30 ECTS credits)				
07-MGCS-F-FHE-252-m01	The Food-Health-Environment Nexus	10	NUM	10
07-MGCS-F-FSA-252-m01	Food System Assessment	10	NUM	12
07-MGCS-F-FST-252-m01	Food System Transformation	10	NUM	14
Sub field 4 „Energy & Sustainable Cities" (30 ECTS credits)				
07-MGCS-E-ET-252-m01	Energy, Emerging Technologies & Smart Cities	10	NUM	7
07-MGCS-E-SU-252-m01	Sustainable Urban Planning, Resource Management & Resilience	10	NUM	9
07-MGCS-E-PO-252-m01	Policy, Climate Change & The Future of Sustainable Cities	10	NUM	8
Thesis "Capstone Phase" (30 ECTS credits)				
07-MGCS-CP-252-m01	Capstone Project	30	NUM	5

Module title			Abbreviation
Capstone Project			07-MGCS-CP-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
30	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- Team formation
- Transdisciplinary collaboration Transdisciplinary research
- Intercultural and interdisciplinary communication Stakeholder engagement
- Sustainability Design thinking Problem solving Critical thinking Presenting Creativity Entrepreneurship Prototyping
- Personal development
- Ethics and research integrity

Intended learning outcomes

This module is designed to build on students' knowledge, skills, and prior learning gained during the previous modules of the Master programme. Students will, in collaboration with extra-academic actors, investigate and evaluate a complex societal challenge from a variety of intercultural and transdisciplinary perspectives. They will contribute to creatively devise, implement and evaluate robust, adaptable, ethical and sustainable solutions for complex societal challenges.

Courses (type, number of weekly contact hours, language — if other than German)

No courses assigned to module
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Thesis (approx. 60 pages)
Language of assessment: English

Allocation of places

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Additional information

Time to complete: 6 months.

Workload

900 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Capstone Preparation Module			07-MGCS-CPM-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- Challenge based learning
- Transdisciplinary collaboration Stakeholder communication Sustainable and inclusive cities Sustainable development goals
- Cross thematic sessions on: Water / Food / Life and Health / Energy Research design and methodology
- Management skills (e.g. project management, conflict management)

Intended learning outcomes

The high-level aim of the Capstone preparation module is for students to practice working on real-world challenges. Students work on existing challenges around a local area of one of the alliance cities. They collaborate in a transdisciplinary team by working together with external stakeholders related to two Sustainable Development Goals (SDG's). At least SDG 11 is being addressed; make cities and human settlements inclusive, safe, resilient and sustainable. Each team can select an additional SDG that is relevant to their specific challenge.
The on-site and situated learning experience that the Capstone preparation module provides, gives students an opportunity to apply the knowledge learned in previous phases to real-world challenges.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Energy, Emerging Technologies & Smart Cities			07-MGCS-E-ET-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include lectures, workshops and seminars on:

- Principles and history of energy conversion and consumption Sustainable and renewable energy resources
- Emerging technologies and their environmental and social impact on urban landscapes
- Energy policies and practices in urban areas Energy justice
- Life cycle analysis

Intended learning outcomes

In this module, students will learn to understand the principles and history of energy conversion and consumption and the importance of renewable energy sources for building and maintaining sustainable cities. They will learn to design practical solutions to the challenges and opportunities presented by emerging technologies, as well as examine the ethical, social, and environmental implications of energy and technology choices in urban contexts.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Policy, Climate Change & The Future of Sustainable Cities			07-MGCS-E-PO-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:
- Planetary boundaries
- Urban policy in sustainable cities
- Sustainable transportation
- Green urban spaces
- Climate justice
- Climate change in cities

Intended learning outcomes

In this module, the student will learn about the intricacies of urban policy and how that affects the global climate. Students will be involved with the future of climate resilient cities and the intermediate steps to get there.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Sustainable Urban Planning, Resource Management & Resilience			07-MGCS-E-SU-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:
- Urban planning and design
- Urban inequalities and approaches to inclusive city design and management
- Sustainable solutions in cities
- Resource management
- Waste management
- Ecosystem services
- Transportation networks

Intended learning outcomes

This module aims to show students the different aspects of urban planning and how to incorporate the sustainability perspective. Students will learn how resource management plays a role in urban planning and what is needed to create a resilient and sustainable city regarding urban planning.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
The Food-Health-Environment Nexus			07-MGCS-F-FHE-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Nutrient cycle, food web interaction, food production environment requirement and impact on the environment,
Cultural identity and food: Cooking and eating as characteristics of human identity, taking into account anthropology and religion. Religious perspectives and food consumption: an honest mind in a (healthy?) body
Food as pleasure and civilisation: European gastronomy, an historical perspective
Food waste
Interactions between food and other sectors, in particular health, environment and social justice
Food inequalities and insecurity and their causes Access to resources and food insecurity
Special topic: the future of meat (environment, culture, technology, marketing and product development).

Intended learning outcomes

This module explores the social, economic and environmental drivers and consequences for (human and ecosystem) health and social justice associated with food systems.
After this module, students will be able to:

- Reflect on the multifaceted nature of the food-health-environment- inequality nexus taking into consideration influence from cultures, energy and society.
- Describe the impact of food and its interdependencies as a result of social, cultural, historical, environmental, economic, medical and political factors.
- Systematically analyse the connections between food and different health impacts (human health and ecosystem health); with health, poverty, and climate change; and the links with social and environmental dimensions of sustainability.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Food System Assessment			07-MGCS-F-FSA-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on: Food system:

- definition and approaches
- Food system mapping
- Food processing, consumption & dietary patterns, including product development, manufacturing, nutritional and sensory quality, storage, packaging engineering, marketing, advertising and distribution
- The role of food producers, retailers, consumers, etc. along the entire value chain
- Sustainable agricultural practices around the world (organic agriculture, nature-inclusive agriculture, agroecology, agroforestry, permaculture, etc.)
- Specific food industries, Big Food e.g. Nestle, Pepsi-Co, Kraft-Heinz; Danone (infant formula)
- The banana: production, distribution and consumption
- Food and conflict

Intended learning outcomes

This module facilitates students to develop the tools to explain and evaluate food systems, i.e. the way people and social groups organise themselves to access and consume food, and how their transformation may affect the future of humanity and the planet.
After this module, students will be able to:

1. Describe a food systems perspective to evaluate food-related sustainability challenges and transformations.
2. Identify and evaluate food systems transformations and their consequences in terms of different dimensions of sustainable development at different levels, from local to global.
3. Analyse the public health, environmental and social consequences of food production and consumption in a transdisciplinary fashion.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Food System Transformation			07-MGCS-F-FST-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- Evaluate (development) interventions for food and nutrition security, hunger and famine in developing countries, including from a historical/post-colonial perspective.
- Assess to what extent and how the water-health-food-inequality nexus is reflected in different governance systems and social actions.
- Assess regulatory frameworks (including (legal/customary) rights) that influence the availability and access to food and related resources.
- National and international policies and regulations around food safety, dietary recommendations and their political, economic, health and environmental implications
- Evaluating different solutions to sustainability challenges, including government-based interventions (e.g. taxes, subsidies, regulations, etc.), market-based interventions (e.g. fair trade/eco-labelling, payment for ecosystem services, etc.), business interventions (e.g. food innovations/biotechnology), civil society interventions (e.g. food projects/programs) and social movements (e.g. veganism movements).

Intended learning outcomes

This module focuses on policies and actions that are required to transform socially just and sustainable food systems. It enables students to develop the tools to (co- and/or re-)design policy and social actions to achieve sustainable transformations of food systems.
After this module, students will be able to:

1. (Co-)design and monitor research and policy/social actions to promote socially just and sustainable food systems transformations.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Internship			07-MGCS-I-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
20	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

During their internship, students will gain knowledge on subjects and strengthen their research skills, such as:
- In-depth knowledge on a particular sustainability challenge Literature review
- Data collection Analysis of data
- Reporting on research results
- Presentation/communication skills

Intended learning outcomes

The objectives of the internship should be based on the application of students' sustainability-based expertise to a challenge relevant for the (internship) organisation.
In the 20 EC internship, the focus lies on gaining professional, research-based experience by:
- analyzing the sustainability aspects of a real challenge in an institution or company
- applying research methods to provide a response to the formulated research question
- documenting the results in a concise report and transferring the knowledge to the host institution.

As part of the internship, the student will produce an individual research report that will be assessed. The feasibility of achieving the aims written above is based on the length of the internship. Each internship agreement will involve interaction between the hosting institution and the academic supervisor to define an internship topic that aligns with academic expectations while addressing a need of the hosting institution.

Courses (type, number of weekly contact hours, language — if other than German)

P (15)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

600 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Internship Preparation Module			07-MGCS-IPM-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Lectures and workshops on health concepts:

- Public health, global health, one health, planetary health Interconnectedness of Human, Animal and Environmental Health and the impact of climate on health
- Health and sustainability
- Challenges and approaches in the field of health and well-being Environmental determinants of health
- Biological determinants of health
- Social and cultural determinants of health from a sustainability perspective
- Behavioural determinants of health Models of behaviour change
- Basic epidemiological concepts
- Health Through the Ages: A Historical Exploration
- Policy and practice: the relationship between an intervention and a policy
- The nature and features of complex interventions

Intended learning outcomes

To provide students with an appropriate understanding on the different health concepts, covering public health, global health, one health and planetary health perspectives.
To enable students to recognise challenges associated with maintaining healthy lifestyles and wellbeing within a sustainable environment and devise and implement solutions for these challenges.
To equip students with the knowledge and skills necessary to promote health and wellbeing by comprehensively addressing the intricate interplay between human, animal, environmental and climate factors.
To equip the students with the necessary skills and concepts on how to contribute to the development of high quality sustainable complex interventions that might respond to current and foreseeable challenges related to health in the context of the SDG targets.

Courses (type, number of weekly contact hours, language — if other than German)

S (2)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

150 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Life and Health - behavior interventions for healthy lives and wellbeing			07-MGCS-LH-BE-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Lectures and workshops on health concepts:
Public health, global health, one health, planetary health Interconnectedness of Human, Animal and Environmental Health and the impact of climate on health
Health and sustainability
Challenges and approaches in the field of health and well-being Environmental determinants of health
Biological determinants of health
Social and cultural determinants of health from a sustainability perspective
Behavioural determinants of health Models of behaviour change
Basic epidemiological concepts
Health Through the Ages: A Historical Exploration
Policy and practice: the relationship between an intervention and a policy
The nature and features of complex interventions

Intended learning outcomes

To provide students with an appropriate understanding on the different health concepts, covering public health, global health, one health and planetary health perspectives.
To enable students to recognise challenges associated with maintaining healthy lifestyles and wellbeing within a sustainable environment and devise and implement solutions for these challenges.
To equip students with the knowledge and skills necessary to promote health and wellbeing by comprehensively addressing the intricate interplay between human, animal, environmental and climate factors.
To equip the students with the necessary skills and concepts on how to contribute to the development of high quality sustainable complex interventions that might respond to current and foreseeable challenges related to health in the context of the SDG targets.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Life and Health - designing policies for health and wellbeing			07-MGCS-LH-DE-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- Determinants and inequalities of health
- biological determinants (age, gender, genetics and epigenetics); Social and economic determinants (including education, employment/occupation, income);
- Environmental determinants (including physical and psychosocial determinants, human-built and natural environment) Interrelations of all the above
- The model of exposure, vulnerability and outcomes
- Meaning, properties and performance of health systems and health care systems
- Sustainability in a health and well-being perspective Global health, issues, actors and stakeholders One-Health approach in action
- Context of policy making – models, methods, stakeholders Health needs assessment - complexity of health
- Health impact assessment – Health in All Policies and Health for All Policies

Intended learning outcomes

In the module, health and well-being topics are addressed in the context of public health, whereas "life" is understood in a full life-course perspective of people, including all the aspects, circumstances, events and decisions along one's life that eventually impact health and well-being outcomes on individual and on population level. The social, economic, cultural and environmental determinants of health and well-being will be examined in detail. Students will approach life and health from a policy perspective.
During the module, they will acquire skills, competencies and knowledge for analysing and assessing the functioning and performance of broadly defined health systems, including biological, environmental and social determinants of health, as well as the health care system. They will be equipped with tools needed to apply a complex, problem-oriented, transdisciplinary approach, and skills and knowledge required for developing strategies and interventions towards sustainable, accessible and resilient health systems (including social, economic and environmental aspects according to the definition of the WHO) at international, national and community levels. They will be enabled to facilitate the development of effective strategies and approaches in the context of diverse health and well-being requirements.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload
300 h
Teaching cycle
Teaching cycle: every semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Life and Health - Research on Health Challenges & Solutions			07-MGCS-LH-RE-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

Module 1 of Life and Health track is a research module, with a focus on developing relevant research skills applicable for any future projects and (research) job positions. Module 1 will equip the students with tools and knowledge on how to perform real research and provide with a glimpse of the real everyday work of a researcher.
The module will include workshops, lectures and seminars on topics including:

- Burden of disease and mortality
- Sustainable interventions
- Translational medicine
- Transdisciplinary collaboration
- Health problems

Intended learning outcomes

To provide the students with the knowledge and skills to research sustainable solutions to address Global Health challenges, while fostering inter- and transdisciplinarity. Solutions range from fundamental science discoveries to clinical and societal issues.
To translate obtained knowledge and skills into innovative solutions for a specific challenge towards achieving health benefit for all.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Sustainability			07-MGCS-S-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- The various, sometimes contradicting, objectives and challenges of the Sustainable Development Goals (SDGs)
- Relations between sustainable development, economic growth (including degrowth), ecology, poverty and inequalityThe role of international organizations, states, businesses, civil society, marginalized groups and scientists in sustainability challenges Explaining people's individual and collective (un)sustainable behaviour
- Participation of stakeholders in addressing sustainability challenges
- Scientific basis, define and articulate the critical planetary boundaries influencing Eart''s resilience and stability and evaluate the scientific methods and data used to identify and quantify these planetary boundaries.
- Importance and challenges of cross-sectoral approaches to sustainability challenges
- Linkages between (post-)colonialism, development cooperation and sustainable development
- Governance, law and economics around sustainability
- Geopolitics in sustainability governance, including the role of Europe and North-South relations
- Ecological overshoot as the main driver of biodiversity loss and decrease in nature's contributions to people
- Concepts of ecological restoration and introduction to nature-based solutions
- Economic implications of sustainability challenges, including (challenges of) the economic valuation of natural capital

Intended learning outcomes

1. Critically discuss the concepts of sustainability and sustainable development as they are constructed and represented within multiple disciplines and by different societal actors. [PLO1, 5]
2. Acquire a systems perspective to analyse and evaluate complex sustainability challenges and develop inter- and transdisciplinary skills to design solutions for these challenges. [PLO2, 3, 4, 6]

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle
Teaching cycle: every semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Social Innovation			07-MGCS-SI-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- Social innovation and intra/entrepreneurship
- Design Thinking
- Practice-Led Research
- Change management
- Business modelling
- Market research
- Inclusivity, Diversity and Integration
- Ethics
- Citizen Science, Citizenship and Human Rights
- Stakeholder engagement and perspectives gathering Patterns of change in culture, identity and communication: Written, verbal, digital
- Communication Theory and Dialogue
- Framing
- Gender Perspectives
- European languages
- Negotiation and Facilitation
- Diplomacy

21st century skills/competencies

- Problem Solving
- Project management
- Pitching
- Critical thinking
- Media/Digital literacy

Intended learning outcomes

This module aims to develop in students the knowledge, skills and tools to turn ideas into action through an advanced understanding of the creative, communicative and innovation processes that drive sustainability transformations.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload
300 h
Teaching cycle
Teaching cycle: every semester
Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Transdisciplinary Research			07-MGCS-TR-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- The concepts, including the history, of epistemic dependence, inter-/transdisciplinarity, boundary work, boundary objects, trading zones, unity /plurality of science.
- The concepts, including the history, of reproducibility, exploratory research vs theory-testing, simulation, scientific models, scientific representations.
- Concepts and strategies for fostering stakeholder engagement for effective transdisciplinary research projects to effect change when tackling challenges framed as "wicked" problems.
- The basic knowledge to identify and formulate research questions, critically analyse and review the bibliography and metrics, select appropriate research methodologies, collate, analyse and evaluate qualitative and quantitative data, and the impact and outcomes of an ethically designed research study.
- Different perspectives on science (e.g. positivist and constructivist), the concept of trust in transdisciplinary research, and how success/crisis influences stakeholders.
- Communicate research effectively for different audiences in line with Open Science frameworks.

Intended learning outcomes

Students will develop an advanced understanding of transdisciplinarity to enable them to work in transdisciplinary/multidisciplinary/interdisciplinary teams. They will be able to demonstrate a critical appreciation of the challenges of integrating different disciplinary and transdisciplinary approaches and research methodologies, of ethical and judicious data creation, discovery and utilisation (including storing, processing and analysing data) and assess for specific complex challenges how to master data as a tool for problem identification and solution building.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in
keinem Studiengang zugeordnet

Module title			Abbreviation
Adaptation Measures and Strategies in Water Management			07-MGCS-W-AD-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:

- Anthropological approaches to water sustainability Environmental earth sciences
- Nature-based Solutions (NbS)
- Managed Aquifer Recharge (MAR) techniques Virtual water (green, blue and grey water) Water chemistry & treatment
- Water governance
- Water economics and policy (including degrowth water economics)
- Water footprint
- Water hydraulics & engineering

Intended learning outcomes

In this module, the student will learn about the global importance of water adaptation strategies and integrated management of water in a safe, sustainable and equal manner.
After this module, the student will be able to relate natural, social, economic and legal issues to water management and formulate their interdependence. Graduates can creatively think about and find potential interventions and measures to water quality and quantity challenges in a trans/interdisciplinary team.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Extremes in the Water Cycle and Their Complex Consequences			07-MGCS-W-EX-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:
- Nature, water, climate and earth sciences (ecology, ecophysiology, biodiversity, hydrology, cryology, climatology, meteorology, geophysics, hydrogeology, oceanology)
- Water economics, policy, legislation
- Land management and resilience of territories Water hydraulics & engineering
- Participatory sciences
- Anthropological approaches in risk management and governance of water
- Mathematics applied in the field (handling of uncertainties)

Intended learning outcomes

After this module, students will be able to identify, and analyse past and present extremes in the water cycle and interpret their evolution under global changes. They will be able to assess the social, political, economic, cultural, environmental and biophysical consequences of water hazards and identify the complex challenges that impacted communities and various stakeholders face. Students will also be able to collaboratively develop and apply strategies to debate with the public or imagine and construct playful forms of civic engagement.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
Oral examinations can also be held as group examinations. The examination time will be determined according to the number of participants, with the specified time frame of 10 to 15 minutes being applied per candidate.
Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet

Module title			Abbreviation
Resilient Cities: Water in Urban Environments			07-MGCS-W-RC-252-m01
Module coordinator		**Module offered by**	
Dean of the Faculty of Biology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

The module will include workshops, lectures and seminars on:
- Smart cities and water supply
- Urban inequalities Urban metabolism Water engineering Water monitoring Water rights Water sharing
- Water-management systems

Intended learning outcomes

Students will be able to recognise the challenges of supplying urban centres with water in different geographical and social contexts. They will also be capable of identifying the main water needs of the urban populations and consider the technical, ecosystem, legal, social and historical aspects to provide present and future urban communities with sustainable and safe water resources.

Courses (type, number of weekly contact hours, language — if other than German)

S (4)
Module taught in: English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Portfolio (10 to 15 written or oral assessments, each 5 to 10 pages or 10 to 15 minutes)
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Language of assessment: English

Allocation of places

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Additional information

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Workload

300 h

Teaching cycle

Teaching cycle: every semester

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

keinem Studiengang zugeordnet