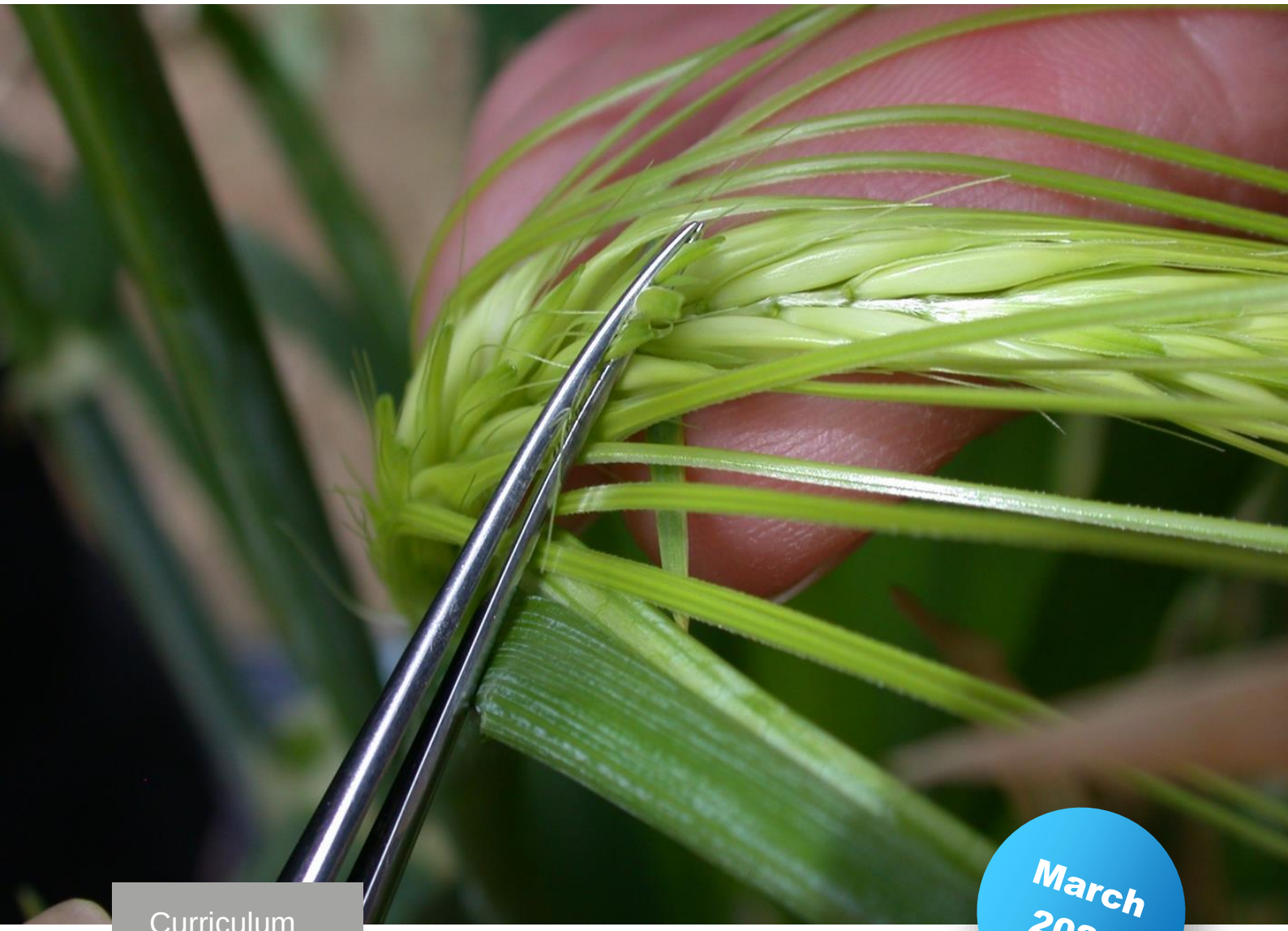
UNIVERSITY OF HOHENHEIM



Curriculum

March 2023

Crop Sciences

Master of Science

www.uni-hohenheim.de/cropsciences

Preamble

This curriculum provides applicants and students as well as teaching and administrative staff with information about the M.Sc. program “Crop Sciences”. It contains information on the program structure and summarizes the most important exam regulations (issued the 19th of February 2018, including all amendments that were introduced up to 06th of July 2022).

The information presented reflects the current situation. Titles and contents of compulsory and optional modules are sometimes subject to change. Due to administrative reasons such changes can only be included in printed materials with a delay. For this reason, all information is supplied without liability.

If in doubt, please contact the coordinator of the program (cropsciences@uni-hohenheim.de) to obtain up-to-date information. For up-to-date module descriptions please refer to the website at uni-hohenheim.de/en/module-catalogue. Time schedules and lecture halls of all courses offered at the University of Hohenheim are displayed in the Course Catalogue of the University of Hohenheim, available at the beginning of each semester online on the university’s homepage: https://www.uni-hohenheim.de/en/course-catalog

Imprint

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The Master's Program *"Crop Sciences"*

1 Program Objectives

The goal of Crop Sciences is to develop crops and cropping systems with the highest possible efficiency in converting light and supplemental resources into food, feed, and fiber. Biological, physiological, molecular, genetic and biometric principles are applied, and graduates are prepared to develop cropping systems that are profitable and ecologically sustainable.

Students have to choose between the two majors "Plant Breeding and Seed Science" and "Plant Nutrition and Protection". The title of the chosen major will be reported in the transcript of records.

The full program is composed of 4 semesters each with 30 ECTS credits. The language of instruction is English and the program can be started in October (winter semester) each year.

2 Modules

2.1 What is a Module?

A module is a teaching unit and can consist of several courses (lecture, seminar, excursion, practical exercises…). Modules at the University of Hohenheim correspond to 6 ECTS credits (unblocked modules) or 7,5 ECTS credits (blocked modules). A few modules with higher work load correspond to 12 or even 15 credits. (See also chapter 2.4)

A detailed description on the content and structure of each module is found in the Module catalogue https://www.uni-hohenheim.de/modulkatalog#Master

2.2 Modules and associated workload

Students earn ECTS credits for the workload associated with each module (1 ECTS credit = 25 – 30 h workload). A module of 6 credits corresponds to a workload of 4 SWS (4 weekly semester hours / 56 total contact hours). A module of 7.5 credits corresponds to a workload of 5 SWS (5 weekly semester hours / 70 total contact hours). In addition, each credit requires preparation time, summing up to a total work load of about 180 hours for one module of 6 credits and 225 hours for one module of 7,5 credits.

The M.Sc. program has a requirement of 120 credits in total (90 credits from course work, 30 credits for the Master's thesis).

2.3 Modules per semester

A typical semester consists of 30 credits, and is either composed of 5 unblocked modules, (6 credits each) or 4 blocked modules (7,5 credits each). Typically, the modules are completed in the first three semesters, followed by the Master's thesis in the fourth semester. However, the examinations regulations allow a certain degree of flexibility. For details, refer to https://www.uni-hohenheim.de/en/examination.

2.4 Blocked and unblocked modules

The University of Hohenheim offers two different types of modules: unblocked modules and blocked modules. Unblocked modules correspond to a workload of 6 credits and blocked modules to a workload of 7.5 credits.

2.4.1 Unblocked Modules

Unblocked modules are based on 4 contact hours per week for the whole semester period. They end with an exam at the end of the semester.

2.4.2 Blocked Modules

Blocked Modules are composed of 3 weeks of daily instruction (usually 5 hours per day) followed by one week of individual preparation, ending with a final exam at the end of the 4th week. Blocked modules correspond to a higher workload than unblocked modules, and are therefore worth 7,5 credits. However, mixing blocked and unblocked modules in one semester it is not recommended, as lectures may overlap significantly.

2.5 Module Categories

Each Master's program consists of compulsory and elective modules; some study programs also include semi-elective modules. The credits of each module correspond to the workload and not to the category, i.e. an elective module with 6 credits has the equal weight as a compulsory module with regard to the final average grade.

2.5.1 Compulsory Modules

… are the modules providing the core knowledge of the study program. Those modules have to be completed to obtain the M.Sc. degree.

2.5.2 Semi-elective Modules

…are modules covering a wider range of content related to the aim of the study program. In some programs, a defined minimum number of modules out of a pool of semi-elective modules have to be chosen and completed. The Master's program in Crop Sciences does not have semi-elective modules.

2.5.3 Elective modules

…are modules chosen by the individual students, according to their interests. They are the modules outside of a program's compulsory modules, which contribute to the final total of 90 ECTS credits required for the achievement of an M.Sc. degree. They can be chosen from all Master's modules offered by the Faculty of Agricultural Sciences of the University of Hohenheim. On request, subject-related Master's modules offered from other faculties or other universities can also be chosen. Note: Bachelor's modules cannot be chosen as elective modules.

2.5.4 Additional modules

…are modules taken out of individual interest beyond the 90 ECTS coursework credits required for the completion of the degree. Credits from additional modules will not be included in the calculation for your final average grade. But, on request to the examinations office, they can be shown on your final transcript.

There are two special cases of elective modules, which are worth highlighting:

2.6 Portfolio Module (3000-410)

You can gain up to 7,5 credits (not graded) for extra-curricular activities like internships, participation in conferences, trainings or summer schools, language courses (max. 3 credits), writing research papers, courses on statistical programs or similar activities. These credits can replace an elective module. The detailed explanation is found in the module catalog under module code 3000-410.

2.7 English for Scientific Purposes (3000-420)

This module consists of four English courses of C1 level at the language center Hohenheim. You can choose from several courses and workshops and they can stretch over several semesters.

After completing the four courses/workshops you have to write an exam to obtain the UniCert III certificate. This module counts as an elective module and is the only way language courses can be recognized for your studies apart from the portfolio module. The detailed explanation is found in the module catalog under module code 3000-420

2.8 Certificate program for courses in Artificial Intelligence and Data Science in Hohenheim (AIDAHO)

The program is designed for students of all faculties: https://aidaho.uni-hohenheim.de/en/home. The aim of AIDAHO is to increase the expertise of its participants in the fields of Artificial Intelligence (AI), Data Science and Scientific Computing. Students can enroll in the certificate in addition to their main course of study. The AIDAHO courses can be taken in any order.

2.8.1 How to achieve the certificate

To successfully complete the program, students have to pass at least five AIDAHO modules (30 ECTS).

- There are **three mandatory basic modules** that all participants have to complete. The courses of these modules teach basic programming skills and statistic methods.
- In the **two semi-elective specialization modules** students can either deepen their methodological skills or choose to work on data projects in application seminars.

The following sections cover additional information about the basic and specialization modules. A complete list of all courses of all faculties in the AIDAHO program can be found here: https://aidaho.uni-hohenheim.de/en/courses

The basic modules contain three courses which all participants of the AIDAHO program have to pass:

Sem	Code	Name of Module	Duration	Credits	Professor
1 or 2	**5000-410** (B.Sc.-level!)	Tools for AI & Data Science: Introduction to Python, R & SQL *(no elective module, only additional for MSc)* *(AIDAHO-Basic)	1 Semester	6	Krupitzer/ Vogelgesang
2	**4407-480**	Introduction to Machine Learning with Python*(AIDAHO-Basic)	1 Semester	6	Stein
1/3	**5107-410**	Introduction to Applied Data Science*(AIDAHO-Basic)	1 Semester	6	Dimpf

In the specializing part students enroll in two modules. At least one of them has to be an application course. Modules of this curriculum that apply to the AIDAHO certificate as a specialization module *(AIDAHO specialization) or application course *(AIDAHO application) are marked. All these modules can be integrated into the Master's degree at the same time in accordance with the program-specific regulations.

Passed project works, seminar papers or theses, in which a substantial part was the quantitative data analysis or working with machine learning/artificial intelligence, can be credited as an “application course”.

Questions about the AIDAHO certificate should be directed to aidaho@uni-hohenheim.de

2.9 Modules with limited numbers of participants

Some modules can accept only a limited number of participants due to space constraints or supervision regulations. It is necessary to register for such modules in advance. See also: https://www.uni-hohenheim.de/en/registration-for-modules .

If the number of participants is limited, this will be stated under the “comments” (“Anmerkungen”) section of the module description. Please check before lectures start, whether the modules you have chosen have a limited number of participants or not. (uni-hohenheim.de/en/module-catalogue). Each module is set up as a course on the e-learning platform ILIAS (https://ilias.uni-hohenheim.de/). You have to register there and see how the spots for each course are allocated. Further instructions and information, e.g. how to contact the relevant lecturer or to join the waiting list are also available there. Generally, students for whom the respective module is compulsory or the last module that needs to be completed to finish a degree program will always be admitted. If you have not yet enrolled by the end of the registration period and do not yet have access to ILIAS, please contact the responsible lecturer by e-mail and ask for registration.

For blocked modules with a limited number of participants in block period 1, the registration starts at least two weeks before the start of the lecture period and ends eight days before the lecture period. For all other modules with a limited number of participants, the registration period starts at least one week before the start of the lecture period and ends at the end of the first week after the start of the lecture period.

2.10 Module codes

Each module and each course have a specific code. Example: 3502-440 Methods of Scientific Working.

The first four digits represent the respective institute and the department or study field (i.e. of the responsible person / course instructor). The next three digits correspond to the type of module and the term, as well as the course.

3502-440 = institute number (350 Institute of Plant Breeding, Seed Science and Population Genetics)
000**2**-000 = department within the institute (2 corresponds to the 2nd letter in the alphabet: B
-> department 350b: Plant Biodiversity and Breeding Informatics)
0000-**44**0 = module designation:
01 - 40 modules for Bachelor's students
41 - 80 modules for Master's students
81 - 90 modules for doctoral candidates
0000-01**1** = course 1 of a module (1 - 9 courses possible)

0 at the end of the code indicates that it is the module name. 1, 2 or 3 as last digit indicate that it is a course (sub-unit) within a module (tutorial, exercises, lectures, etc.)

2.11 Individual Timetable

The Master's programs at the University of Hohenheim offer a high variety of different modules that can be chosen as elective modules. This allows for a personalized study profile with different specializations as well as for the creation of individual timetables depending on the choice of courses.

The Course Catalog of the University of Hohenheim contains information on times, lecturers, and lecture rooms of all courses, and is available at the beginning of each semester online on the University's homepage: https://www.uni-hohenheim.de/en/course-catalog. It is linked to the modules listed in the HohCampus Study Planner. A tool to compose a virtual individual timetable is also available on HohCampus. Please note: many modules consist of more than one course e.g. a lecture and a seminar (see above, module code explanation).

The lectures usually begin 15 minutes after the defined start time indicated in the course catalogue (c.t.=lat.: cum tempore = "with time"). Therefore, a lecture with a defined start time at 9 c.t. starts at 9:15. If a lecture starts on time at 9:00, there will be an indication 9 s.t. (lat.: sine tempore = "without time").

2.12 Evaluation of Modules

The quality of courses and modules is evaluated every year by the students of all study programs. The evaluation sheets are distributed and evaluated by the Faculty of Agricultural Sciences and the results are sent back to the lecturers in an anonymous format. The lecturers are asked to discuss the results with the students at the end of their courses. This feedback is important for the Faculty to be able to continuously improve the study experience for our students.

3 Examinations

Each module is completed with an examination. The examinations of the blocked modules are held at the end of the respective block period; those for the unblocked modules are held in the two examination periods that follow the lectures. Withdrawal from a registered module examination is possible until 7 days before the examination date. The right to be admitted to an examination expires if:

- the examination of any module has been failed for the third time
- not all module examinations have been passed by the end of the seventh semester at the latest.
- the Master's thesis has not been registered by the beginning of the seventh semester at the latest.

The right to be admitted to an examination does not expire if the candidate cannot be held responsible for the failure to comply with the deadline. The students are responsible for complying with these examination deadlines as well as all other regulations given in the examination regulations. The examination regulations are distributed by the Examinations Office.

It is possible to change the designation of completed elective and additional modules, i.e. replacing an elective module with a completed additional module, or a set of elective modules with a set of completed additional modules. This exchange is only available on request, and only once during your studies. Therefore, students usually request the change shortly before finishing their degree, when they have the most information and can make the best choices out of their completed modules.

Please note that plagiarism —copying text or phrases in a written examination (even as part of a partial performance) without quoting them accordingly—will be marked as a cheating attempt and the respective examination performance is to be graded "fail" (F; mark 5.0). A declaration (available at: https://agrar.uni-hohenheim.de/en/plagiats) has to be attached to homeworks, presentations, and to the Master's thesis.

3.1 Registering for Examinations

Students have to register for the examinations of each semester at the examination office using HohCampus. The registration must take place during the time period announced at the examination office. When you have to register for an examination depends on whether it is a blocked or a non-blocked module. More information on examination periods and dates, deadlines for registration, withdrawal, and resits is given at the homepage of the examination office (https://www.uni-hohenheim.de/en/examination). Please note: the ILIAS registration is only for participation in the module and is NOT a registration for the examination!

3.2 Exam Repetition

If an exam is failed, the Examinations Office will inform the student via post. Students are responsible for checking in HohCampus or with the responsible professor about dates for resit exams and registration deadlines. Resit exams for blocked modules will usually be scheduled by the responsible professor within the same semester. Resit exams in unblocked modules will usually be scheduled for the next examination period. Students are not obliged to take a re-exam in the next possible examination period but can choose to take it in one of the later examination periods, if they wish.

4 Marks and Grades

With each completed module, students earn credits for the workload associated with each module. The M.Sc. program has a requirement of 120 credits in total. The credit point system used in the M.Sc. program is fully compatible with the European Credit Transfer System, ECTS.

The examination result is expressed in grades and marks. The highest score is 1.0 [grade A]. A score of 4.0 [grade D] is required for passing.

	Marks and Grades		
	grades		score
excellent performance	very good	A	1.0
		A-	1.3
performance considerably exceeding the above average standard	good	B+	1.7
		B	2.0
		B-	2.3
performance meeting the average standard	medium	C+	2.7
		C	3.0
		C-	3.3
performance meeting minimum criteria	pass	D+	3.7
		D	4.0
performance not meeting minimum criteria	fail	F	5.0

The final score is calculated as an average score weighted according to the credits achieved in all modules and the thesis.

The final, weighted average of received scores results in a final grade for the Master's degree according to the table below:

between 1,0 and 1,5 = very good (A)
between 1,6 and 2,5 = good (B)
between 2,6 and 3,5 = medium (C)
between 3,6 and 4,0 = pass (D)

Additional and non-graded modules will not be included in the calculation of the final average grade.

5 Semester structure

The academic year at the University of Hohenheim is structured into two semesters, a winter semester (October until March) and a summer semester (April until September). The lecture period of each semester usually lasts 14 weeks (winter as well as summer semester).

Winter semester (WS) courses usually begin in the middle of October and end in February of the following year. Summer semester (SS) courses begin the first Monday in April and by end of July / beginning of August. For unblocked modules, the lecture period of each semester is followed by an examination period of three weeks. The last block period of each semester overlaps with this examination period for the unblocked modules. (See here https://www.uni-hohenheim.de/en/semester-dates and also back side of this brochure for important semester dates)

6 Program Design

6.1 Major: Plant Breeding and Seed Science

	1st Semester	2nd Semester	3rd Semester	4th Semester
6 Credits	3502-440 **Methods of Scientific Working** (for Crop Sciences)	3402-450 **Advanced Statistical Methods for Metric and Categorical Data**	3501-460 **Planning of Breeding Programs**	**Master's Thesis** (30 credits)
6 Credits	3502-450 **Population and Quantitative Genetics**	3501-450 **Breeding Methodology**	3501-470 **Selection Theory**	
6 Credits	Elective Module	3504-430 **Seed Research**	Elective module	
6 Credits	Elective Module	Elective module	Elective module	
6 Credits	Elective Module	Elective module	Elective module	

The major "Plant Breeding and Seed Science" consists of seven compulsory modules (42 credits) spread over the first three semesters. The remaining 48 credits required for the degree have to be added with elective modules.

6.1.1 Compulsory modules of „Plant Breeding and Seed Science":

Sem	Code	Name of Module	Duration	Credits	Professor
1	3502-440	**Methods of Scientific Working** (for Cr. Sciences)	1 Semester	6	Schmid
1	3502-450	**Population and Quantitative Genetics** *(AIDAHO specialization)	1 Semester	6	Schmid
2	3501-450	**Breeding Methodology**	1 Semester	6	Würschum
2	3504-430	**Seed Research**	1 Semester	6	Kruse
2	3402-450	**Advanced Statistical Methods for Metric and Categorical Data** *(AIDAHO specialization)	1 Semester	6	Piepho
3	3501-470	**Selection Theory**	1 Semester	6	Würschum
3	3501-460	**Planning of Breeding Programs**	1 Semester	6	Würschum

6.1.2 Recommended elective modules for "Plant Breeding and Seed Science"

The elective modules can be chosen from the list below or from the modules of other Master's programs offered by the Faculty of Agricultural Sciences at the University of Hohenheim. On request to the examination board and with the approval of an academic counsellor or the program coordinator, modules can be chosen from other programs of the University of Hohenheim or other universities. With compulsory and elective modules together, at least 90 credits have to be reached.

Sem	Code	Name of Module	Duration	Credits	Professor
1-4	3000-410	Portfolio-Module (Master)	Not defined	1 - 7,5	Kruse, M.
1	3408-440	Physiology and Biochemistry of Crops	1 Semester	6	Ludewig
1	3603-480	Entomology	1 Semester	6	Petschenka
1/3	3402-420	Quantitative Methods in Biosciences *(AIDAHO specialization)	1 Semester	6	Piepho
1	3504-460	Seed Testing *	1 Semester	6	Kruse
2	3502-470	Plant Genetic Resources *(AIDAHO specialization)	First half of semester	6	Schmid
2	3504-450	Saatguttechnologie	1 Semester	6	Kruse
2	3401-510	Three-Dimensional Modeling of Plant Architecture and Function *(AIDAHO application)	1 Semester	6	Graeff-Hönninger
2	5703-510	Entrepreneurship	1 Semester	6	Kuckertz
3	3402-460	Advanced Statistical Methods for Metric and Categorical Data II *(AIDAHO specialization)	1 Semester	6	Piepho
3	3411-420	From Genes to Transgenic Plants and Edited Genomes	1 Semester	6	Schmöckel
3	4302-420	Ethical Reflection on Food and Agriculture *	1 Semester	6	Bieling

Blocked Modules *(might have significant time overlap with unblocked modules!)*

Sem	Code	Name of Module	Duration	Credits	Professor
2	4605-500	Biologische Sicherheit und Gentechnikrecht	Block 4, SS	7.5	Hölzle

* Limited number of participants. Please register for participation in ILIAS

6.2 Major: Plant Nutrition and Protection

	1st Semester	2nd Semester	3rd Semester	4th Semester
6 Credits	3502-440 **Methods of Scientific Working** (for Crop Sciences)	Elective module	Elective module	**Master Thesis** (30 credits)
6 Credits	3408-500 **Methods in Molecular Biology and Biotechnology** (12 credits)	Elective module	Elective module	
6 Credits		Elective module	Elective module	
6 Credits	3408-440 **Physiology and Biochemistry of Crops**	Elective module	Elective module	
6 Credits	3411-420 **From Genes to Transgenic Plants and Edited Genomes**	Elective module	Elective module	

The major “Plant Nutrition and Protection” consists of four compulsory modules (30 credits), all offered in the first semester. The remaining 60 credits required for the completion of the degree have to be added with elective modules.

Instead of choosing five elective modules per semester (each 6 credits) as shown above, the major “Plant Nutrition and Protection” offers the possibility to choose four blocked modules (each 7.5 credits) offered by the Faculties of Agricultural Sciences and/or Natural Sciences during the second and/or the third semester. Choosing modules of the Faculty of Natural Sciences – codes starting with “1” or “2” - requires the approval of an academic counsellor or the coordinator and a request to the examination board. Most modules have a strictly limited number of participants; access is not guaranteed.

6.2.1 Compulsory modules of “Plant Nutrition and Protection”

Sem	Code	Name of Module	Duration	Credits	Professor
1	3502-440	**Methods of Scientific Working** (for Crop Sciences)	1 Semester (in the morning)	6	Schmid
1	3408-440	**Physiology and Biochemistry of Crops**	1 Semester (in the morning)	6	Ludewig
1	3411-420	**From Genes to Transgenic Plants and Edited Genomes**	1 Semester (in the morning)	6	Schmöckel
1	3408-500	**Methods in Molecular Biology and Biotechnology**	1 Semester (in the afternoon)	12	Ludewig

6.2.1 Recommended elective modules for “Plant Nutrition and Protection”

The elective modules can be chosen from the list below or from the modules of other Master’s programs offered by the Faculty of Agricultural Sciences at the University of Hohenheim. On request to the examination board and with the approval of an academic counsellor or the program coordinator, modules can be chosen from other programs of the University of Hohenheim or other universities. With compulsory and elective modules together, at least 90 credits have to be reached.

Sem	Code	Name of Module	Duration	Credits	Professor
1-4	3000-410	Portfolio-Module (Master)	open	1 – 7.5	Kruse, M.
1/3	3402-420	Quantitative Methods in Biosciences *(AIDAHO specialization)	1 Semester	6	Piepho
1/3	4611-440	The Bacterial Genome, from Culture to Functional Reconstruction	blocked in March	7,5	Kube
2	3408-430	Molecular Plant Nutrition	1 Semester	6	Ludewig
2	3408-490	Rhizosphere Processes - Nutrient Acquisition and Stress Adaptations of Higher Plants	1 Semester	6	Ludewig
2	3401-500	Bioactive Compounds of Food Crops	1 Semester	6	Graeff-Hönninger
2	3402-450	Advanced Statistical Methods for Metric and Categorical Data *(AIDAHO specialization)	1 Semester	6	Piepho
2	3411-410	Understanding Stress Physiology to Increase Yield Stability *	1 Semester	6	Schmöckel
2	3502-470	Plant Genetic Resources *(AIDAHO specialization)	First half of semester	6	Schmid
2	3602-460	Information Technologies and Expert Systems in Plant Protection (offered every other year. 2022, 2024,…) *(AIDAHO application)	1 Semester + (partly blocked in June)	6	Gerhards
2	3603-420	Crop Protection in Organic Farming	1 Semester	6	Petschenka
2	3401-510	Three-Dimensional Modeling of Plant Architecture and Function *(AIDAHO application)	1 Semester	6	Graeff-Hönninger
2	5703-510	Entrepreneurship	1 Semester	6	Kuckertz

Sem	Code	Name of Module	Duration	Credits	Professor
2/3	3409-480	Fertilization and Soil Fertility Management in the Tropics and Subtropics	e-learning 1 Semester	7.5	Müller, T.
3	3408-470	Methods in Molecular Transport Physiology	1 Semester	6	Ludewig
3	3103-410	Plant and Crop Modeling *(AIDAHO application)	In March	6	Priesack
3	3408-450	Plant Symbioses for Nutrient Acquisition	1 Semester	6	Ludewig
3	3408-460	Plant Quality	1 Semester	6	Ludewig
3	3602-450	Molecular Aspects of Plant Protection	1 Semester	6	Gerhards
3	3603-480	Entomology	1 Semester	6	Petschenka
3	4302-420	Ethical Reflection on Food and Agriculture *	1 Semester	6	Bieling
3	4905-420	Crop Production Systems	1 Semester	6	Cadisch

* Limited number of participants. Please register for participation in ILIAS

Suggestions for a semester package of **blocked elective modules** including one module offered by the **Faculty of Natural Sciences.**

Sem	Code	Name of Module	Duration	Credits	Professor
2	3601-410	Molecular Phytopathology	Block 1, SS	7,5	Vögele
2	4905-430	Integrated Agricultural Production Systems	Block 2, SS	7,5	Cadisch
2	4905-470	Biodiversity and Genetic Resources	Block 2, SS	7.5	Rasche
2	4907-430	Crop Production Affecting the Hydrological Cycle	Block 3, SS	7,5	Asch
2	4907-420	Ecophysiology of Crops in the Tropics and Subtropics	Block 4, SS	7,5	Asch
2	1916-400	Pathogens, Parasites and their Hosts, Ecology, Molecular Interactions and Evolution**	Block 4, SS	7,5	Mackenstedt
2	4605-500	Biologische Sicherheit und Gentechnikrecht	Block 4, SS	7,5	Hölzle

** *EuroLeague Summer School: 8 places for UHOH-students!*

7 Master's Thesis

The Master's thesis shows that the candidate is able to work independently on a problem in the field of "Crop Sciences" within a fixed period of time by applying scientific methods. The exam consists of a written (thesis) and an oral (defense) part. The written part of the Master's thesis has to be completed within a period of six months and accounts for 30 credits. It is usually written during the fourth semester. Thesis work includes a literature review, new and original data derived from field work, a period of writing-up and, finally, a presentation. The candidate has to defend the essential arguments, results, and methods of the thesis in a colloquium of 30-45 minutes. The thesis can be carried out either at the University of Hohenheim or at one of the various partner universities.

There are several possibilities for finding the right reviewer and the right topic. Sometimes you can find them from the homepage of the department or institute, or you can talk directly to a professor.

The Master's thesis has to be registered at the latest at the start of the seventh semester. Otherwise it is graded "fail" (F; mark 5.0).

8 Teaching Staff

The professors of the University of Hohenheim have broad experience in international research. Students also benefit from Hohenheim's network of academic partners worldwide. Guest speakers from partner universities as well as research, development, and policy institutions cover additional topics, thus enriching the curriculum with special fields of expertise.

9 Academic Counseling

Academic counsellors advise students on their choice of modules to design their individual study profile and to support smooth and focused study progress. If a student wants to select modules offered by a faculty other than the Faculty of Agricultural Sciences, they have to be approved by the academic counsellor or the program coordinator beforehand. Students can contact these counsellors at any time and ask for an appointment.

Academic counselors for Crop Sciences and their respective research focus:

- Prof. Dr. Ludewig, program director (Nutritional Crop Physiology), u.ludewig@uni-hohenheim.de
- Prof. Dr. Schmid (Crop Biodiversity and Breeding Informatics, in charge of the major “Plant Breeding and Seed Science”), karl.schmid@uni-hohenheim.de
- Dr. Tobias Schrag (Plant Breeding), tobias.schrag@uni-hohenheim.de
- Prof. Dr. Vögele (Phytopathology), ralf.voegele@uni-hohenheim.de
- Prof. Dr. Petschenka (Applied Entomology), georg.petschenka@uni-hohenheim.de

10 Study Abroad

Students are encouraged to spend one semester in the second year at a partner university abroad, to gain additional experience and further strengthen their individual profile. Our credit point system is intended to facilitate the mutual acceptance of courses attended at different universities. Assessment is based on the European Credit Transfer System (ECTS), which facilitates this kind of international mobility. Particularly, the third semester is suitable for integrated study abroad. Students will preferably spend this time at one of the partner universities of the Euro League for Life Sciences: Universität für Bodenkultur Wien (BOKU), Austria; Royal Veterinary and Agricultural University (KVL), Denmark; Swedish University of Agricultural Sciences (SLU), Sweden; Wageningen University, Nether-lands; Czech University of Life Sciences (CZU), Czech Republic, Warsaw Agricultural University (SGGW), Poland. On the basis of an agreement on quality standards, the members of the Euro League for Life Sciences have agreed to mutually recognize study achievements. Students may also re-quest to spend the semester at universities other those than mentioned above

11 Degree

After successful completion of all modules as well as the thesis, the student is awarded the degree "Master of Science" (M.Sc.) in Crop Sciences, the degree certificate mentioning the chosen major. This degree entitles to continue with a Ph.D./doctoral program if the total grade is above average.

12 Career Perspectives

Graduates acquire in-depth knowledge in their field of study, develop critical thinking skills, and are able to conduct cutting-edge research. Potential areas of employment are:

- Plant cultivation and seed companies
- Grain and greenhouse companies
- Chemical-pharmaceutical industry
- Service industry and consulting
- Non-governmental organizations
- Ministries
- Public and private research facilities
- Agrochemical companies

Examples of Crop Sciences graduates can be found here: https://www.uni-hohenheim.de/cropsciences-alumni

13 Crop Sciences Program Director

Prof. Dr. Uwe Ludewig, University of Hohenheim
Department of Nutritional Crop Physiology (340h)

Email: u.ludewig@uni-hohenheim.de
Web: https://crop-physiology.uni-hohenheim.de/uwe-ludewig

13.1 Professors in charge of the majors

Plant Nutrition and Protection: Prof. Dr. Uwe Ludewig, Email: u.ludewig@uni-hohenheim.de

Plant Breeding and Seed Science: Prof. Dr. Karl Schmid, Email: karl.schmid@uni-hohenheim.de

14 Crop Sciences Program Coordinator

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Web: http://www.uni-hohenheim.de/cropsciences
https://agrar.uni-hohenheim.de/student-support

15 Blocked Modules in Winter Semester 2022/23

● = Pflicht/Compulsory ◖ = Wahlpflicht/Semi-elective ○ = Wahl/Elective

Blockperiode / Period Studiengang / Study Course	Block 1 *(7.5 credits!)* **17.10. - 11.11.2022**	Block 2 *(7.5 credits!)* **14.11. - 09.12.2022**	Block 3 *(7.5 credits!)* **12.12. – 22.12.2022 + 09.01. – 20.01.2023**	Block 4 *(7.5 credits!)* **23.01. - 17.02.2023**	März-Block/ March Block **i.d.R. 27.02.-22.03.2023**
M.Sc. Agrarwissenschaften Pflanzen- und Tierwissensch.			○ **7301-420** (Ernst) Aktuelle Themen zur Biologie der Honigbienen *(hybride Lehre)*		○ **4611-440** (Kube) The Bacterial Genome, from Culture to Functional Reconstruction (*7,5 credits*) *27.2. - 17.3.2023)*
M.Sc. Agrarwissenschaften Tierwissenschaften					◖ **4601-480** (Rodehutscord) Futtermitteltechnologie und -analytik *(6 credits) (Präsenz: 06.03. - 31.03.2023)* ○ **4605-510** (Hölzle) Wissensch. Fragestellungen d. Umwelt- und Tierhygiene (6 credits) (*n.V.)*
M.Sc. Agrarbiologie (nur die Module der Fakultät A)					◖ **4611-440** (Kube) The Bacterial Genome, from Culture to Functional Reconstruction (*7,5 credits*) (*27.2. - 17.3.2023)*
M.Sc. EnviroFood					◖ **3003-410** (Schöne) Food Safety and Quality Chains (6 credits) (*in presence:27.02. - 10.03.2023)*
M.Sc. Landscape Ecology	● **3201-560** (Schurr) Landscape Ecology	● **3201-570** (Schurr) Community and Evolutionary Ecology	● **3201-580** (Dieterich) Conservation Biology	● **3202-440** (Schweiger) Plant Ecology	○ **3201-420** (Schurr) Methods in Landscape and Plant Ecology *(7.5 credits!) (time schedule individually arrangeable)*
M.Sc EnvEuro Ecosystems and Biodiversity (Alternative 2)	◖ **3201-560** (Schurr) Landscape Ecology	◖ **3201-570** (Schurr) Community and Evolutionary Ecology	◖ **3201-580** (Dieterich) Conservation Biology	◖ **3202-440** (Schweiger) Plant Ecology	◖ **3201-420** (Schurr) Methods in Landscape and Plant Ecology *(7.5 credits!) (time schedule individually arrangeable)*
M.Sc. Crop Sciences					○ **3103-410** (Priesack) Plant and Crop Modeling (6 credits) (*in presence:* 06.03. - 16.03.2023) ○ **4611-440** (Kube) The Bacterial Genome, from Culture to Functional Reconstruction (*7,5 credits*) *(27.2. - 17.3.2023)*
M.Sc. AgriTropics					○ **4909-430** (Focken) Experimental Aquaculture (*in presence: 27.02.-17.03.2023 at Bremerhaven) (6 credits)* In 2022/23, 2024/25…: ○ **4907-490** (Asch) Excursion to the Tropics and Subtropics (*2 weeks in Feb/March) (6 credits)*

16 Blocked Modules in Summer Semester 2023

● = Pflicht/Compulsory ◖ = Wahlpflicht/Semi-elective ○ = Wahl/Elective

Blockperiode / Period Studiengang / Study Course	**Block 1** *(7.5 credits)* **03.04. - 28.04.2023**	**Block 2** *(7.5 credits)* **02.05. - 26.05.2023**	**Block 3** *(7.5 credits)* **05.06. - 30.06.2023**	**Block 4** *(7.5 credits)* **03.07. - 28.07.2023**	**By arrangement** *(7,5 credits)*
M.Sc. Agrarwissenschaften Bodenwissenschaften	◖ **3103-450** (Streck) Spatial Data Analysis with GIS ◖ **3102-460** (Kandeler) Molekulare Bodenökologie in 2023, 2025, 2027…: ◖ **3101-460** (Herrmann) Soils of the World - Formation, Classification, and Land Evaluation	◖ **3102-440** (Kandeler) Environmental Pollution and Soil Organisms ◖ **3201-620** (Schmieder) Vegetation and Soils of Centr. Europe	◖ **3101-570** (Herrmann) Boden- und veg.kundl. Geländeübung / Field Course Soils + Vegetation	● **3101-430** (Herrmann) Integriertes bodenwissenschaftliches. Projekt für Fortgeschrittene in 2023, 2025, 2027…: ○ **3201-430** (Schmieder) Ecology of Alpine Vegetation ○ **3103-460** Env. Science Proj.	◖ **3102-420** (Kandeler) Bodenwissenschaftliches Experiment/Project in Soil Sciences (Engl.+ Ger.) ~~○ **3101-420** (Herrmann) Internationale standortkundliche Geländeübung (Engl.+Ger.)~~ (September 2024, 2026, …)
M.Sc. Agrarwissenschaften und **MSc. NawaRo**	~~○ **3602-410** (Gerhards) Integrierter Pflanzenschutz mit Übungen~~ *(jetzt ungeblockt)*	○ **7301-400** (Ernst) Soziale Insekten *(10 Plätze f. Fak. A*	◖ **7301-410** (Ernst) Bienen	○ **4605-500** (Hölzle) Biologische Sicherheit und Gentechnikrecht	○ **4407-480** (Stein) Introduction to Machine Learning in Python (*E-Learning*) *(unblocked)* ○ **4408-480** (Kruse, A.) Der Business Design Prozess - Von der Idee zum Produkt (*6 Credits*)
Tierwissenschaften: Profil Ernährung und Futtermittel	◖ **4603-420** (Seifert) Futtermittelmikrobiologie	~~◖ **4601-470** (Rodehutscord) Tracerbasierte Methoden in der Tierernährung~~ *(nicht SS 2023)*		◖ **4601-450** (Rodehutscord) Spezielle Ernährung der Wiederkäuer	
Tierwissenschaften: Profil Genomik und Züchtung		◖ **4607-510** (Bennewitz) Zuchtplanung und Zuchtpraxis i. d. Nutztierwissenschaften	~~◖ **4608-420** (Hasselmann) Molekulare Evolution und Populationsgenetik~~ *(nicht 2023)*		
Tierwissenschaften: Profil Gesundheit und Verhalten	◖ **4606-490** (Stefanski) Verhaltensbiologie ◖ **4605-480** (Hölzle) Spezielle Tierhygiene und Tierschutz	◖ **4606-420** (Stefanski) Immunologie und Infektionsbiologie	◖ **4604-410** (Huber) Leistungs- assoziierte Stoffwechselstörungen bei landwirtschaftlichen Nutztieren	○ **4604-420** (Steffl) Seminar zu klinischen Fallstudien der Spez. Anatomie und Phys. d. Nutztiere	○ **4605-510** (Hölzle) Wissensch. Fragestellungen d. Umwelt- und Tierhygiene (6 credits)
M.Sc. Agrarbiologie (nur die Module der Fakultät A)	◖ **4603-420** (Seifert) Futtermittelmikrobiologie	◖ **4906-430** (Graß) Field Course Agroecology and Biodiversity	◖ **4603-440** (Seifert) Interaktionen Mikrobiom-Nutztier	◖ **4907-420** (Asch) Ecophysiology of Crops in the T+S	
	◖ **4613-420** (Camarinha Silva) Microbiome in Animals and Humans	◖ **4611-430** (Kube) Infektionserkrankungen, akt. Herausford. bei Nutzpfl. und Nutztier-*(23, 25...)*	~~◖ **4606-430** (Stefanski) Integrative Immunbiologie bei Tieren~~ *(erst im Sommersemester 2024*)	◖ **4605-500** (Hölzle) Biologische Sicherheit und Gentechnikrecht	
	◖ **3601-410** (Vögele) Molecular Phytopathology	~~◖ **4907-420** (Asch) Ecophysiology of Crops in the T+S~~	◖ **4604-410** (Huber) Leistungs- assoziierte Stoffwechselstörungen bei landwirtschaftlichen Nutztieren	◖ **3411-430** (Schmöckel) Von Genen und Genregulation zu Transgenen und editierten Genomen	
	◖ **3102-460** (Kandeler) Molekulare Bodenökologie /Molecular Soil Ecology	◖ **3102-440** (Kandeler) Environmental Pollution and Soil Organisms	~~◖ **4608-420** (Hasselmann) Molekulare Evolution und Populationsgenetik~~ *(nicht 2023)*	~~◖ **3408-420** (Ludewig) Genetische und molekulare Regulation der pflanzlichen Nährstoffaufnahme~~ *(nicht 2023)*	
M.Sc. Crop Sciences (option for a blocked semester)	○ **3601-410** (Vögele) Molecular Phytopathology	○ **4905-430** (Cadisch) Integr. Agricultural Production Systems	○ **4907-430** (Asch) Crop Prod. Affecting the Hydrological Cycle	○ **1916-400** (Mackenstedt) Pathogens, Parasites and their Hosts, … *(8 Pl. UHOH)*	
		○ **4905-470** (Rasche) Biodiversity and Genetic Resources	~~○ **3501-480** (Würschum) Breeding of Tropical, Ornament., and Vegetable Plants~~	○ **4605-500** (Hölzle) Biologische Sicherheit und Gentechnikrecht	
		~~○ **4907-420** (Asch) Ecophysiology of Crops in the T+S~~		○ **4907-420** (Asch) Ecophysiology of Crops in the T+S	

M.Sc. AgriTropics	● **4907-440** (Asch) Interdiscipl. Practical Science Training	○ **4905-470** (Rasche) Biodiversity and Genetic Resources			
Livestock		○ **4908-480** (Chagunda) Animal Breeding for Sustainable Development		○ **4908-420** (Chagunda) Promotion of Livestock in Trop. Environments	
Crops		○ **4905-430** (Cadisch) Integrated Agricultural Production Systems	○ **4907-430** (Asch) Crop Production Affecting the Hydrological Cycle	○ **4907-420** (Asch) Ecophysiology of Crops in the Tropics and Subtropics	
		~~○ **4907-420** (Asch) Ecophysiology of Crops in the Tropics and Subtropics~~	~~○ **3501-480** (Würschum) Breeding of Tropical, Ornament., and Vegetable Plants~~		
Engineering		○ **4403-550** (Müller, J.) Postharvest Technology of Food and Bio-Based Products	○ **4403-470** (Müller, J.) Renewable Energy for Rural Areas	○ **4403-410** (Müller, J.) Irrigation and Drainage Technology	○ **4407-480** (Stein) Introduction to Machine Learning in Python (*E-Learning*) *(unblocked)*
M.Sc. EnviroFood	● **3103-450** (Streck) Spatial Data Analysis with GIS	◖ **3102-440** (Kandeler) Environmental Pollution and Soil Organisms	◖ **4302-470** (Bieling) Landscape Change, Resilience, and Ecosystem Services	In 2023, 2025, …: ○ **3201-430** (Schmieder) Ecology of Alpine Vegetation	
		◖ **4905-470** (Rasche) Biodiversity and Genetic Resources		◖ **3201-600** (Schurr) Intensive Course Landscape Ecology	
		◖ **4403-550** (Müller, J.) Postharvest Technology of Food and Bio-Based Products	◖ **4403-470** (Müller, J.) Renewable Energy for Rural Areas	◖ **4403-410** (Müller, J.) Irrigation and Drainage Technology	
				○ **3103-460** Env. Science Proj.	
M.Sc. EnvEuro Environmental Management	● **3103-450** (Streck) Spatial Data Analysis with GIS	◖ **4905-430** (Cadisch) Integrated Agricultural Production Systems	◖ **4403-470** (Müller, J.) Renewable Energy for Rural Areas	○ **3201-600** (Schurr) Intensive Course Landscape Ecology	◖ **3409-480** (Müller, T.) Fertilisation and Soil Fertility Management in the T. and S.
		◖ **4905-470** (Rasche) Biodiversity and Genetic Resources	◖ **4302-470** (Bieling) Landscape Change, Resilience, and Ecosystem Services	◖ **4403-410** (Müller, J.) Irrigation and Drainage Technology	
Soil Resources and Land Use	● **3103-450** (Streck) Spatial Data Analysis with GIS	◖ **3201-620** (Schmieder) Vegetation and Soils of Centr. Europe	○ **4907-430** (Asch) Crop Production Affecting the Hydrological Cycle	In 2023, 2025, …: ○ **3201-430** (Schmieder) Ecology of Alpine Vegetation	◖ **3409-480** (Müller, T.) Fertilisation and Soil Fertility Management in the T. and S.
		◖ **3102-440** (Kandeler) Environmental Pollution and Soil Organisms	◖ **3101-570** (Herrmann) Field Course Soils and Vegetation	◖ **4403-410** (Müller, J.) Irrigation and Drainage Technology	◖ **3102-420** (Kandeler) Bodenwissenschaftl. Experiment/ Project in Soil Sciences (Engl.+Ger.)
				○ **3103-460** (Streck) Environmental Science Project	◖ **3202-460** (Schweiger) Plant Ecology of Cultural Landscapes
Ecosystems and Biodiversity	● **3201-590** (Schurr) Combining Ecological Models and Data	◖ **3201-620** (Schmieder) Vegetation and Soils of Centr. Europe	◖ **3101-570** (Herrmann) Field Course Soils and Vegetation	○ **1916-400** (Mackenstedt) Pathogens, Parasites and their Hosts, Ecology, Molec. Interactions a. Evolution *(8 Pl. UHOH)*	○ ~~**3101-420** (Herrmann) International Field Course Site Evaluation (Engl.+Ger.)~~ (September 2024, 2026, …)
		◖ **4905-470** (Rasche) Biodiversity and Genetic Resources	◖ **4302-470** (Bieling) Landscape Change, Resilience, and Ecosystem Services	◖ **3201-600** (Schurr) Intensive Course Landscape Ecology	◖ **3202-460** (Schweiger) Plant Ecology of Cultural Landscapes
M.Sc. Landscape Ecology	◖ **3201-590** (Schurr) Combining Ecological Modells and Data	◖ **3201-620** (Schmieder) Vegetation and Soils of Centr. Europe	◖ **3101-570** (Herrmann) Field Course Soils and Vegetation	● **3201-600** (Schurr) Intensive Course Landscape Ecology	○ ~~**3101-420** (Herrmann) International Field Course Site Evaluation (Engl.+Ger.)~~ (September 2024, 2026, ...)
	◖ **3103-450** (Streck) Spatial Data Analysis with GIS	◖ **4905-470** (Rasche) Biodiversity and Genetic Resources	◖ **4403-470** (Müller, J.) Renewable Energy for Rural Areas	○ **3103-460** (Streck) Environmental Science Project	
	◖ **3102-460** (Kandeler) Molekulare Bodenökologie / Molecular Soil Ecology	◖ **4906-430** (Graß) Field Course Agroecology and Biodiversity	◖ **4302-470** (Bieling) Landscape Change, Resilience, and Ecosystem Services		◖ **3202-460** (Schweiger) Plant Ecology of Cultural Landscapes
	in 2023, 2025, 2027…: ◖ 3101-460 (Herrmann) Soils of the World - Formation, Classification, and Land Evaluation		◖ **4906-440** (Graß) Agroecology and Biotic Resource Conservation		

Lecture Periods at UHOH

WS 22/23	**First day of un-blocked modules:**	(42. KW) Monday, 17 Oct 2022
	First day of blocked modules:	(42. KW) Monday, 17 Oct 2022
	Last day of un-blocked modules:	(5. KW) Saturday, 04 Feb 2023
	Last day of blocked modules:	(7. KW) Friday, 17 Feb 2023
SS 23	**First day of blocked modules:**	(14. KW) Monday, 3 April 2023
	First day of un-blocked modules:	(14. KW) Monday, 3 April 2023
	Last day of un-blocked modules:	(28. KW) Saturday, 15 July 2023
	Last day of blocked modules:	(30. KW) Friday, 28 July 2023

No lectures: All Saints' Day: Thurs, 01 Nov 2022, Christmas holidays: Fri, 23 Dec 2022 – Sat 07 Jan 2023, Easter: Fri, 7 Apr – Mon, 10 Apr 2023, International Labor Day: Sun, 01 May 2023, Ascension: Thurs, 18 May 2023, Pentecost: Mon, 29 May 2023 – Sat, 3 Jun 2023 (excursions might take place during that week!), Corpus Christi: Thurs, 8 June 2023.

See also: https://www.uni-hohenheim.de/en/semester-dates

Examination periods for the winter semester 2022/23 and the summer semester 2023 were not known at the time of publishing this curriculum.

Check the website of the Examinations Office for up-to-date information: https://www.uni-hohenheim.de/en/examination