Please note that this document is a non-binding convenience translation. Only the German version of the document entitled "Prüfungsordnung der Universität Heidelberg für den Master-Studiengang Molecular Biosciences", dated 15 December 2006 [published in the President's bulletin (Mitteilungsblatt des Rektors) of 11 January 2007, p. 49], last amended on 28 November 2014 [President's bulletin (Mitteilungsblatt des Rektors) of 10 December 2014, p. 593] has legal validity.

HEIDELBERG UNIVERSITY EXAMINATION RULES AND REGULATIONS FOR THE MASTER'S DEGREE PROGRAMME IN MOLECULAR BIOSCIENCES

as of 15 December 2006

I. General information

§ 1 Purpose of the academic programme and examination

(1) The Master's degree programme in Molecular Biosciences is a consecutive, research-oriented degree programme which equips students with in-depth specialist knowledge and understanding of the scientific methods employed in the field of Molecular Biosciences. Knowledge is gained in particular areas of specialisation, called majors.

(2) The purpose of the Master's examination is to assess whether students have an overview of the connections between individual disciplines, are able to apply academic methods and knowledge, and have acquired the specialist knowledge required for entering a profession, or enrolling in a doctorate programme.

(3) Admission to the academic programme and majors is subject to separate admission regulations.

§ 2 Master's degree

If the Master's examination is successfully passed, Heidelberg University, represented by the Faculty of Biosciences, awards the academic degree, "Master of Science" (abbreviated to "M.Sc.").

§ 3 Standard periods of study, programme structure, majors and range of courses offered

(1) The standard period of study, including the Master's examination, is four semesters.

(2) Lectures and courses are offered over three semesters. The Master's thesis is to be completed in the fourth semester. The lectures and courses offered include those modules listed in Annex 1. Successful completion of the Master's degree programme requires that students successfully complete lectures and courses (both compulsory and elective), and the Master's thesis module / oral defence amounting to a total of 120 ECTS points (European Credit Transfer System).

(3) Majors in the Master's degree programme in Molecular Biosciences are:

1. Cancer Biology
2. Developmental and Stem Cell Biology
3. Evolution and Ecology
4. Infectious Diseases
5. Molecular and Cellular Biology
6. Molecular Plant Sciences
7. Neuroscience
8. Systems Biology

Following a recommendation from the academic commission, a request may be submitted to the examinations board for the creation of further majors.

(4) Modules completed in the second and third semesters, as well as the Master's thesis correspond to the chosen major. The modules "Focus Bioscience 1", "Focus Bioscience 2" and "Biolab" must be completed in the major for which the candidate was admitted.

(5) The module "Working in Bioscience" may be freely selected.

(6) Examination prerequisites are determined in terms of credit points (CP), in accordance with the European Credit Transfer System. One credit corresponds to around 30 hours of work. Credits are awarded only for successfully completed modules. The grade "sufficient" (4.0), or higher, must be acquired for successful completion of a module.

(7) The language of instruction is generally English. In general, examination components have to be taken in the language of instruction.

(8) All module and sub-module examinations, as well as the corresponding credits and grades, are listed in a transcript. The transcript shows average grades for the module grades listed and credits obtained. The average grade is calculated as the mean of the module grades, weighted according to the credits. When calculating the average grade, only the first digit after the decimal point is taken into account. The other digits are dropped without rounding.

§ 4 Examinations board

(1) An examinations board is formed for organising examinations and tasks defined in these examination rules and regulations. It consists of five members from the academic staff who are primarily employed by the Faculty of Biosciences. This must include four professors, one representative from the body of research associates, and one student representative as an advisory member.

(2) The chairperson of the examinations board, deputy chairperson, further members and their deputies are all appointed by the faculty council. The chairperson and their deputy must be professors. The examinations board student member is appointed by the faculty council based on a proposal from the departmental student committee.

(3) The members are appointed for two years; the student member is appointed for one year. Each term starts on 1 January. Members may be re-elected.

(4) The examinations board ensures that the examination rules and regulations are respected. On a regular basis, the board reports to the Faculty regarding changes to examinations, study periods and grading. This report is published in a suitable form.

(5) The chairperson manages the business of the examinations board, prepares and chairs its meetings and, in the event of a tie vote, has the deciding vote. The examinations board may confer further responsibility to its chairperson. Such a decision may be revoked at any time.

(6) Examinations board members have the right to attend examinations.

(7) Members of the examinations board and their deputies are subject to official secrecy. Those who are not civil servants are sworn to secrecy by the chairperson.

§ 5 Examiners and observers

(1) The chairperson, having consulted the examinations board, appoints the examiners for examination components. Examiners must be lecturers in the Master's degree programme in Molecular Biosciences.

(2) The examinations board decides on admission to a major, based on a proposal from the academic commission. Lecturers in the majors have the right to suggest examiners.

(3) In general, the lecturer for the respective lecture or course is responsible for examination components completed during the course of study.

(4) Observers must have sat the Master's examination, or an equivalent final examination. They are appointed by the examinations board, which may confer these appointments to the respective examiner.

(5) Examiners and reviewers for the Master’s thesis must generally be professors, lecturers, associate professors, or research associates who have been granted the right to examine by the faculty council on the basis of long-term teaching experience. They must be members of the Faculty of Biosciences. Where the first examiner or reviewer is appointed in accordance with clause 1, examiners or reviewers who are not members of the Faculty of Biosciences, may also be appointed.

(6) § 4 paragraph 7 (official secrecy) shall apply accordingly to examiners and reviewers.

§ 6 Recognition of course credits, examination results and academic degrees

(1) Examination prerequisites and results, as well as academic degrees obtained through degree programmes at German universities or universities of cooperative education (state or state-recognised), or at foreign universities (state or state-recognised), will be recognised as long as there is no significant difference in terms of the skills acquired, courses taken and degree obtained through the

programme. This recognition is necessary in order that students may continue an academic programme, take examinations, begin a further academic programme, or be admitted to a doctoral programme. The validity of § 15, paragraph 3 and 4 LBG (State Public Service Law) remains unaffected.

(2) Preliminary and intermediate examinations taken at other German universities of the same type, in the same or a similar academic programme, will be recognised. Units of study completed at recognised distance learning institutions will be considered equal to the corresponding regular study programme regarding the duration of study.

(3) It is the applicant's responsibility to provide all information necessary for achievements to be recognised. It is the responsibility of the office which carries out the recognition procedure to prove that an application does not fulfil the requirements.

(4) If agreements exist between the Federal Republic of Germany and other states concerning equivalent university degree programmes (Equivalency Agreements) that favour students from other states by way of derogation from paragraph 1 and § 29, paragraph 2, clause 5 of the LHG (Act on Higher Education of the Land of Baden-Württemberg), the rules and regulations in the Equivalency Agreement take precedence.

(5) Examination results are to be graded on the basis of a credit point system that allows for achievements in equivalent or similar degree programmes to be recognised; this also applies to universities of cooperative education, provided that there is equivalence.

(6) Knowledge and skills gained outside a university degree programme may be recognised for such a programme, as long as

1. the requirements for university admission are fulfilled at the time of recognition,
2. the knowledge and skills to be recognised for the university degree programme are equivalent in both content and level to the course credits and examinations which they should replace, and
3. the criteria for recognition have been verified via accreditation.

Knowledge and skills gained outside a university degree programme may not replace more than 50% of the university degree programme. Universities shall specify the details of the examination rules and regulations, in particular the extent to which knowledge and skills gained outside a university degree programme can be recognised and the preconditions that must be fulfilled. The examination rules and regulations may require the completion of a placement test.

(7) In case of refresher courses, credits may be given for courses and examinations. When recognising credits from refresher courses for a university degree programme, paragraphs 2 and 5, as well as paragraph 6 clause 1 no. 1 apply accordingly. When recognising knowledge and skills gained outside a university degree programme for refresher courses, paragraph 6 applies accordingly.

§ 7 Unexcused absence, withdrawal, deception and breaches of regulations

(1) An examination is graded as "failed" (5.0) if candidates fail to appear without being able to state a valid reason for their absence, or if they withdraw after the examination has started. A written examination that was not produced within the allocated time is also graded as "failed", unless the candidate is not responsible for the deadline being exceeded.

(2) Plausible reasons for withdrawal or absence must be immediately addressed, in writing, to the examinations board. If the candidate, or a child for whom the candidate is generally the sole carer, is ill, a medical certificate must be provided. In case of doubt, the University may request a medical certificate from a doctor of its choice. If the reasons are accepted, a new appointment will be scheduled. In this case, examination results that are already available will be taken into account.

(3) When deciding whether the candidate is at fault for exceeding a deadline for registration, or taking an examination, the examinations board must respect the provisions stated in the Maternity Protection Act and the legal regulations concerning parental leave, and allow candidates to make appropriate use of these provisions.

(4) If the candidate tries to influence the examination results through deception or by using unauthorised aids, the examination component in question will be graded as "failed" (5.0). If a candidate disrupts the proper course of the examination, the examiner or examination supervisor may exclude the candidate from continuing the examination. In this case, the examination result will be graded as "failed" (5.0). In extreme cases, the examinations board may exclude the candidate from all further examinations.

(5) Within a period of fourteen days, the candidate may request that the decision be validated by the examinations board in accordance with paragraph 4 clauses 1 and 2. The candidate must be informed of negative decisions immediately and in writing; the reasons for the decision must be stipulated and information on the procedure for appeal must be provided.

§ 8 Types of examination components

(1) The examination components are:
1. oral examinations
2. written examinations (electronically where applicable)
3. Master’s thesis and oral defence.

(2) If a candidate provides a medical certificate that plausibly proves that they are not able to take examinations in the form prescribed, whether completely or partially, due to permanent or chronic health problems, the examinations board may allow them to take an equivalent examination. The same applies for other course requirements.

§ 9 Oral examination components completed during the course of study

(1) In oral examinations, candidates should prove that they are able to identify connections within the examination subject matter, and relate specific problems to these interconnections.

(2) Oral examination components are generally examined by one examiner and one qualified observer.

(3) An oral examination lasts between 15 and 45 minutes.

(4) All significant content, and the result of the oral examination, must be recorded in the minutes. Candidates must be notified of examination results immediately following the oral examination.

(5) Students wishing to take a subject examination at a later date, should be permitted to listen in on the same examination, if room is available. The audience may not be present for assessment or for the announcement of the examination results. Listeners can be prohibited from attending upon the candidate's request or for other valid reasons.

§ 10 Written examination components completed during the course of study

(1) In written examination components, candidates should show that they are able to recognise problems relating to their subject and find solutions for them, using subject-specific methods with limited time and resources.

(2) A written examination lasts between 45 and 120 minutes. Multiple choice questions are permitted.

(3) Multiple choice questions are generally set by the lecturer responsible for a lecture or course, as determined by the examinations board. The examination questions must correspond to the knowledge imparted in the lecture or course, and must provide reliable examination results. Before assessing the examination results, the responsible person, as determined in clause 1, must ensure that the questions for the examination correspond with paragraph 3 clause 2. If the examiner finds that individual examination questions are incorrect, these questions must not be considered when assessing the examination results. In such a case, the total amount of questions is reduced and the assessment is based on the reduced number of questions. Reducing the number of examination questions must not have negative consequences for the candidates.

An examination carried out as a multiple choice examination is considered to be passed, when at least 50 % of the questions were answered correctly, or when the number of questions answered correctly by the candidate is not lower than 22 % of the average examination results of all candidates (non-referenced

grading). In case of non-referenced grading, at least 45 % of the questions must be answered correctly.

If a candidate has correctly answered the number of questions required to pass the examination, then the multiple choice examination must be assessed as follows. In case of non-referenced grading, the scale for assessment is moved lineally by the difference between absolute and relative threshold for passing.

%	corresponds to	grade
≥ 50 – 55		4.0
> 55 – 60		3.7
> 60 – 65		3.3
> 65 – 70		3.0
> 70 – 75		2.7
> 75 – 80		2.3
> 80 – 85		2.0
> 85 – 90		1.7
> 90 – 95		1.3
> 95 – 100		1.0

(4) If a written examination component is taken as a term paper, it must be taken under examination conditions. Furthermore, candidates must assure that they are the author of their work and have used no sources or aids other than those indicated.

§ 11 Assessment of examination components

(1) Grades for the individual examination components are determined by the respective examiners. The following grades must be used for assessment of examinations:

1 = very good	=	an outstanding performance;
2 = good	=	performance which significantly exceeds the average requirements;
3 = satisfactory	=	a performance which corresponds to the average requirements;
4 = sufficient	=	a performance which, despite deficiencies, still meets the requirements;
5 = failed	=	a performance which does not meet the requirements due to considerable deficiencies.

For more detailed assessment of examination results, interim grades may be given by increasing or decreasing the individual grades by 0.3; the grades 0.7,

4.3, 4.7 and 5.3 may not be used.

(2) In general, the period for evaluation of examination components shall not exceed two weeks immediately following the completion of the module.

(3) An examination component is passed when it has been graded as "sufficient" (4.0) or higher. A module is successfully completed when all individual sub-module examinations have been passed.

(4) The module grade is calculated as the mean of the individual sub-module evaluations.

(5) When calculating final module grades and the overall examination grade, only the first digit after the decimal point is taken into account. The other digits are dropped without rounding.

(6) Additionally, grades are awarded in accordance with the European Credit Transfer System (in accordance with Annex 2).

§ 12 Retaking examination components

(1) If examination components are not passed or considered not to have been passed, they may be retaken once.

(2) A second retake is only possible for the written examinations Frontiers in Biosciences I and II, and only following a request made to the examinations board. A second retake must be taken as an oral examination with an examiner in accordance with § 5 paragraph 5. If the examination taken as a second retake is passed, it may be graded only as passed (4.0).

(3) Retaking an examination that has been graded as passed is not permitted.

(4) If an examination component has been failed, it must be retaken at the next possible examination date. If candidates miss this deadline, they may not retake the examination component, unless they are not responsible for exceeding the deadline.

II. Master's examination

§ 13 Scope, nature and completion of the Master's examination

(1) The Master's examination consists of:

1. examination components completed during the course of study for the modules in accordance with Annex 1,
2. the Master’s thesis module / oral defence.

(2) Examinations as referred to in paragraph 1 no. 1 are taken as part of the relevant lecture or course. They may be in written or oral form. The lecturer responsible for a lecture or course determines the nature and duration of the examination components in accordance with paragraph 1 no. 1 and announces this information at the beginning of the lecture or course at the very latest.

(3) Module examinations may consist of several sub-module examinations.

§ 14 Admission requirements and procedure

(1) Admission to the individual examination components is only authorised for students who:

1. are enrolled in the Master's degree programme in Molecular Biosciences at Heidelberg University;
2. have not forfeited their entitlement to take examinations in the Master's degree programmes in Molecular Biotechnology or Molecular Biosciences at the Faculty of Biosciences at Heidelberg University.

   For admission to the Master's thesis module, certificates must be presented as proof of the following:

3. successfully completed modules in accordance with Annex 1 and § 3 paragraphs 3 and 4.

(2) The application for admission must be made in writing to the chairperson of the examination board before the first examination component is taken. Such an application has to include the following documents:

1. Proof that all admission requirements, in accordance with paragraph 1 no. 1, have been met;
2. a declaration stating that the candidate has not forfeited their entitlement to take examinations in the Master's degree programme in Molecular Biotechnology or Molecular Biosciences at the Faculty of Biosciences.

(3) If a candidate is unable to provide the required documents in accordance with paragraph 2 no. 1, the examinations board may accept alternative forms of proof.

(4) The decision on admission of the candidate is made by the chairperson of the examinations board.

(5) The application for admission to the examination may only be rejected if

1. The conditions named in paragraph 1 are not met, or
2. documents are incomplete, or
3. The candidate has forfeited their entitlement to take examinations due to other reasons.

(6) Such a declaration, in accordance with paragraph 2 no. 2, must be submitted to the examiner for each examination component.

§ 15 Master's thesis

(1) The Master's thesis is an examination component that concludes the academic programme. The purpose of the thesis is that candidates show their ability to work independently on a problem taken from the field of their major in Molecular Biotechnology, within a given period of time and using academic methods. The Master's thesis is to be taken in the major selected by the candidate.

(2) The Master's thesis may be assigned and supervised by any authorised examiner for the corresponding major in accordance with § 5 paragraphs 1 and 5.

(3) The candidate must apply for allocation of a Master's thesis topic (registration) no later than six weeks after passing the last course-integrated examination component. This application must be addressed to the chairperson of the examinations board. Work on the thesis may be begun only after registration. It is possible to begin writing the thesis at a later date only after submission of a substantiated request to the chairperson of the examinations board.

(4) If the candidate misses this deadline, the thesis is graded as "failed" (5.0), unless the candidate is not responsible for the deadline being exceeded.

(5) The topic for the Master's thesis shall be determined by the thesis supervisor, in consultation with the candidate. If such an application is made, the chairperson of the examinations board will ensure that the candidate receives a topic for their Master's thesis in due time. The candidate shall be given the opportunity to propose topics. However, this does not constitute a legal entitlement to a certain topic. The chairperson of the examinations board assigns the thesis topic; the date of assignment must be recorded.

(6) The deadline for submission of the thesis is six months after topic assignment. In exceptional cases, the examinations board may extend this deadline by up to one month. If the deadline is exceeded, the thesis will be graded as "failed" (5.0), unless the candidate is not responsible for the deadline being exceeded.

(7) The topic, task and scope of the Master's thesis must be limited in such a way that the candidate is able to complete the thesis within the given time frame.

(8) The Master's thesis may be written in German or English.

(9) The thesis must contain an English summary.

§ 16 Submission and assessment of Master's thesis

(1) Three copies of the Master's thesis must be submitted to the examinations board

before the deadline; the submission date must be recorded.

(2) When submitting the Master's thesis, candidates must provide assurance in writing that they are the author of their work and that they have used no sources or aids other than those indicated.

(3) The Master's thesis is assessed by two examiners in accordance with § 5 paragraph 1 and 5. The first examiner should be the supervisor of the thesis. The candidate has the right to propose a topic, this does not, however, constitute a legal entitlement. The evaluation period may not exceed four weeks.

(4) The grade is calculated as the mean of both evaluations. If the grades differ by more than one grade level, the examinations board determines the grade of the Master's thesis in consultation with both examiners. In such cases, a third examiner may be consulted.

(5) If the Master's thesis is graded as "failed" (5.0), it may be retaken with a new topic. Retaking the thesis with the previous topic is not possible.

(6) The Master's thesis may be presented to third parties if the candidate provides written consent.

§ 17 Oral defence

(1) Candidates shall present and defend the findings of their Master's thesis in a discussion with the examiner. This oral defence must be taken within four weeks following submission of the Master's thesis.

(2) The oral defence is carried out by two examiners in accordance with § 5 paragraph 1 and 5. One examiner shall be the supervisor of the thesis; the second examiner in the oral defence is generally the second examiner of the thesis. The examiners are designated by the examinations board. The candidate has the right to suggest an examiner.

(3) The oral defence lasts for approximately 45 minutes. The presentation of the central findings of the Master's thesis may not exceed 20 minutes.

(4) The grade of the oral defence is calculated as the mean of the individual evaluations.

(5) If the oral defence is graded as "failed" (5.0), it may be retaken once.

§ 18 Overall grade of the Master's thesis module / oral defence

The overall grade of the Master's thesis module / oral defence is calculated using the evaluations of the Master's thesis and the oral defence. The Master's thesis is weighted two-thirds, the oral defence is weighted one-third. Both the Master's thesis module and oral defence must be passed, and graded as "sufficient" (4.0) or higher.

§ 19 Passing the examination and overall grade

(1) The Master's examination is passed when all examination components completed during the course of study, the Master's thesis, and the oral defence have been graded as "sufficient" (4.0) or higher.

(2) § 11 applies for the overall grade.

(3) When calculating the overall grade for the Master's examination, all module grades (Annex 1) and the Master's thesis module / oral defence are weighted according to the credits.

§ 20 Diploma

(1) Within four weeks of the Master's examination having been passed, a diploma will be issued. The diploma states the major, all individual modules with their respective grades, credits, and the overall grade. The diploma is dated with the day of the last examination component. It must be signed by the chairperson of the examinations board.

(2) A Diploma Supplement in German and English is also provided, containing additional information about the course content and period of study. The content complies with the European Diploma Supplement Model.

§ 21 Master's certificate

(1) A Master's certificate is issued with the diploma, bearing the same date. It certifies the conferment of the academic degree.

(2) The Master's certificate is signed by the dean and the chairperson of the examinations board. It bears the faculty seal.

(3) If the candidate has failed the Master's examination, a certificate will be issued on request and on presentation of relevant proof, listing passed examination components and the corresponding grades as well as the missing examination components. It is signed by the chairperson of the examinations board and includes a note concerning the fact that the Master's examination has not been passed. The same applies for the Master's examination, if it is failed on the final attempt.

III. Final provisions

§ 22 Invalidity of examinations

(1) If a candidate has deceived in an examination and this is only discovered after

the diploma has been issued, the examinations board may accordingly change the examination results affected by the deception, and may declare the examination partially or completely failed.

(2) If the candidate failed to fulfil the requirements for admission to the examination, but concealment of this failure was unintentional on the part of the candidate, and this failure is only discovered after the diploma has been issued, the passed examination is considered to compensate for this shortcoming. If the candidate intentionally deceived in order to gain admission to the examination then the examinations board will make a decision on the matter.

(3) Before the decision is made, candidates will be given the opportunity to provide an explanation.

(4) Fraudulent examination diplomas will be confiscated and, if necessary, a new diploma will be issued. If the examination is declared as “failed” as a result of discovered deception, then the Master's certificate will be confiscated along with the fraudulent examination diploma. In accordance with paragraph 1 and paragraph 2 clause 2, a decision may not be taken more than five years after the date on the examination diploma.

§ 23 Access to examination documents

Within a year following completion of the examination procedure, the candidate may request access to written examination documents, examiners reviews and the examination minutes.

The chairperson of the examinations board decides when and where access shall be given.

§ 24 Coming into force

These examination rules and regulations come into force on 1 October 2007.

ANNEX 1:
Compulsory (elective) modules, incl. certification of successful participation and grading

Modules	Teaching method	C
Frontiers in Bioscience 1	L, Lab, T, S	1
Frontiers in Bioscience 2	L, Lab, T, S	1
Focus Bioscience 1 *	L, Lab, T, S	1
Focus Bioscience 2 *	L, Lab, T, S	1
Biolab *	Lab	1
Working in Bioscience	Lab	1
Master's thesis / defence	Master's thesis / defence	3

*Modules "Focus Bioscience 1", "Focus Bioscience 2", "Research in Bioscience" and the Master's thesis module must be taken in the field of the selected major.

Annex 2: Grading in accordance with ECTS

In addition to the German-style grades, students who have passed the examination components will also be awarded a relative grade according to the following scale:

A	top 10 %
B	the following 25 %
C	the following 30 %
D	the following 25 %
E	the following 10 %

The grades achieved by at least two previously graduating year groups may also be taken into account when calculating the relative grades for the current graduating year group, depending on the size of the graduating cohort. For degree grades, the ECTS grade must be added. For individual modules, the ECTS grade may be listed when possible and necessary.

Annex 3: Details of teaching content of the individual majors

1. Cancer Biology

Building on already solid knowledge in molecular and cell biology, the major “Cancer Biology” focuses on cancer biology and its various fields. A broad and interdisciplinary approach is taken. Modules in this major deal with the following aspects of cancer research: virology, immunology, toxicology and relevant topics of translational oncology. Practical lab courses in current fields of cancer research and cancer biology complete the intensive training provided within this major.

2. Developmental and Stem Cell Biology

The major “Developmental and Stem Cell Biology” is intended for students wishing to focus on modern developmental biology. This major enables students to further their knowledge of molecular and cell biology, and to acquire knowledge of the principles of developmental biology. Course content ranges from molecular issues in developmental processes, to signalling cascades, systemic issues and modelling.

3. Evolution and Ecology

The major “Evolution and Ecology” links topics ranging from cell issues and organisms, to biocoenosis and ecosystems. This major primarily conveys the basic principles of general and molecular evolution and ecology. Various genetic and molecular principles will be the object of intensive investigations. Students shall be able to take an evolutionary view and assess the loss and acquisition of various characteristics and attributes. Training in organismic principles is furthered by practical hands-on training in the field.

4. Infectious Diseases

The major “Infectious Diseases” is intended for students with an already sound knowledge of molecular and cell biology, who wish to focus on a topic which is particularly relevant to biomedicine, and who wish to take an interdisciplinary approach. The major extends students’ knowledge in molecular and cell biology and introduces specific aspects of the replication of infectious pathogens and their interaction with relevant host–pathogens. Knowledge is imparted in lectures, seminars and practical lab courses.

5. Molecular and Cellular Biology

This major aims at providing profound and interdisciplinary training in molecular and cell biology with a focus on research. Basics, as well as specific biomedical aspects are covered. Current issues are dealt with in theoretical lectures or courses, courses on methods, as well as in additional practical lab courses. The major covers a broad range of topics including molecular and cell issues, and organismic theories relevant to the use of biochemical, biophysical, molecular, genetic and cytologic methods.

6. Molecular Plant Sciences

The major “Molecular Plant Sciences” focuses on the analysis of the “plant” as a biological system. It includes the molecular and cytological description of endogenously controlled processes, organisms’ adaptation to their environment, as well as the molecular evolution of such processes in plants. Other specialist fields covered, include host-pathogen interaction and their symbiotic relationships with other organisms. The basics in molecular biotechnology of crop plants are also covered. The whole range of molecular and cytological techniques are conveyed on an experimental level.

7. Neuroscience

In the major “Neuroscience” students will gain knowledge of current issues in the field of neurobiology through a combination of theoretical lectures and courses with intense practical training. Topics include molecular and cell neurobiology, developmental neurobiology, signal processing in neural networks, as well as neurophysiology. A main part of the major consists of a structured programme of practical lab courses which impart a broad range of methods used in the field of neuroscience.

8. Systems Biology

The major “Systems Biology” introduces students to the field of system biology by combining practical lab courses in the fields of intense biology, molecular biology and bioinformatics, with theoretical training in bioinformatics and biology. Biology topics are focused on the processes involved in the creation of regulatory networks in cells, as well as in developing and adult organisms. The main methods used are high-throughput techniques for the detection an analysis of complex and comprehensive systemic parameters and processes in organisms. A second focus is placed on modelling systemic processes.

Annex 4: Module descriptions

Frontiers in Bioscience 1 module (compulsory elective):

a) *Module content and qualification objectives*
Deeper theoretical knowledge and practical skills in the field of molecular biology and biochemistry will be gained.
The language of instruction for the relevant lectures and courses is English.

b) *Teaching methods*
Lecture, tutorial, lab course, seminar

c) *Requirements for participation*
None

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
All lectures or courses taught as part of this module, as well as corresponding examinations, must be successfully completed.

f) *Credits and grades*
15 ECTS points are awarded.
The module grade is calculated as the mean of the examination components.
Lectures and tutorials are examined in a written examination. The lecturer running the given practical lab course and associated seminar determines the examination component required and provides this information at the beginning of the course or seminar.

g) *Course offered*
every winter semester

h) *Workload*
The workload is 450 hours.

i) *Duration*
one semester

Frontiers in Bioscience 2 module (compulsory elective):

a) *Module content and qualification objectives*
Deeper theoretical knowledge and practical skills in the field of molecular cell biology will be gained.
The language of instruction for the relevant lectures and courses is English.

b) *Teaching methods*
Lecture, tutorial, lab course, seminar

c) *Requirements for participation*
None

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
All lectures or courses taught as part of this module, as well as corresponding examinations, must be successfully completed.

f) *Credits and grades*
15 ECTS points are awarded.
The module grade is calculated as the mean of the examination components.
Lectures and tutorials are examined in a written examination. The lecturer running the given practical lab course and associated seminar determines the examination component required and provides this information at the beginning of the course or seminar.

g) *Course offered*
every winter semester

h) *Workload*
The workload is 450 hours.

i) *Duration*
one semester

Focus Bioscience 1 module (compulsory elective):

a) *Module content and qualification objectives*
Acquiring and extending specialist knowledge in biology is combined with gaining practical qualifications by studying specific issues from within the field of the selected major in Molecular Biosciences.
Conveying and acquiring key qualifications such as time management (qualitative and operational), self-responsibility and goal orientation are integrated into practical lab courses. Presentation skills are acquired and media literacy is gained in the seminars offered. Independently producing and giving presentations, and discussing the results, serves to improve and build on students' communication and language skills. The language of instruction for relevant courses may be English.

b) *Teaching methods*
Lecture, tutorial, lab course, seminar

c) *Requirements for participation*
For admission to this major, the modules Frontiers in Biosciences 1 and 2 must be successfully passed.

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
All lectures or courses taught as part of this module, as well as corresponding examinations, must be successfully completed.

f) *Credits and grades*
15 ECTS points are awarded.
The module grade is calculated as the mean of the examination components.
Lectures and tutorials are examined in a written examination. The lecturer running the given practical lab course and associated seminar determines the examination component required and provides this information at the beginning of the course or seminar.

g) *Course offered*
every summer semester

h) *Workload*
The workload is 450 hours.

i) *Duration*
one semester

Focus Bioscience 2 module (compulsory elective):

a) *Module content and qualification objectives*
Acquiring and extending specialist knowledge in biology is combined with gaining practical qualifications by studying specific issues from within the field of the selected major in Molecular Biosciences.
Conveying and acquiring key qualifications such as time management (qualitative and operational), self-responsibility and goal orientation are integrated into practical lab courses. Presentation skills are acquired and media literacy is gained in the seminars offered. Independently producing and giving presentations, and discussing the results, serves to improve and build on students' communication and language skills. The language of instruction for relevant courses may be English.

b) *Teaching methods*
Lecture, tutorial, lab course, seminar

c) *Requirements for participation*
For admission to this major, the modules Frontiers in Biosciences 1 and 2 must be successfully passed.

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
All lectures or courses taught as part of this module, as well as corresponding examinations, must be successfully completed.

f) *Credits and grades*
15 ECTS points are awarded.
The module grade is calculated as the mean of the examination components.
Lectures and tutorials are examined in a written examination. The lecturer running the given practical lab course and associated seminar determines the examination component required and provides this information at the beginning of the course or seminar.

g) *Course offered*
every summer semester

h) *Workload*
The workload is 450 hours.

i) *Duration*
one semester

Module Biolab (compulsory elective):

a) *Module content and qualification objectives*
The aim of the module is for students to gain practical qualifications by working on specific questions from the areas of molecular biosciences in the field of the chosen major. Conveying and acquiring key qualifications such as time management (qualitative and operational), self-responsibility and goal orientation are integrated in the laboratory course. In preparation for independent scientific work, problem solving strategies and networked thinking will be taught and developed.
The language of instruction for relevant courses may be English.

b) *Teaching methods*
Lab research project

c) *Requirements for participation*
For admission to this major, the modules Frontiers in Biosciences 1 and 2 must be successfully passed.

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
The course taught as part of this module, as well as the corresponding examinations, must be successfully completed.

f) *Credits and grades*
15 ECTS points are awarded.
The module grade is calculated as the mean of the examination components.
The lecturer determines the type of examination component.

g) *Course offered*
every winter semester

h) *Workload*
The workload is 450 hours.

i) *Duration*
one semester

Working in Bioscience module (compulsory elective):

a) *Module content and qualification objectives*
The aim of the module is for students to gain practical qualifications by working on specific questions from the area of Molecular Biosciences in the field of the chosen, or a freely selected major. Conveying and acquiring key qualifications such as time management (qualitative and operational), self-responsibility and goal orientation are integrated in the laboratory course. In preparation for independent scientific work, problem solving strategies and networked thinking will be taught and developed.
The language of instruction for relevant courses may be English.

b) *Teaching methods*
Lab research project

c) *Requirements for participation*
The modules Frontiers in Biosciences 1 and 2 must be successfully completed.

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
The courses taught as part of this module, as well as corresponding examinations, must be successfully completed.

f) *Credits and grades*
15 ECTS points are awarded.
The module grade is calculated as the mean of the examination components.
The lecturer determines the type of examination component.

g) *Course offered*
every winter semester

h) *Workload*
The workload is 450 hours.

i) *Duration*
one semester

Master's thesis / defence module:

a) *Module content and qualification objectives*
The academic thesis should cover a topic from the field of study, using academic methods and working independently. The results shall be presented in written form in the Master's thesis, which includes a summary in German and English. The Master's thesis is taken in the student's major. The results are presented and defended in an oral defence. The purpose of the oral defence is also for candidates to show that they have broader context knowledge.

b) *Teaching methods*
Guidance to scientific work

c) *Requirements for participation*
Admission to the major All other modules must have been successfully completed. The oral defence shall be taken one week after submission of the Master's thesis, at the very latest.

d) *Applicability of module*
Molecular Biosciences (Master)

e) *Requirements for awarding credits*
The thesis will be assessed by two examiners; the thesis supervisor should be the first examiner. The module grade is calculated on the basis of the written thesis and the oral defence.
The module must be begun four weeks following completion of the last examination component completed during the course of study, at the latest.
The Master's thesis may be retaken once.

f) *Credits and grades*
30 ECTS points are awarded.

g) *Course offered*
every semester

h) *Workload*
The workload is 900 hours.

i) *Duration*
6 months, however, in exceptional cases, an extension of one month may be applied for

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