

## Life Sciences Program – Study Completion Guide

Relevant regulation: [MU Study and examination regulations, sections 31 – 34](#)

### Requirements for Study Completion

- Achieving 240 credits
- Meeting the requirements of an individual study plan
- Successful completion of compulsory core subjects
- Successful completion of compulsory hard skills subjects
- Successful completion of compulsory soft skills courses
- Completing the internship
- Participation in the CEITEC PhD Conference and completing the TAC meetings (for students who commenced studies before 2017, the annual PhD Progress Day substitute the TAC meetings)
- Publication of results of student's doctoral theses in an international journal with an impact factor. The student has to be the first author of at least one publication. If this publication has not IF in Q1 in the given field of study, there should be two more publications with IF in Q1 or Q2 of which the student should be a co-author.
- Submission of the Application for the State Doctoral Examination (SDE), the Application for the Defence of PhD thesis with all required annexes and the dissertation thesis (at least two months before the planned date of the state examination and defence).

**An overview of the study and research duties is provided in the Recommended Study Plan - [Formal Requirements of Studies in Life Sciences program](#).**

In individual cases where the requirement (e.g., for an internship abroad) cannot be met for objective reasons, the student may apply for an exemption by filing **an exemption application** electronically via the IS MUNI Document Office. The application will be sent automatically for approval to the supervisor and the Doctoral Board chair. The Vice-Dean for Doctoral Studies will make the final decision (approval/rejection).

### Contacts

The State Doctoral Examination and Defence of PhD thesis are coordinated by the CEITEC Research and Innovations Support Department in cooperation with the Office for Doctoral Studies at the Faculty of Science.

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Doctoral Board Chair:	Michaela Wimmerová	<a href="mailto:michaw@chemi.muni.cz">michaw@chemi.muni.cz</a>

### Format and Date of the Doctoral Examination and Defence

The State Doctoral Examination has to be conducted prior to the Defence of PhD thesis (**the students commencing their studies in the autumn semester 2021 or later take their State Doctoral Exam in the**

**5th or 6th semester (3<sup>rd</sup> year) of their studies.**). Both parts are public. The examination, thesis, as well as defence, are performed in English.

The examination, as well as the defence, usually takes place on-site. The Examination Committee external members are also expected to be present in person.

The Members of Executive Committee set the date of the examination and the defence – based on all members of the Examination Committee's prior consent.

### Reviewers, Examination Committee

- Rules of the university and the program require three opponents. At least two (optimally all of them) are not in an employment relationship with MUNI; one of them must be from a foreign institution.
- To strengthen the quality of discussion during examination and defence, opponents of the thesis will also be members of the Examination Committee.
- The Examination Committee is supposed to have seven and more members. One of them is the chairman, three are the opponents, and the remaining three are selected from the [pre-approved list of candidates](#) (containing internal and external members from academia); the supervisor is supposed to be a member.
- Members of the Examination Committee must be of associate professor level and higher; otherwise, they must be approved by the Faculty of Science MUNI's Scientific Board. The Board meets several times a year; a CV must be submitted in advance before the board meeting.
- Opponents have to submit their reviews at least seven working days prior to the date of defence.

### Dissertation Thesis

- The thesis presents the results of work carried out by a candidate in his/her studies. It must contain original results which have been either published or already accepted for publication.
- Formal requirements are defined in [Measure No. 8/2019 of the Dean of the Faculty of Science](#), Masaryk University. The particular conditions relevant to the Life Sciences program are specified in [Recommended Form of Dissertation Thesis](#).
- The dissertation thesis is submitted in electronic form through the application in IS MU and in paper form - in B5 format (printed copies for opponents are subject to agreement, one copy shall be available during the defence - it is intended for archiving at CEITEC MU, no printed copy is archived at the Faculty of Science).

### State Doctoral Examination

The Executive Committee of the Life Sciences Programme after discussion with the supervisor will select, with the presented general topics as a starting point, a set of three specific topics for the State Doctoral Examination based on the discussion, on completed hard skills courses and in a relation to the topic of the thesis.

## THE LIST OF TOPICS:

### Molecular aspects

- composition and structure of proteins, nucleic acids, glycans and lipids

### Bioanalytical aspects

- separation and identification of bio(macro)molecules
- sequencing of biopolymers
- determining structure of bio(macro)molecules, its hierarchical aspects (primary, secondary, tertiary, quaternary, modifications, suprastructures)
- determining and quantifying interbiomolecular interactions (protein-protein interactions, protein-nucleic acid, protein-ligand)
- bioinformatics – molecular property predictions, experimental data analysis, gene ontology
- molecular modelling (basics of quantum mechanics, molecular mechanics)

### Biological aspects

- general cellular and organismal functions of bio(macro)molecules
- proteins – cellular structure, metabolism, transport, signalling
- nucleic acids – genetic information, protein biosynthesis and its regulation, non-coding RNA, chromosomes and telomeres
- glycans – signalling, protein stabilisation, intra- & inter-cellular communication and interactions
- lipids – membranes, lipid rafts

The student is acquainted with the specified topics and, according to his / her choice, prepares a presentation of about 10 minutes for one of them. The presentation will be followed by a discussion on the chosen topic, as well as questions covering the area of the given discipline, based on the syllabus of the topics for the state doctoral examinations.

## PhD Thesis Defence

A student must meet all requirements for completion of studies before starting PhD thesis defence. The defence is given by a 20-minute presentation of the doctoral project results, followed by a discussion clarifying the opponents' comments and questions, further questions of the Examination Committee members, and questions from the audience.

## Role of Parties in the Process

### Student's Responsibility

- Communicate the form of the dissertation thesis and the intention to complete the study with the supervisor (in case of uncertainty, also consult with the members of the Executive Committee or the Doctoral Board Chair).
- Prepare the doctoral thesis according to the [formal](#) and [program-specific](#) requirements. *Recommendation:* Check previously defended theses in [Theses Archive](#).
- Check the fulfilment of [requirements](#) for completing the studies. Apply for an exemption if necessary.

- Consider and communicate with the supervisor whether the thesis is fully public or not (it has to be stated in the Application for the Defence). The thesis marked as public will be published immediately in the MUNI Theses Archive. If the work contains data that needs to be hidden for some time, it should be indicated that the thesis is not public. In this case, it will be necessary to submit via Document Office in IS MUNI the Application for hiding the work, based on proper justification (e.g., contains as yet unpublished data, etc.) and the period the work is to be hidden (max. 3 years).
- Submit the **Application for the State Doctoral Examination (SDE)**, the **Application for the Defense of PhD Thesis** with all required annexes via Document Office in IS MUNI (at least two months before the planned date of the state exam) and inform the PhD Studies Manager.
- Upload in IS MUNI the dissertation thesis. In case some parts of the thesis should be hidden (based on the Application for hiding the work), upload two versions of the thesis – the full version and the version with the "hidden" parts omitted (this version will be published in the MUNI Theses Archive).
- Submit the required number of printed versions of the dissertation thesis.
- Prepare the presentations for the examination and the defence, address comments from opponents.
- Attend the examination and the defence.

### Role of the Supervisor

- Communicate with the student his/her intention to complete the study, and discuss whether the thesis should be fully public or not.
- Contact all potential opponents in advance and confirm with them that they are willing to participate in the Examination Committee personally.
- Consider the possibility of reimbursement of the traveling expenses.
- Propose the opponents to the Members of the Executive Committee.
- Approve the dissertation thesis in IS MUNI, check for plagiarism.
- Submit the supervisor's evaluation in IS MUNI.
- Designate (in cooperation with the Member of the Executive Committee) three topics for the SDE.
- Attend the examination and the defence.

### Role of the Members of the Executive Committee

- Designate the Examination Committee and the date of the endeavor.
- Designate (in cooperation with the supervisor) three topics for the SDE.

### Role of the PhD Studies Manager

- Coordinate the organization of the examination and the defence (placement, technical equipment, online connection, publicity)
- Check the fulfilment of specific study requirements of the program
- Administer the contracts with opponents

### Role of the Office for Doctoral Studies at the Faculty of Science

- Administer the formal process and the student's file in IS MUNI (accept applications for the exam and the defence, issue official appointments of the examination committee members, collect the opponents' reviews and upload them into IS MUNI)