

Faculty of Medicine, Vilnius University
Systems Biology Master program

PROCEDURES AND METHODOLOGICAL GUIDELINES FOR MASTER THESIS PREPARATION, DEFENCE AND GRADING

CONTENT

1. Purpose of the Master Thesis
2. Selection of Master Thesis topic
3. Thesis preparation guidelines and procedures
 - 3.1 Research proposal for the selected thesis topic
 - 3.2 Preparation and submission of Research progress
 - 3.3 Preparation and submission of Final thesis
4. Thesis layout and form
5. Limited access
6. Thesis defence (oral examination)
7. Evaluation criteria
 - 7.1 Research progress report evaluation criteria
 - 7.2 Written Master thesis evaluation criteria
 - 7.3 Oral presentation evaluation criteria
8. Final Comments
9. Appendices

Master Thesis is prepared, defended, graded and stored in compliance with the “REGULATIONS FOR THE PREPARATION, DEFENCE AND STORAGE OF RESEARCH PAPERS OF STUDENTS STUDYING AT VILNIUS UNIVERSITY” approved by Resolution No. S-2017-12-11 of the Senate of Vilnius University of 19 December 2017 and according to the “DESCRIPTION OF THE PROCEDURE FOR THE ADMINISTRATION OF RESEARCH PAPERS IN VILNIUS UNIVERSITY STUDY INFORMATION SYSTEM” approved by Order No. R-512 of the Pro-Rector for Studies of Vilnius University of 22 November 2017.

Current document complements the above regulations in providing specific details and guidelines.

Presented and authorized at VU MF Council meeting dd/01/2020 (Record Nr. xxx-xx-xx).
Approved by Systems Biology Study Program Committee.

1. Purpose of the Master Thesis

Master Thesis – is a research paper, independently developed by a student, compliant with the requirements for university studies witnessing the student's ability:

- 1) to apply the knowledge acquired during the studies,
- 2) to find the necessary scientific literature and to use it – to present, to analyse and to interpret,
- 3) to apply the proper research methods,
- 4) to independently cope with the assigned tasks,
- 5) to provide one's own conclusions (mandatory) and recommendations (preferred),
- 6) to accurately describe the research in correct language.

Master Thesis is original and self-written scientific work that concludes two year MSc studies in Systems Biology. Upon a successful defence of Master Thesis a student is awarded a Master of Science degree in Health Sciences.

2. Selection of Master Thesis topic

2.1 In Systems Biology (SB) program, students are encouraged to find/propose a thesis topic themselves. The proposed topic with short abstract and tentative supervisor should be sent to the Study Program Committee (SPC) Chair by email no later than the end of the first semester (preferably by 15th of December).

2.2 For those who do not propose a thesis topic, the topic of the master's theses can be selected from a publicly available list (visit [SB website](#)). A list of the research topics for final thesis is prepared in consultation with the scientists from three Vilnius University units that are executing the Systems Biology program: Centre of Life Sciences, Faculty of Medicine and Faculty of Mathematics and Informatics and also in consultation with the scientists from the industrial partners of the SB program such as ThermoFisher Scientists, whose topics students selected become appointed Master Thesis (MT) supervisors.

2.3 The selected topic with a short abstract and a tentative supervisor should be sent to the SPC Chair by email no later than 4th of February (a first day of the second semester).

2.4 All proposed and selected topics are discussed and approved at the SPC meeting during the first two weeks of the second semester. These are supposed to become the final thesis topics and supervisors.

3. Thesis preparation guidelines and procedures

The preparation of Master Thesis will consist of three stages described below in Systems Biology program.

3.1 *Research Proposal for the selected thesis topic*

3.1.1 The Research Proposal is a complete description of the intended research, developed under the supervision of the assigned supervisor. Through the full proposal, the student needs to demonstrate convincingly that the study will contribute with new findings to the Systems biology field.

3.1.2 The full research proposal must be 3 pages (without Title page and References). The Research Proposal should be prepared and submitted at the end of second semester and it will be part of Science forum course.

3.1.3 Research Proposal is presented to Systems Biology community (SPC, supervisors, other tutors). At this moment students receive first feedback about relevance, novelty, possible direction of the topic. Detailed instructions about Research proposal preparation are provided with Science forum material.

3.2 *Preparation and submission of Research progress*

3.2.1 The purpose of Research Progress is to demonstrate how much of the Master's thesis has been done. Research Progress document is a master thesis template completed with all the research work done.

- 3.2.2 During the first week of fourth semester Master student sends title of Master Thesis to systems.biology@mf.vu.lt. During the second week of fourth semester SPC appoints independent Reviewer for each Thesis who will read and assess the Research Progress.
- 3.2.3 During the second week Student receives information about appointed Reviewer. Student sends an email with the attached report to the Reviewer no later than 70 business days before the defence (see Table 1).
- 3.2.4 No later than 65 business days before the defence the student will present the Research progress to SPC, reviewer and supervisor. At this point the student receives a second, more detailed feedback about his/her undergoing research from the independent reviewer. Recommendations should be taken into account for better quality of the final thesis.
- 3.2.5 Research progress will be graded by SPC in 10 point scale and it will represent 25% of the final grade. For the evaluation criteria, please read Part 7.

3.3 Preparation and submission of Final thesis

- 3.3.1 The Master thesis is a complete description of the research conducted under the supervision of the assigned supervisor. Through the thesis, the student demonstrates convincingly how the study is contributing with new findings to the Systems Biology field. Final theses may be defended only by the students who have completed the whole study programme. Master thesis preparation and writing is directed through the regular meetings and consultations with the thesis supervisor.
- 3.3.2 Students must confirm that they prepared their final thesis independently, in good faith and in accordance with the requirements of the Vilnius university regulations by filling out a Warranty (Appendix 1). Electronic PDF version of the final thesis with the Warranty should be uploaded to Vilnius University Information System (VUSIS) no later than 19 business days prior to defence.
- 3.3.3 No later as the next business day the thesis supervisor must get acquainted with the computer check for originality report and all the information of computer checks for independence in the thesis development using the electronic version of the thesis uploaded to the VUSIS. The supervisor fills the Computer Check For Originality Report (Appendix 2). The report should be presented to the Committee together with the supervisor's report (Appendix 3). The final thesis may be defended only after the supervisor decides that it is properly prepared, written in correct language, and meets the requirements established for the Final thesis.
- 3.3.4 The decision of the supervisor to permit to defend the thesis shall be confirmed by his/her signature and an entry "Permit to defend" on the printed Final thesis by specifying the supervisor's name, surname and entry date.
- 3.3.5 If the supervisor does not permit the defence of the submitted thesis, same or at latest the next business day the student has a right to apply to the Committee with a request to allow to defend the thesis. The Committee has one business day (no later than 2 working days after the Student received rejection to defend or refusal to accept the thesis) to decide whether the Student's arguments allow the thesis be defended.
- 3.3.6 Systems biology SPC shall by this order permit the defence of the Final theses that meet the following conditions:
1. The student completed the entire study programme;
 2. The student presented Research progress;
 3. The Final thesis was uploaded onto VUSIS (excluding the case of limited access);
 4. The Final thesis, printed and in electronic form as a pdf file, was submitted and registered by SPC (SP administrator or Chair, if administrator is not available);
 5. The supervisor of the Final thesis or the Committee permitted the defence of the Final thesis.

- 3.3.7 No later than 15 business days prior to defence the student submits the printed and electronic versions (via e-mail systems.biology@mf.vu.lt) of the Final thesis and the filled Warranty to the SPC (SP administrator or Chair, if administrator is not available). The submitted Final thesis will be immediately registered at the SPC.
- 3.3.8 No later than 13 working days before the defence, the Final thesis is handed to a reviewer. The reviewer receives the Final thesis in the electronic form as a pdf file by e-mail. The reviewer may request the printed thesis. It is a responsibility of the student to accommodate the reviewers request.
- 3.3.9 The independent reviewers can be employees of the other Units at Vilnius university or of the other institutions. They can also be representatives of the social or industrial partners. The reviewers must have a relevant academic degree and a sufficient technical expertise in the Systems Biology field and must not have collaborated in the MSc project under review.
- 3.3.10 The reviewer shall submit a technical review and an assessment of the thesis (Appendix 4) to the Systems Biology SPC no later than three days before the defence of the Final thesis. The following day this review must be sent to the student's e-mail address provided by Vilnius university.
- 3.3.11 Whole thesis development and defence procedure is summarised in Table 1.

Table 1. The timeline and workflow of the final thesis development in Systems Biology program.

Tentative period	Activity	Grade	Weight
-70 WD	Submission to reviewer Research progress		
-65 WD	Presentation of Research progress report at SPC	1-10	25%
-19 WD	Student uploads the Final thesis onto VUSIS		
-18 WD	Pass from supervisor	No-pass from supervisor	
-17 WD		Application to the Committee to defend	
-16 WD		Decision by the Committee	
-15 WD	Student submits the Final thesis printed and in the electronic form, and the filled Warranty to the SPC. Registration of the Final thesis by the SPC.		
-13 WD	The Final thesis is handed to a reviewer		
-3 WD	A reviewer submits a review to SPC		
-2 WD	Student receives a review by e-mail assigned to the student by the university		
0	Defence of the Final Master thesis at the Committee	1-10	75%
	Graduation ceremony		

Used abbreviations: WD - Working Day; SPC - Study program committee; Committee - Master thesis defence committee.

4. Thesis layout and form

- 4.1 The final Master thesis is written in a good English language and a correct grammar. A summary in Lithuanian is mandatory at the end of the thesis.
- 4.2 Recommended length of the full regular final Master thesis is 30-100 pages strictly using template prepared by SPC. Student will receive the template by email after the first lecture of Science forum.
- 4.3 The Final thesis should be uniformly printed on A4 format pages and bound in a book. Electronic version of the Final thesis (as a pdf file) should be send via e-mail systems.biology@mf.vu.lt. The confirmation email should be received.

5. Limited access

- 5.1 In general, access to the MSc thesis shall be open through the eLABAa (electronic access through the network of Lithuanian academic libraries).
- 5.2 If restricting access to a thesis is needed for the purpose of protecting intellectual property or protecting commercial interests of an industrial partner participating in the MSc project or any other circumstances specified in the research paper Regulations Chapter V, then the restriction of access should be requested. If the restriction of access to a thesis is granted, then it should be clearly stated in the thesis with a specification of the date at which the thesis embargo is lifted. In such case the Final thesis is not published in eLABA.

6. Thesis defence (oral examination)

- 6.1 The Final thesis shall be defended publicly at the meeting of the Committee, unless the SPC received request for closed defence (paragraph 4.5-4.6 of Regulations).
- 6.2 The defence shall be announced through the appropriate channels with at least 3 days' notice.
- 6.3 The SPC submits to the Committee the Final thesis with the permission of the supervisor to defend the Final thesis and the Warranty, and the conclusions of the independent reviewer no later than one day before the defence of the Final thesis.
- 6.4 The examination should take a form of an approximately 10±2 minute presentation by the student. The author of the Final thesis shall briefly present the thesis: identify its stated problem, will outline its aim and objectives, will characterize shortly the research object, will disclose the findings and the applied methods, will introduce the conclusions and justify them, and provide possible recommendations. The student will answer questions of the Committee members and other participants at the public defence of the Final thesis.
- 6.5 Following the student's presentation and answers to the questions, the reviewer shall present his opinion about the thesis. In case the reviewer is not able to attend the defence meeting, his/her written review shall be read. The Student shall be given the opportunity to reply to the reviewer's comments and answer his questions.
- 6.6 After the Master's thesis defence, the Committee will evaluate the Final thesis in a closed session.
- 6.7 During the assessment of the Final thesis, the Committee members shall take into account the report of the supervisor, the review of the final thesis, the thesis defence itself, the answers of the author of the thesis to the questions of the reviewer, the members of the Committee, and other people who attended the public defence, the correctness of the thesis language.
- 6.8 The Committee shall make a collegial decision regarding the assessment of the Final thesis. In case the Committee can't decide on the grade, the grade will be decided by a majority voting. If there is a tie, then the grade will be decided by the Chairman of the Committee according to the research paper Regulations.
- 6.9 The Chairman of the Committee will publicly announce the results of the thesis evaluation.

7. Evaluation criteria

The Research progress, written Final thesis and its oral examination are evaluated according to the criteria summarized in this section. Note that oral presentation of the written Master Thesis is limited to 10±2 minutes. The decision of the Committee on the grade for the final thesis shall not be open to appeal.

7.1 Research progress report evaluation criteria

- presentation 10% (15min)
- reviewer's report 40%

- work done - filled Master Thesis template 50% (minimum requirement for 50% : problem formulation; literature review; background; experiments if applicable).

7.2 Written Master thesis evaluation criteria

- importance of research project if possible evidenced by a peer reviewed conference presentation or published journal article (30%)
- correct methods of data analysis and if present sound statistical analysis (30%)
- clear structure and writing (20%)
- adequate literature reviewed and cited (20%)

7.3 Oral presentation evaluation criteria

- ability to fit into the allocated time for presentation (20%)
- clarity of presentation (25%)
- clarity, visibility of visual material supporting your presentation and sources citation (25%) (no more than 20 slides)
- ability to answer all questions (30%)

8. Final comments

These Recommendations come into force after their approval at the Council of the Faculty of Medicine and from the date set in the meeting.

APPENDICES

All appendix documents are available online to download: <http://systems-biology.mf.vu.lt>.

APPENDIX 1. Warranty

**Vilniaus universiteto studijuojančiojo,
teikiančio baigiamąjį darbą,
GARANTIJA**

**WARRANTY
of Vilnius University Student Thesis**

Vardas, pavardė:
Padalinys:
Studijų programa:
Darbo pavadinimas:
Darbo tipas:

Name, Surname:
Faculty:
Study programme:
Thesis topic:
Thesis type:

Garantuojau, kad mano baigiamasis darbas yra parengtas sąžiningai ir savarankiškai, kitų asmenų indėlio į parengtą darbą nėra. Jokių neteisėtų mokėjimų už šį darbą niekam nesu mokėjęs. Šiame darbe tiesiogiai ar netiesiogiai panaudotos kitų šaltinių citatos yra pažymėtos literatūros nuorodose.

I guarantee that my thesis is prepared in good faith and independently, there is no contribution to this work from other individuals. I have not made any illegal payments related to this work.

Quotes from other sources used in this thesis, directly or indirectly, are indicated in literature references.

Aš, [Vardas Pavardė], patvirtinu (pažymėti)
I, [Name Surname], confirm (check)

Patvirtinu, kad baigiamasis darbas yra pateiktas į Vilniaus universiteto studijų informacinę sistemą.
I declare that this thesis is submitted to the Vilnius University Study Information System.

(vardas, pavardė / name, surname)

(parašas / signature)

(data / date)

Embargo laikotarpis / Embargo period

Prašau nustatyti šiam baigiamajam darbui toliau nurodytos trukmės embargo laikotarpį:

I am requesting an embargo of this thesis for the period indicated below:

- _____ mėnesių/ months [embargo laikotarpis negali viršyti 60 mėn. / an embargo period shall not exceed 60 months];
 embargo laikotarpis nereikalingas/ no embargo requested.

Embargo laikotarpio nustatymo priežastis/ reason for embargo period:

.....

(vardas, pavardė / name, surname)

(parašas / signature)

(data / date)

Katedros (Padalinio) patvirtinimas, kad atspausdintas baigiamasis darbas buvo pateiktas ir užregistruotas:

(vardas, pavardė)

(parašas)

(data)

Appendix 2. (For supervisor) Example for the Computer check for originality report.

COMPUTER CHECK FOR ORIGINALITY REPORT

Student (Name, surname)	
-----------------------------------	--

Title of the Study program (title)	Systems biology
State code of the study program	6213GX002
Study cycle	Second cycle studies
Mode of studies	Full-time
Duration of the study program (in years)	2

Supervisor (Name, surname)	
--------------------------------------	--

Title of Master Thesis	
-------------------------------	--

Computer check(ESAS) detected that Master Thesis overlap with other written papers (in percent) : _____

Notes from work supervisor (if computer check overlaps > 0%)

Appendix 3. Template for Supervisor's report

Vilnius university Systems Biology study program
Master Thesis
SUPERVISOR'S REPORT

1. Student (name and surname): _____

2. The place (where the Master's Thesis was carried out): _____

3. Title of Master's Thesis: _____

No.	Supervisor evaluates	Grade (1-10 scale)
A1	Student's ability to apply knowledge acquired during the studies	
A2	Autonomy and initiative	
A3	Ability to select, analyse and interpret scientific literature	
A4	Ability to apply proper research or experimental methods and evaluate the reliability of theoretical assumptions and the results obtained	
A5	Ability to summarize the results obtained and draw one's own conclusions	
	Overall assessment (arithmetic average of the grades above):	

Additional comments/remarks by the supervisor:

Supervisor (name, surname)

(signature)

(date)

Vilnius university Systems Biology study program
Master Thesis
REVIEWER'S REPORT

1. Student (name and surname): _____

2. Title of Master's Thesis: _____

3. Assessment for the content of the Thesis:

4. Assessment of the layout of the Thesis:

5. Remarks and questions:

7. Suggested grade for the Master's Thesis:

- 10 (excellent - excellent, exceptional knowledge and skills)
- 9 (very good - strong, good knowledge and skills)
- 8 (good - knowledge and skills above average)
- 7 (average - average knowledge and skills, some minor mistakes)
- 6 (satisfactory - lower than average knowledge and skills)
- 5 (poor - knowledge and skills meet minimum requirements)
- 4 (unsatisfactory - minimum requirements not met)

Supervisor (name, surname)

(signature)

(date)