

## MS in Biology

### The difference between Thesis and Project Options: Myths and Reality

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Graduation with MS in Biology requires 30 credits of study.

Students have the option of completing either a Thesis or a Project to graduate. For both options students will form a committee made up of three (3) graduate faculty members with the help of their faculty advisor, who acts as the committee Chair. At least two (2) of the committee members must be from the home department, SSB.

In case of Thesis, from 3 to 6 credits are used, BIOL799, often referred to as Thesis Credits.

In case of Project, from 1 to 3 credits are used, BIOL798, often referred to as Project Credits.

In case of Thesis option, your written Thesis is **publicly defended and submitted to the University Library**. There is NO COMPREHENSIVE EXAM associated with the thesis option.

In case of Project option, your written project work is evaluated by your Committee only. There is NO PUBLIC DEFENSE OR LIBRARY SUBMISSION. However, you would have to take oral and written comprehensive exams, written by your committee members.

Currently, about 75% of students in the MS Biology program graduate with Thesis option, and about 25% with a Project. These numbers widely fluctuate from semester to semester.

**Myth number 1:**

Students who choose to do Project instead of Thesis have a lesser chance of finding professional employment or getting into a PhD program.

**Reality:**

Employers and PhD programs evaluate every candidate as a whole. Your best ticket to the future is to produce academic work, i.e. publish papers in peer-reviewed journals, and to present oral talks and posters at various conferences or meetings. You can do that with a Project or a Thesis, there is no difference. You should be PROACTIVE – ask your faculty advisor for information on opportunities to publicly present the results of your research.

**Myth number 2:**

A Project involves less work than a Thesis.

**Reality:**

Not correct. The Project emphasizes different skills, but it is a lot of work. By completing a project, your primary skill is a comprehensive understanding not only in your area of research but also in broad topics of Biology, as evidenced by your ability to successfully complete the oral and written comprehensive exams.

Also, completing a Project is often the only possible option for students who do their experimental work outside of GMU labs, i.e. in the labs of their respective employers. A Project is NOT associated with a public

defense and therefore does not represent a public disclosure. In this case, the intellectual property rights of employers are preserved.

**Myth number 3:**

A Project is literature review, and a Thesis is real lab work.

**Reality:**

Not exactly correct. Project students often present literature review work instead of lab work. This is not because writing a review is inferior to doing lab work – many projects are based on lab work. In case of a literature review project, the final product is a polished version of the manuscript that is formatted to article submission guidelines for scientific peer-reviewed journals. Literature review projects are written with the intention to send the review to the journal for publication. Polishing a review article for actual journal submission requires a large amount of effort that is reflected in 3 credits. Students who write literature reviews are not precluded from learning techniques or doing research in the lab. In fact, a majority of the students do both.

**Myth number 4:**

If you are doing a Project, it takes you less time to graduate as compared to doing a Thesis.

**Reality:**

This is somewhat correct. However, this is not because of less effort needed to finish with a project, but because **Thesis students often underestimate the amount of time and effort needed to complete and defend the Thesis for submission to the Library.** The university library's thesis submission deadline is more than a month before the end of the semester! Failing to adhere to the Library's guidelines often delays a student's actual graduation date to the next semester, i.e. Spring to

Summer. Saying that, the Project option is especially good for students who are “on the clock” for graduation, i.e. these who are completing a Master’s degree before going to medical, dental or other professional school with standard application dates.

On average, students graduate with MS in Biology after 4 semesters, with Project or Thesis. However, graduation in 3 semesters is not uncommon, especially in cases when students have taken graduate credits in Mason’s non-degree program or at other Universities that are transferred. You can transfer up to 12 credits toward your MS in Biology if the courses meet transfer requirements.

### ***Notes on the Comprehensive Exams:***

The MS Comprehensive Exams consist of two parts, written and oral, usually taken a week or more apart. Written exam is always first of two.

In Written exam, we usually ask student to sit for 6 hours (or less) and answer questions in closed book format.

Typically, there are three sections in this exam: in each of three sections student is asked to answer 2 questions out of 3 provided by their committee members. Written questions are graded on a scale of HIGH PASS/ PASS/ LOW PASS/ FAIL.

The areas of written questioning are set in advance, with an input from a student. In fact, we usually guide student to the particular topics in relevant fields. These topics are discussed and agreed by student at least 2-3 weeks in advance. One of the topics is the research field of the student’s Project (content of the project, so to speak). Two others may be either relevant to research field, or cover subjects in students’ Program of Study.

Typical examples of Exam Topics covered by classes that student took in MS in Biology Program: Eukaryotic Cell Signaling, Regulation of Gene Expression in Prokaryotes and Eukaryotes, Molecular Genetics of Eukaryotes, Molecular Medicine, Host – Virus Interactions, etc..

Written exam is administered by Chair of your Committee.

The oral comp exam may naturally start with deficiencies in these written answers. The oral exam includes real life questioning by all three members of your Committee, who should gather in the same room with you, in pre-scheduled time. Please note: the responsibility of the scheduling of exam to fit everybody's open time slots falls on YOU, the student. Oftentimes, the oral exam is coupled with closed-door (non-public) project or project proposal presentation, lasting approximately 15 mins or so.

In case if Committee, as a result of BOTH written and oral exams, would agree that your level of knowledge is insufficient in one or more areas, you would have either an option to retake either one or both exams, or will be issued particular remedial recommendation. For example, studying particular topics and compiling a written report on particular subjects.

If you have any questions concerning Thesis or Project options, or Comprehensive Exam, please do not hesitate to contact me at [abaranov@gmu.edu](mailto:abaranov@gmu.edu)