



BIOM*6900 Research Project in Biomedical Sciences - DRAFT

Fall 2021

Section(s): 01

Department of Biomedical Sciences

Credit Weight: 1.00

Version 1.00 - September 24, 2021

1 Course Details

1.1 Calendar Description

This course is a lab- or literature review-based, one-semester research project course for students in the course-based Master of Biomedical Sciences (MBS). As part of this course, students will complete a research paper and grant proposal pertaining to the research topic as well as a poster presentation of the project.

Restrictions: Restricted to Master of Biomedical Sciences students.

1.2 Course Description

PLEASE NOTE: Due to the COVID-19 pandemic, this course is offered during the summer 2020 semester via a hybrid on-campus / online format. The following statements should be considered in addition to the usual course outline information and the MBS Program Outline document posted on the Department website: <https://ovc.uoguelph.ca/biomedical-sciences/graduate-programs/master-biomedical-science-mbs>

It is our goal to support students to complete their MBS program on time, which may require modifications to research projects and to components of BIOM*6900 as described below.

As graduate students of the University, MBS students involved in ongoing, time-sensitive research may elect to continue to complete their research projects on-campus. The continuation of any on-campus work would need to comply with guidance from both the Office of Research and the Office of Graduate and Postdoctoral Studies (OGPS). Specific COVID-19 websites for each of these offices can be found here:

<https://www.uoguelph.ca/research/article/2019-novel-coronavirus-information>

https://graduatestudies.uoguelph.ca/AVP_UPDATE_COVID19

Students normally complete the MBS program when they successfully complete the minimum 4.0 course credits, including this mandatory research project course BIOM*6900 (or BIOM*6910 for students in the Applied Toxicology stream). In light of the impact that COVID-19 has had on the ability to perform and present student research projects, the following considerations will be applied to BIOM*6900.

The four graded components of BIOM*6900 listed below will maintain their normal weighting toward the final grade, and will have the same due dates. Please refer to pages 2-3 of the MBS Program Outline.

- (1) The NSERC-style research grant proposal will be completed as it would have normally.
- (2) The research project and associated Research Paper may need to be modified, in light of the ongoing modifications to on-campus research activity. The decision on how to proceed will be specific to each student/project, and should be made by the student and their advisory committee. If sufficient data can be obtained for the project, then the project and Research Paper may proceed as they normally would. If the student is not able to complete the original research project as planned, then the project may be changed to a novel literature review on the original topic. This literature review should include novel insight/findings on a specific topic, for example, as may be performed for a meta-analysis or in-depth review of published research studies. The specific mandate for each literature review should be decided in advance by the student and their advisory committee. The length of the literature review should be similar to what the original Research Paper would have been.
- (3) The Poster Presentation will not take place in-person. Students should prepare a poster presentation of their research or literature review project, as if it were to be presented in-person. Students should send the poster to their advisory committee by email and arrange to present the poster to the advisory committee remotely, i.e., over the phone or other communication service (e.g. MS Teams, Zoom, etc.). This presentation should be completed by December 12th. **Please Note:** Students may present their work in poster form before this date, either to their advisory committee or at an organized meeting, like an online scientific conference.
- (4) The Advisor Assessment of Student Performance will be submitted to the course coordinator along with the other grade components. Supervisors are encouraged to consider the COVID-19-associated disruption to research, and to the student's graduate program overall, when assigning this mark. Please let us know if you have any questions or concerns about the completion of the MBS program during the upcoming summer semester.

PLEASE NOTE: The usual course outline is shown below and on the other sections of this form.

Degree Requirements:

- The MBS program requires a **minimum of 3 semesters of study.**

- It is expected that students graduate from this degree within 12 months of enrolment. Students who cannot finish within this time period may be allowed to continue to a later graduation date.
- Students are required to complete a minimum of **4.0 course credits**. This includes the mandatory BIOM*6900 course which must be taken in the final semester of the degree (see Courses below).

Advisory Committee:

- During the *first semester of study*, an advisory committee must be established.
- This committee includes a minimum of 2 members, including:

1. Faculty Advisor
2. One Other Internal Graduate Faculty Member

- Once the Advisory Committee is established, an *Advisory Committee Appointment Form* must be submitted (see Forms Below).
- Advisory Committee meetings are *recommended* every semester.

Courses:

- Students are encouraged to discuss appropriate course selection with their Faculty Advisor.
- Students can enroll in courses from the list of Graduate Courses in Biomedical Sciences *or from any other Department on the University of Guelph campus*.
 - In special circumstances, and with supervisory and course instructor approval, students may take up to 1.0 course credit of 4th year undergraduate courses.
- Students must obtain a minimum **overall weighted average of a 'B-'** in prescribed courses.
- A course average of 64% or less is considered a failure in a course.
- The **4.0 course credits** students are required to take **includes the mandatory course BIOM*6900**, which accounts for 1.0 course credit of the total 4.0 course credits required for degree completion (see BIOM*6900 details below).
- In *semester 1*, students will be automatically registered in **UNIV*7100 Academic**

Integrity for Graduate Students. There is no need to add this course on WebAdvisor. This is an online course and access to the course will begin on the first day of scheduled classes.

- *Every semester* students must register in two courses that **do not** count toward the 4.0 credits needed for degree completion:
 - **UNIV*7510 Active F/T Registration OR UNIV*7520 Active P/T Registration**
 - **UNIV*7500 Research Writing**

BIOM*6900 Research Project in Biomedical Sciences

- This is a *mandatory* course for MBS students and provides academic credit for the research component of your program.
- This course is the only restricted graduate course in Biomedical Sciences – no MSC or PhD students may take this course.
- All course components *must* be completed to qualify to graduate from the course-based Masters (MBS) and forms the basis for the final degree grade.
- *Students will register for this course in semester 3* of the program, despite students initiating research and writing associated with this course as early as *semester 1*.
- A grade for BIOM*6900 is assigned based on marks in 4 components (see the Assessment section for details).

1.3 Timetable

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Course Co-ordinator:	Craig Bailey
Email:	baileyc@uoguelph.ca

Telephone: +1-519-824-4120 x54954
Office: OVCE 2602

Program Advisor: Katherine Iversen
Email: iversenk@uoguelph.ca
Telephone: +1-519-824-4120 x54780
Office: OVCS 2509

3 Learning Resources

4 Learning Outcomes

5 Teaching and Learning Activities

5.1 Lab

Topics: Please refer to Section 1.2 "Course Description" above, and to the MBS Program Outline document posted online at:

<https://ovc.uoguelph.ca/biomedical-sciences/graduate-programs/master-biomedical-science-mbs>

6 Assessments

6.1 Assessment Details

NSERC-style Discovery Grant (or similar) proposal (30%)

- In consultation with their Faculty Advisor, students will develop a research proposal structured in the form of an NSERC Discovery Grant application (or other funding agency applicable to the research project).
- Instructions can be found on the NSERC website but students will not register the project online or submit the grant proposal to the NSERC website. The guidelines on the NSERC website are used as an example only.

- This proposal is started as early as semester 1 and it is expected that the draft proposal be submitted to the Advisory Committee for review by the middle of the second month of semester 2.
- The proposal should be a maximum of 5 typed pages (single spaced) including figures and tables, and the budget information is included at the discretion of the Faculty Advisor. Up to 2 additional pages for references should also be included.
- The final grant proposal is due for evaluation by the Advisory Committee no later than the middle of the second month of semester 3.

Poster Presentation (15%)

- Regardless of program start date, all students are required to present their research (or in some cases proposed research) in poster format at a scientific conference. The supervisor may choose to have the poster presented at an appropriate external conference or the annual Career Opportunities and Research Experience (CORE) Program Presentation Days (CORE is held in mid-August).
- Students are encouraged to discuss their poster with their Advisory Committee.
- Although every effort should be made to include original data in the poster, in some cases it may be necessary to focus on proposed or preliminary work.

Research Paper (40%)

- Once the research project has been completed, students will be required to write their work up in the form of a research paper in a journal style agreed upon by the student and the Faculty Advisor.
- By the ***end of the third month of semester 2*** the student is required to submit a draft of the research paper to the Advisory Committee. The paper will then be reviewed with written critiques returned to the student.
- The student will then have the opportunity to revise the paper to address the review comments before resubmission of the final manuscript to the Advisory Committee for evaluation.
- The deadline for the final manuscript is the ***middle of the second month of semester 3***.

Advisor Assessment of Student Performance (15%)

- This includes student effort within the laboratory, progression through the grant proposal process, and the poster presentation.
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7 Course Statements

7.1 Research and research-related tasks

- The research project will be designed so that it can reasonably be completed within 2-3 months of *full-time* lab work. It should be noted that 'full-time lab work' is not necessarily based on a 40h work week, but rather is reflective of the time commitment typically experienced by a master's level graduate student.
- As early as semester 1, students should conduct background research, discuss with their Faculty Advisor about receiving appropriate training for the proposed project, and begin research.
 - It is to the student's advantage to spend as much time in the lab as possible throughout the program in order to gain skills and become proficient in techniques necessary to complete the research project.
- Where applicable, students may prepare necessary ethical approval forms if human and/or animal ethical approval is required for the project.
- If applicable to the research project, students will also be required to take a portion of the Animal Care training course to ensure that they are able to handle live animals.
- The aim of completion of ethics forms and animal care training is to ensure that students know everything that is involved in setting up a research project.
- Students will be required to learn and demonstrate proficiency in the techniques that they will be using in their lab projects.
- It will not be necessary for students to publish their final paper in a scientific journal as factors related to the validity of the initial hypothesis, unexpected methodological difficulties, etc will often preclude development of a first-author paper in a total of only one or two semesters of work in the laboratory. However, the structure of the project will ensure that students are aware of the steps involved in conducting biomedical research; from the initial development of a research proposal, through the application for funding, preparation of results for

publication, and writing up and submitting the results in the format of a scientific peer-reviewed journal manuscript.

7.2 Do you love your research and want to complete a thesis-based MSc?

- It is possible for MBS students to switch to the MSc degree.
- The decision to transfer to the MSc program should be made by the mid-point of semester 2 since the requirements for the course-based and thesis-based programs begin to diverge at this stage of the program.
- While students are strongly encouraged to formally apply for transfer before the 40th class day of their third semester in the program, the deadline for transfer requests from the MBS to the MSc is the last day of classes in the third semester of study. Applications received after that date will not be considered.
- Consult with your Advisor and Supervisory Committee if you would like to transfer.

8 University Statements

8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The

deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have

the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

8.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed

assessments or when involving a large part of a course (e.g.. final exam or major assignment).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

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