

**MDSC 417/419**  
**Integrated Research Course I/II**

**MDSC417.02/MDSC419.02 Microbiology, Immunology and Infection**  
**MDSC417.05/MDSC419.05 Biochemistry and Molecular Biology**

**Instructors:**

**MDSC417.02/MDSC419.02 Microbiology, Immunology and Infection**

Dr. Guido van Marle (vanmarle@ucalgary.ca)

**MDSC417.02/MDSC419.05 Biochemistry and Molecular Biology**

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**Faculty Supervisors:**

**MDSC417.02/MDSC419.02 Microbiology, Immunology and Infection**

Dr. Anthony Schryvers (schryver@ucalgary.ca)

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**MDSC417.05/MDSC419.05 Biochemistry and Molecular Biology**

Dr. Guang Yang (guang.yang2@ucalgary.ca)

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**Office Hours/Policy on Answering Student Emails**

Office Hours are by appointment only. The instructors will respond to emails received during working hours by the next working day

**Time and Location:**

Tuesdays & Thursdays 1:00pm – 3:50pm

O2525 and G743 and other locations as described in the course schedule posted on D2L.

Please consult course schedule to confirm location of individual sessions.

MDSC417 will involve both classroom and laboratory-based sessions  
MDSC419 will predominantly be laboratory-based.

### **Prerequisite/Co-Requisite:**

MDSC 308 and enrolment in the Bachelor of Health Sciences program

Anti-requisite:

MDSC 402. Credit may not be obtained for both MDSC402 and MDSC417.

Note:

MDSC417 is to be taken in combination with the corresponding MDSC419 integrated research course II in the same academic year.

### **Course Description:**

Provides students with the basic conceptual framework, knowledge and skill set to work and think independently in a medical science or life science research environment in their topic area. The course will include lectures in the various topic areas, group sessions and self-directed research project in the topic area.

### **Overarching Theme**

These combined courses provide students with the basic conceptual framework, knowledge and skill set to work and think independently in a biomedical research environment in selected topic areas. The course will include lectures, group sessions and a self-directed research project in the selected topic areas.

### **Global Objectives**

To give students a comprehensive introduction to the conceptualization, formulation, execution and completion of a research project.

### **Learning Objectives**

By the end of MDSC417, students will be able to:

1. Demonstrate an understanding of the broader context of their research project area.
2. Search current literature effectively in the context of their proposed research project
3. Investigate and evaluate the existing evidence in the context of their chosen subject area of study, clearly state the problem to be investigated, and provide rationale for the proposed research.
4. Understand research design and conceptualize a research project from beginning to end.
5. Evaluate the appropriateness and limitations of using various experimental approaches and research designs.
6. Develop a research project within the defined context of their chosen subject area.
7. Write a research proposal outlining a cohesive set of experiments.

8. Formulate strong, focused, and testable research questions/hypotheses and propose methods to test the hypotheses in the context of their chosen subject area.

By the end of MDSC419, students will be able to:

1. Demonstrate knowledge and understanding of a number of laboratory techniques relevant to their area of study/specialization and successfully perform these techniques in a research setting.
2. Apply the gained knowledge to troubleshoot and ultimately correct technically-based problems that arise during a research project.
3. Critically analyze data obtained from experiments.
4. Combine and interpret data obtained from various experiments
5. Discuss the limitations of the data obtained.
6. Propose further lines of investigation.
7. Discuss the data obtained in the broader context of their research project area.
8. Successfully execute a research project.
9. Work in a team to tackle a research project.
10. Give a scientific presentation of their research project to audience of peers
11. Write a final research report summarizing their findings in an academically rigorous, coherent and cohesive fashion.

### **Required Textbooks**

*There are no required text books*

### **Recommended Textbooks/Readings**

*There are no recommended textbooks but there will be several require reading that will be posted on D2L.*

### ***A Note regarding readings***

*A list of required readings for all course sections will be outlined on D2L and links and documents will be made available, where possible. Required readings have been chosen carefully to inform you and enhance the lecture material. **Students are REQUIRED to complete assigned readings BEFORE each lecture.** Instructors will proceed in class on the assumption that students have read completely the assigned readings. Students should be aware that many of the readings they will be assigned may be of an unfamiliar nature and style. Students should allot sufficient time to allow for several reads of the assigned material.*

### **Evaluation**

The University policy on grading and related matters is described in section F.2 of the 2017-2018 Calendar.

In determining the overall grade in the course the following weights will be used:

**You will receive a grade for MDSC417 and MDSC419 separately**

**Details for each assignment will be provided in class.**

**MDSC417**

- **Take home (re)writing assignment** **5% (Due Sept. 21, 2017)**
- **In class literature search assignment** **10% (Sept. 26, 2017)**
- **In class abstract writing assignment** **10% (Oct 3, 2017)**
- **Subject-specific summary and significance paper (~3 pg)** **15% (Oct 26, 2017)**
- **Letter of Intent (1 pg single-spaced)** **10%**
  - **Draft (0%) (Nov 2, 2017)**
  - **Final LOI (value 10%) (Nov. 14, 2017)**
- **Grant Reviews** **10% (Nov. 27, 2017)**
- **Research Proposal (5 pg single spaced)** **40%**
  - **Draft (10%) (Nov. 23, 2017)**
  - **Final Proposal (30%) (Friday Dec. 9, 2017)**
  - **To include work distribution statement and project timeline**

**MDSC419**

- **Lab Notebook** **25%**  
**The laboratory notebook will be checked on a regular basis by your supervisor.**
- **Lab Performance** **25%**
- **Final Report** **30% (due April 6, 2018)**
- **Final Oral Presentation** **20% (on April 12, 2018)**

**\*\*There will be no December or April exams for these courses**

**A Note regarding Writing Assignments:**

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary's emphasis on the importance of academic writing in student assignments (section E.2 of 2017-18 Calendar), writing is emphasized, and the grading thereof in determining a student's mark in this course. The Bachelor of Health Sciences values excellence in writing.

Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). The University of Calgary offers a number of instructional services through the Students' Success Centre's Writing Support Services (<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

#### Grading Scheme:

A+ 97-100%	B+ 80-84%	C+ 65-69%	D+ 54-56%
A 90-96%	B 75-79%	C 60-64%	D 50-53%
A- 85-89%	B- 70-74%	C- 57-59%	F 0-49%

#### Missed Components of Term Work:

**Late assignments will lose 5% per day late past the deadline for all assignments.** Assignments will **NOT** be accepted more than 72 hours after the posted deadline and students failing to submit any assignment within this time frame will receive a mark of zero.) **Students who miss a quiz will receive a mark of zero unless the instructor has been previously notified. There will be NO exceptions to this policy.**

*It is the agreement of all Faculty and Staff involved in MDSC417/419 that **extensions will NOT be granted** on any assignment or quizzes. The only exceptions to this are those in keeping with the University Calendar (illness, religious conviction, or domestic affliction) that are received in writing and with supporting documentation. Please be advised that students should notify the instructor before the assignment deadline to discuss.*

#### Desire2Learn (D2L)

Desire 2 Learn is located on the University of Calgary server and will be used extensively for communication with students. **It is the student's responsibility to ensure that s/he gets all posted communications and documents and that s/he receives emails sent by instructors or fellow students through D2L.** Only your @ucalgary.ca email address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account.

If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

#### Policies Governing the Course:

##### Attendance

*Attendance for this course is mandatory. We request that you notify your supervisor and the course coordinator, Dr. Guido van Marle, directly (not via peers) if you are unable to attend, and explain your absence. Full time lab attendance/participation will also be monitored and is part of your performance grade for MDSC419.*

**REQUIRED MATERIALS:**

A lab coat and hard-covered lab notebook (available at the bookstore) are both required for MDSC 417 and 419.

**LABORATORY NOTEBOOK:**

The laboratory notebook should be updated before, during and/or after each laboratory session in accordance with the guidelines provided by each research supervisor. Ensure that your lab notebook is kept up to date, and results are clearly presented and explained. The laboratory notebooks will be graded as part of your final grade for MDSC419.

**THE LABORATORY NOTEBOOK IS THE PROPERTY OF THE SUPERVISOR OF THE LABORATORY YOU ARE WORKING IN FOR YOUR PROJECT AND WILL REMAIN IN THE HOST LABORATORY AT THE END OF THE COURSE.**

**LABORATORY SAFETY:**

Students are required to familiarize themselves with the Bachelor of Health Sciences Guidelines for Safety Procedures (posted on the D2L) and follow laboratory safety of the particular procedures of the laboratory they work in at all times. Students who do not follow the laboratory safety procedures will be asked to leave the lab. Students must have completed WHMIS 2015 and Biosafety Laboratory Training in order to work in the laboratory. Students may be required to have additional laboratory safety training specific to the laboratory they will be working in as part of their project.

**GENERAL LABORATORY AND SAFETY CONCERNS:**

It is important that students direct all immediate questions and concerns regarding the laboratory portion of the course to their laboratory supervisor. If the supervisor is unable to provide an explanation or answer, then the student should contact Dr. Guido van Marle.

**Electronic Devices**

The Bachelor of Health Sciences program aims to create a supportive and respectful learning environment for all students. Research studies have found that student use of electronic devices (laptops, tablets, etc) in the classroom negatively affects the learning of both the user and those sitting nearby. Inappropriate use of laptops is also disruptive to your fellow classmates and disrespectful to the lecturer. The use of laptops and other electronic note-taking devices is permitted; however, their use in the classroom should be for course-related work/note-taking only. Please do **surf the web, check email or do other unrelated work**. Students who use their laptops inappropriately or are otherwise disruptive during lectures will be asked to leave.

Cell phones (or similar devices) should **be turned off** (not merely silent) upon entering the classroom. Sending/receiving text messages or leaving the class to take calls is disruptive to the entire class and will not be tolerated unless absolutely necessary. Students who disregard this rule during lectures or tutorials will be asked to leave. These items are not permitted under any circumstance during exams/quizzes, etc.

## **Copyright**

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance for Students ([library.ucalgary.ca/files/library/guidance\\_for\\_students.pdf](http://library.ucalgary.ca/files/library/guidance_for_students.pdf)). Further information for students is available on the Copyright Office web page (<http://library.ucalgary.ca/copyright>)

## **A Note Regarding Instructor Intellectual Property**

Generally speaking, course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may **NOT** be reproduced, redistributed or copied without the explicit consent of the professor. **The posting of course materials to third party websites such as note-sharing sites without permission is prohibited.** Sharing of extracts of these course materials with other students enrolled in the course **at the same time** may be allowed under fair dealing.

## **Academic Accommodations Based on Disability or Medical Condition**

It is the student's responsibility to register with Student Accessibility Services to be eligible for formal academic accommodation in accordance with the Procedure for Accommodations for Students with Disabilities ([https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities\\_0.pdf](https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf)). If you are a student who may require academic accommodation and have not registered with Student Accessibility Services, please contact their office at (403) 220-8237; <http://www.ucalgary.ca/access/>. Students will be provided with all necessary accommodations to ensure equal opportunity to succeed in this course. Please provide the instructor your accommodation letter from Student Accessibility Services within 14 days after the start of this course so that all needed arrangements for exams and assignments can be made.

## **Accommodations on Protected Grounds other than Disability**

Students who require an accommodation in relation to their coursework based on a protected ground other than disability, should communicate this need, preferably in writing, to the designated BHSc program contact, Mrs. Jennifer Logan ([jljlogan@ucalgary](mailto:jljlogan@ucalgary)), or to Dr. Ebba Kurz, Associate Dean, Undergraduate Health and Science Education, Cumming School of Medicine. Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/).

## **Academic Misconduct**

The University of Calgary is committed to the highest standards of academic integrity and honesty. The University of Calgary has created rules to govern all its members regarding the creation of knowledge and the demonstration of knowledge having been learned. These rules are contained principally in Sections J to L of the *University of Calgary Calendar*. Students are expected to be familiar with these standards and to uphold the policies of the University in this

respect. The Calendar also stipulates the penalties for violating these rules. Please know that the University and the Cumming School of Medicine take these rules seriously. **All incidences of academic dishonesty in this course, such as cheating and plagiarism, will be reported to the Associate Dean for investigation;** infractions will be noted on the record of a student found to be guilty.

### **Recording of Lectures**

Audio or video recording of lectures is prohibited except where explicit permission has been received from the instructor.

## **Other Important Information**

### **Freedom of Information and Protection of Privacy Act**

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP); students should identify themselves on written assignments (exams and term work) by their name and ID number on the front page and ID on each subsequent page. Work assigned to you by your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission. See <http://www.ucalgary.ca/policies/files/policies/privacy-policy-2011.pdf> for more information.

### **Appeals**

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section I of the University Calendar. Students must follow the official reappraisal/appeal process and may contact the Student Ombuds' Office (<http://www.ucalgary.ca/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct. Students should be aware that concerns about graded term work may only be initiated **within 15 days** of first being notified of the grade.

### **Resources for Support of Student Learning, Success, Safety and Wellness**

Student Success Centre	<a href="http://www.ucalgary.ca/ssc/">http://www.ucalgary.ca/ssc/</a>
Student Wellness Centre	<a href="http://www.ucalgary.ca/wellnesscentre/">http://www.ucalgary.ca/wellnesscentre/</a>
Distress Centre	<a href="http://www.distresscentre.com/">http://www.distresscentre.com/</a>
Library Resources	<a href="http://library.ucalgary.ca">http://library.ucalgary.ca</a>

### **Wellness and Mental Health Resources**

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health

resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370 MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy (<http://www.ucalgary.ca/mentalhealth/>).

### **Student Ombuds' Office**

The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit [www.ucalgary.ca/ombuds/](http://www.ucalgary.ca/ombuds/) or email [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca)

### **Student Union (SU) Information**

The SU Vice-President Academic can be reached at (403) 220-3911 or [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca); the SU representatives for the Cumming School of Medicine can be reached at [medrep@su.ucalgary.ca](mailto:medrep@su.ucalgary.ca).

### **Emergency Evacuation/Assembly Points**

Assembly points for emergencies have been identified across campus. Assembly points are designed to establish a location for information updates from the emergency responders to the evacuees; and from the evacuated population to the emergency responders. The primary assembly point for the Health Sciences Centre is the Health Research Innovation Centre. The alternate assembly point is Parking Lot 6. For more information, see the University of Calgary's Emergency Management website: <http://www.ucalgary.ca/emergencyplan/assemblypoints>.

### **Safewalk**

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.