

MDSC 569.08  
Advanced Topics in Physiology

Instructors:

Dr. Jennifer Thompson, Course Coordinator  
Associate Professor, Department of Biochemistry and Molecular Biology  
Office: Check D2L  
Email: [Jennifer.thompson2@ucalgary.ca](mailto:Jennifer.thompson2@ucalgary.ca)

Dr. Ji Soo Yoon  
Postdoctoral Fellow, Department of Biochemistry and Molecular Biology  
Email: jisoosamantha.yoon@ucalgary.ca

Dr. Chunlong Mu  
Assistant Professor, Department of Microbiology, Immunology and Infectious Diseases  
Email: Chunlong.mu1@ucalgary.ca

Office Hours/Policy on Answering Student Emails  
Contact instructors by email to make an appointment. Student emails addressed to Jennifer Thompson will be answered within 24 hrs. Please note that all course communications must occur through your @ucalgary email.

Time and Location:

Lectures/presentations: MW 9:00 am to 10:15 am  
Tutorials: F 9:00 am to 9:50 am  
Check D2L for location

Prerequisite/Co-Requisite:  
MDSC 404 or Zoology 463 or consent of course director.

Course Description:

Designed for undergraduates with a general understanding of human physiology who wish to pursue advanced topics in a physiological system(s). The physiological system offered will vary from year-to-year and students should contact the instructor for more information prior to enrolling in the course. There will be a review and then build on basic physiological principles through a series of lectures and/or discussion groups. An examination of the specified area of physiology in-depth by introducing students to research methodologies and pathological processes.

## Overarching Theme

This is an advanced physiology course that provides students with an understanding of the mechanisms that promote energy homeostasis at the organ and whole-body level. Fundamental concepts of physiology and integration of function across cellular, molecular and organ-levels pertaining to glucose and lipid metabolism will be explored in adipose, liver, pancreas, and muscle. Students will undertake an

in-depth examination of the role of organ crosstalk, the central nervous system, and endocrine pathways in the regulation of energy balance and the pathophysiology of metabolic diseases like obesity. Students will be introduced to contemporary theories and controversies as well as current experimental approaches in the field of metabolic health and obesity. Topics will be covered through a series of lectures, while evaluations will be designed to promote skills in critical thinking as it relates to contemporary and real-world issues in metabolic health.

## Global Objectives

To advance understanding in fundamental mechanisms of metabolic regulation and introduce students to contemporary perspectives in the field of metabolic health and disease.

## Learning Objectives

By the end of this course, students will be able to:

- Develop in-depth knowledge of mechanisms regulating energy homeostasis and development of metabolic diseases
- Enhance skills in oral communication, tailored to either a scientific or lay audience
- Improve skills in scientific writing
- Learn to critically evaluate the scientific literature and engage in group discussion

### Transferable Skill Development:

Many of the skills and abilities that you are developing in your coursework are transferable to the workforce, graduate and professional studies and other facets of life. Employers seek applicants with transferable skills because they can be an asset in the workplace, regardless of industry or sector. Transferable skills are core skills for your success in building your future career.

The work that you will do in MDSC 569.08 will help you build the following transferable skills:

- **Collaboration:** Work respectfully with others from different backgrounds, cultures, and countries.
- **Verbal Communication:** Learn and share information by presenting, listening, and interacting with others.
- **Creativity and Innovation:** Find different and better ways to do things, being curious, thinking imaginatively.
- **Critical Thinking:** Actively and skillfully conceptualize, apply, analyze, synthesize, and/or evaluate information (data, facts, observable phenomena, and research findings) to make a reasoned judgement or draw a reasonable conclusion.

- **Digital Skills:** Use digital technologies like computers, social media, virtual meeting platforms, and the internet.
- **Information Literacy:** Find, understand, and use information presented through words, symbols, and images
- **Written Communication:** Share ideas and information by using words, images, and symbols.

#### Learning Resources

- Human Metabolism: A Regulatory Perspective. Fourth Edition. Keith Frayn & Rhys Evans. 2019

#### Recommended Textbooks/Readings

- Supplemental reading material will be provided via D2L to enhance understanding of course content.

#### Learning Technology Requirements

Brightspace (by D2L) 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 they receive all posted communications and documents and that they receive 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.

A laptop, desktop, tablet or mobile device is required for D2L access. If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

#### Evaluation

The University policy on grading and related matters is described in section F of the 2025-2026 Calendar. In determining the overall grade in the course, the following weights will be used:

Evaluation will be based on 3 quizzes (total 20%), a 10-min oral presentation (total 10%), a final 20-min oral presentation (total 30%), a final written paper (total 20%) and class attendance/participation (total 20%). Participation grade will consider engagement in journal club-style group discussions and question-and-answer periods during oral presentations. There will be no final exam for this course.

Assessment *	Weight (% of Grade)	Due Date and Time	Alignment with course Learning Objectives
Quizzes	20	Quiz 1: Jan 28th Quiz 2: Mar 11th Quiz 3: Mar 30th	Develop in-depth knowledge of mechanisms regulating energy homeostasis and development of metabolic diseases
Attendance and participation in critical article review and group discussions	20	Feb 4 <sup>th</sup> Mar 25th	Learn to critically evaluate the scientific literature and engage in group discussion
Presentation #1	10	Feb 9-11th	Enhance skills in oral communication, tailored to either a scientific or lay audience
Presentation #2	30	April 1-13th	Enhance skills in oral communication, tailored to

			either a scientific or lay audience
Final Written Assignment	20	April 13th	Improve skills in scientific writing

Descriptions and rubrics/marking guidelines of each assessment item are posted in D2L.

Students who do not complete presentations and/or the final written assignment prior to end of term will be considered as not passing the course.

**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 2025-26 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). Sources used to complete each assessment must be properly documented, unless otherwise noted by the instructor. The University of Calgary offers 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:**

Letter Grade	Description	Percentage
A+	Outstanding performance	96-100
A	Excellent performance	90-95.99
A-	Approaching excellent performance	85-89
B+	Exceeding good performance	80-84
B	Good performance	75-79
B-	Approaching good performance	70-74
C+	Exceeding satisfactory performance	65-69
C	Satisfactory performance	60-64
C-	Approaching satisfactory performance	57-59
D+	Marginal pass	54-56
D	Minimal pass	50-53
F	Does not meet course requirements	0-49

**Missed Components of Term Work:**

**Students will lose 5% per day late past the deadline for all assignments.** In this case, 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. **There will be NO exceptions to this policy.**

As per University Calendar Section G.2.3 **students who are absent from an in-class assessment will receive a mark of zero on the missed component.** Students who are absent are responsible for contacting their instructor to discuss the impact of their missed assessment. Alternative opportunities for completing missed assessments or shifting of the assessment weight **may** be possible but are not

guaranteed. Students may be asked to provide supporting documentation for their absence; falsifying information related to missed assessments is considered academic misconduct.

**Extensions will NOT be granted** on any assignment or quizzes in MDSC 569.08. The only exceptions to this are those in keeping with the University Calendar (debilitating illness, religious conviction, or severe domestic affliction) that are received in writing and with supporting documentation. Traffic jams and late or full buses are common events in Calgary and are NOT acceptable reasons for late arrivals to class, meetings and examinations. Please note that while absences are permitted for religious reasons, students are responsible for providing advance notice and adhering to other guidelines on this matter, as outlined in the University Calendar

<https://calendar.ucalgary.ca/pages/02ffccb6b1a541db880fe4223d122b5e>

#### Course Evaluations and Student Feedback

Student feedback will be sought at the end of the course through the new UCalgary Course Experience Survey and a qualitative student evaluation. Students are welcome to discuss the process and content of the course at any time with the instructor. Students may also address any concerns they may have with Dr. Fabiola Aparicio-Ting, Associate Dean (Undergraduate Health and Science Education) in the Cumming School of Medicine (feaparic@ucalgary.ca).

#### Attendance

**Regular attendance is advised in order to succeed in MDSC 569.08.** Students are expected to take notes during class and should not rely solely on material supplied by the instructors. Instructors may or may not post lectures notes to D2L, at their individual discretion. In-class discussion and all content presented in class, including concepts and examples, can constitute substantial learning and can be considered for assessment.

Attendance will be considered in the final grade, as described above.

#### Conduct During Lectures

The classroom should be respected as a safe place to share ideas without judgement - a community in which we can all learn from one another. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

As members of the University community, students, employees and academic staff are expected to demonstrate conduct that is consistent with the University of Calgary Calendar, the Code of Conduct and Non-Academic Misconduct policy and procedures, which can be found at

<https://ucalgary.ca/student-services/student-conduct/policy>

#### Use of Internet and Electronic Communication Devices in Class

The Bachelor of Health Sciences program aims to create a supportive and respectful learning environment for all students. The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. However, research studies have found that inappropriate/off-topic use of electronic devices in the classroom negatively affects the learning of others during class time.

Students are responsible for being aware of the University's Internet and email use policy, which can be found at <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-electronic-resources-and-information-policy>

### Use of Artificial Intelligence Tools

Generative Artificial Intelligence (AI), and specifically foundational models that can create writing, computer code, and /or images using minimal human prompting includes not only GPT-4 (and its siblings ChatGPT and Bing), but many writing assistants that are built on this or similar AI technologies.

You may use generative artificial intelligence tools and apps for learning course material, but their use is **strictly prohibited** in all course assignments unless explicitly stated otherwise by the instructor in this course. This includes ChatGPT and other AI writing and coding assistants. Use of generative AI in this course may be considered use of an unauthorized aid, which is a form of cheating and a breach of academic integrity subject to Academic Misconduct procedures. You could be asked to provide evidence of your own work. While we appreciate that the use of AI tools is appropriate in some contexts, in this course we will be focusing on building your own critical thinking, foundational knowledge and writing skills, which could be compromised by a reliance on AI tools.

Students are not allowed to upload class slides, assignment instructions, or other course materials to AI tools or platforms. These are the intellectual property of the course instructor (IP); uploading these to an AI platform may breach IP rules since some of these sites may use these as training/output data.

## UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

### Copyright

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy>) and requirements of the Copyright Act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks, etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy <https://www.ucalgary.ca/legal-services/university-policies-procedures/student-non-academic-misconduct-policy>

### Instructor Intellectual Property

Course materials created by instructors (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. 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

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The Student Accommodations policy is available at <https://ucalgary.ca/student-services/access/prospective-students/academic-accommodations>. Students needing an accommodation based on disability or medical concerns should contact Student Accessibility Services (SAS) in accordance with the Procedure for Accommodations for Students with Disabilities (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>).

Students who require an accommodation in relation to their coursework based on a Protected Ground other than Disability should communicate this need in writing to Dr. Fabiola Aparicio-Ting (feaparic@ucalgary.ca), Associate Dean (Undergraduate Health and Science Education).

### **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.

Academic Misconduct refers to student behaviour that compromises proper assessment of a student's academic activities and includes (but is not limited to): cheating, fabrication, falsification, plagiarism, unauthorized assistance, failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses, and failure to comply with exam regulations applied by the Registrar. **It also includes using of third party websites/services to access past/current course material, essay/assignment writing services, or real-time assistance in completing assessments, seeking answers to assessment questions and similar, whether paid, bartered or unpaid.**

For information of the Student Academic Misconduct Policy and Procedures, please visit;

<https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-policy>

Additional information is available on the Academic Integrity website at: <https://ucalgary.ca/student-services/student-success/learning/academic-integrity>.

### **Recording of Lectures**

Audio or video recording of lectures (or similar) by students is prohibited except where explicit permission has been received from the instructor.

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

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary

### **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/student-services/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 10 business days** of first being notified of the grade

<https://calendar.ucalgary.ca/pages/e31a7115dca740ec83579e946d4a4193>

### **Sexual and Gender-Based Violence Policy**

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at <https://www.ucalgary.ca/legal-services/university-policies-procedures/sexual-and-gender-based-violence-policy>

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

Student Success Centre <http://www.ucalgary.ca/ssc/>

Student Wellness Centre <http://www.ucalgary.ca/wellnesscentre/>

### **Student Advocacy and Wellness Hub (CSM)**

<https://cumming.ucalgary.ca/mdprogram/current-students/student-advising-wellness>

Distress Centre <http://www.distresscentre.com/>

Library Resources <http://library.ucalgary.ca>

## **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 (<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/student-services/ombuds/](http://www.ucalgary.ca/student-services/ombuds/) or email [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).

## **BHSc Student Faculty Liaison Committee (SFLC)**

The BHSc SFLC, with elected representatives from all majors, serves to raise issues of interest to BHSc students to the program administration, including items pertaining to curriculum, scheduling and events. A list of current representatives can be found on the BHSc website.

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

The SU Vice-President Academic can be reached at (403) 220-3911 or [suvpac@ucalgary.ca](mailto:suvpac@ucalgary.ca); the SU representatives for the Cumming School of Medicine can be reached at [medrep1@su.ucalgary.ca](mailto:medrep1@su.ucalgary.ca) or [medrep2@su.ucalgary.ca](mailto:medrep2@su.ucalgary.ca).

## **Student Success Centre**

The Student Success Centre provides services and programs to ensure students can make the most of their time at the University of Calgary. Our advisors, learning support staff, and writing support staff assist students in enhancing their skills and achieving their academic goals. They provide tailored learning support and advising programs, as well as one-on-one services, free of charge to all undergraduate and graduate students. For more information visit: <https://www.ucalgary.ca/student-services/student-success>

## **Emergency Evacuation/Assembly Points**

As part of the University of Calgary Emergency Evacuation plan, students, faculty, and staff should locate the closest Assembly Point in case of Fire Alarm. Safety signage is posted throughout the campus showing the locations and the possible route to these locations. All students, faculty, and staff are expected to promptly make their way to the nearest Assembly Point if the Fire Alarm is activated. No one is to return into campus facilities until an all clear is given to the warden in charge of the Assembly Area. For more information, see <https://www.ucalgary.ca/risk/emergency-management/drills/assembly-points-and-evacuation-maps>

**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.