Physiology 463  
Advanced Topics in Physiology Research I  
(Coordinator: Dr. Peter Nguyen)

This course will train students to identify, present, and critically discuss recent advances in Physiology research. Instructors will assign selected research papers. Students are required to read them prior to scheduled class sessions and to discuss the papers with classmates and instructors. This is not a lecture course. Students will initiate and drive the in-class discussion, in a journal-club format, with some guidance from instructors when appropriate. The course is team-taught by members of the Department of Physiology. Prerequisites: PHYSL 210 or PHYSL 212/214 and consent of course coordinator. This course must be taken along with PHYSL 464 in second term.

Evaluation: 30% class participation; 70% one term paper.  
See Guidelines and Expectations (next page).

These marks will be summed to obtain the combined percentage mark for the course. Letter grades will be determined for the final course grade, based on verbal descriptors used by the University of Alberta for the letter grades, the absolute mark, and the overall performance of the class. Final results will be posted on eClass.

ACADEMIC INTEGRITY: ‘The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.’

All forms of dishonesty are unacceptable at the University. Any offense will be reported to the Senior Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offenses. Anyone who engages in these practices will receive at minimum a grade of zero for the term paper in question and no opportunity will be given to replace the grade or redistribute the weights.

If you have any questions about a particular topic area, please e-mail the instructor responsible for that topic:

Physiology of Blood  
Dr. Saswati Das  7-58 MSB  
saswati@ualberta.ca

Cardiovascular Physiology  
Dr. Jamie Mitchell  7-58 MSB  
jrm@ualberta.ca

Membrane Transport Physiology  
Dr. Kyla Smith  7-35 MSB  
kylasmith@ualberta.ca

Synaptic Plasticity and Memory  
Dr. Peter Nguyen (Course Coordinator) 7-14 MSB  
peter.nguyen@ualberta.ca
Guidelines and Expectations

In-Class Discussion
A list of assigned articles will be provided to students at the start of the course. One article per class session. Students are expected to have read the assigned article prior to the scheduled class, and to be competently familiar with the background, hypotheses, data, methods, and conceptual issues presented in the paper. At the start of each class, the instructor will pick one student, at random, to introduce the article; this should take approx. 10 minutes, and should include the relevant background and main hypotheses addressed by the article. Slides are not required, but may be used at the discretion of the student. After the introduction, the discussion will commence, involving all students. The instructor’s role will be to steer the discussion towards specific areas, but only when necessary. Students are expected to constructively drive the discussion forward.

Class participation (30% of final mark) will be assessed by the instructors, who may also provide feedback. Criteria for effective participation will include: clarity of remarks, awareness of key issues, enthusiasm, and ample demonstration of critical, evaluative thinking. It is not enough to show up and repeat verbatim what was printed in the assigned article.

Some questions to consider for in-class discussion:
1. What central problem/issue is addressed by the paper?
2. What are the main hypotheses?
3. Did the results prove the hypotheses?
4. What additional experiments could have been done to strengthen the conclusions?
5. Were the methods sufficient for resolving mechanistic questions addressed by the paper?
6. What are the overall strengths and weaknesses of the paper?
7. What significant gaps in knowledge remain to be addressed?
8. Does the paper represent a small, incremental advancement, or a major paradigm shift?

Back up your remarks with clear reasoning. Speculation is welcome.

Term Paper (70% of final mark)
Students will select papers from the list of assigned articles, from one instructor. The number of students per instructor will be limited to ensure an even distribution among the four. Students will write one term paper that exposes and critically discusses the key issues raised by the articles. Deadline to hand in the paper is November 27th, and it will be graded by the instructor most closely associated with the material selected by the student. Instructors are available for advice on article selection. Term papers will have a maximum length of 16 pages (double-spaced, 12-point font mandatory), excluding figures, figure legends, and tables.

The term paper must demonstrate:
1. A clear grasp of the questions and conceptual issues raised by the selected articles.
2. An understanding of the significance of the articles’ research findings to integrative physiology that spans multiple organ systems and/or multiple levels of experimental analysis.
3. Evidence of evaluative thinking in identifying gaps in knowledge and assessing validity of data.

The term paper must not:
1. Repeat/paraphrase the results and discussion sections of articles.
2. Consist of text copied and pasted from the internet.

More advice: Do not procrastinate on writing the term paper. Start early. Reading and thinking take time. Select your articles from the provided list, early on. Consult your instructors – they are here to help you succeed in this course.
Class Schedule – PHYSL 463

We will meet in 7-53 MSB, **Tuesday and Thursday 200-320 pm.**

Instructors will provide a list of website links to required articles that can be downloaded and viewed on your mobile device in class.

The following are the dates for each instructor, presented in block form:

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Dates</th>
<th>Course</th>
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<tbody>
<tr>
<td>Dr. Kyla Smith</td>
<td>Sept 3-19 inclusive</td>
<td>Membrane Transport Physiology</td>
</tr>
<tr>
<td>Dr. Saswati Das</td>
<td>Sept 24-Oct 10 inclusive</td>
<td>Physiology of Blood</td>
</tr>
<tr>
<td>Dr. Jamie Mitchell</td>
<td>Oct 15-31 inclusive</td>
<td>Physiology of the Cardiovascular System</td>
</tr>
<tr>
<td>Dr. Peter Nguyen</td>
<td>Nov. 5-28 inclusive</td>
<td>Synaptic Plasticity and Memory</td>
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</tbody>
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No classes: Oct 14 (Thanksgiving), Nov 11 (Remembrance Day), Nov 12-15 (Reading Week).