1 Course Details

1.1 Calendar Description

The course is designed to provide a senior level introduction to the endocrine discipline, focusing largely on mammals, with some examples taken from other vertebrate taxa. The course will give an introduction to the historical developments in the discipline, explore the actions of hormones and other chemical signalling pathways, and examine processes of hormone synthesis and secretion. The focus of the course will be the integrative nature of hormone actions in the regulations of various physiological processes in animal systems, such as metabolic control, growth, and reproduction. The course will also explore aspects of "non-classical" endocrinology, endocrine dysfunctional states and emerging environmental concerns related to endocrine dysfunction.

Pre-Requisite(s): BIOC*2580, [1 of BIOM*3200, HK*3810, HK*3940, (ZOO*3200, ZOO*3210), ZOO*3600]

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

1.2 Course Description

<table>
<thead>
<tr>
<th>Term</th>
<th>Section</th>
<th>Location</th>
<th>Dates</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>01</td>
<td>MCLN102</td>
<td>LEC: Mon, Wed, Fri</td>
<td>08:30 AM-09:20 AM</td>
</tr>
<tr>
<td>Classes Start</td>
<td>Classes End</td>
<td>Final Exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 08, 2018</td>
<td>April 06, 2018</td>
<td>Take-home (see below)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Monday, February 18 (Winter Break begins-NO CLASSES SCHEDULED THIS WEEK).
2. Instructor/TA Contact Information

<table>
<thead>
<tr>
<th>Instructors and TAs</th>
<th>Office/Office Hours</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pawel M. Bartleewski</td>
<td>OVCX, rm. 1677/e-mail for appointment</td>
<td><a href="mailto:pmbart@uoguelph.ca">pmbart@uoguelph.ca</a></td>
</tr>
<tr>
<td>Neil MacLusky</td>
<td>OVC, rm. 1668/Tue 02:00PM-05:00PM or e-mail for appointment</td>
<td><a href="mailto:nmaclusk@uoguelph.ca">nmaclusk@uoguelph.ca</a></td>
</tr>
<tr>
<td>Emily Craig</td>
<td>OVC, rm. 1647/e-mail for appointment</td>
<td><a href="mailto:ecraig@uoguelph.ca">ecraig@uoguelph.ca</a></td>
</tr>
<tr>
<td>Julia Pacosz</td>
<td>OVC, rm. 1661/e-mail for appointment</td>
<td><a href="mailto:jpacosz@uoguelph.ca">jpacosz@uoguelph.ca</a></td>
</tr>
</tbody>
</table>

*Instructors and TAs will strive to respond to e-mail communication within a reasonable period of time, typically within 3 weekdays.*

3. Course Description

The course is intended for senior students who have a strong background in physiology (at a minimum of the BIOM*3200 level). The majority of lectures in the course will be taught by the course instructors, with a few guest lecturers contributing specific topics in endocrinology that are relevant to their particular areas of expertise and research interests.

The course will focus primarily on human endocrinology, with some consideration of both animal models in endocrine research and parallels between human medicine and veterinary clinical practice using the expertise available in the Ontario Veterinary College. The lectures
will deal with the investigational methods that are used in endocrine research, the mode of action of hormones, the intracellular signaling pathways of target cells, aspects of hormone synthesis and secretion, and the main regulatory functions of the hormones. The course will emphasize the integrative nature of hormone action in the regulation of processes such as metabolic control, growth and reproduction. Much of basic endocrinology taught in third-year B.Sc. courses treats hormones and their actions individually, as if any given hormone is produced and acts in isolation, independently of other physiological processes. In reality, of course, endocrinology involves considerable “cross talk” between hormonal signaling pathways, so that the actions of different hormones are integrated and coordinated.

The course will not attempt to cover all aspects of the growing field of endocrinology. Rather, it will focus on specific underlying concepts and use examples to illustrate the broader implications of hormonal control of physiological events, including the consideration of how endocrine problems can contribute to many common human/animal disease states. As a fourth-year course, the emphasis is on learning objectives and class activities that test “real world” skills, using many of the same approaches that we use in graduate courses in Biomedical Sciences: group work on the development of presentations based on the scientific literature as well as individual writing assignments.

4. Course Objectives

The overall learning objectives of the University can be found in the University of Guelph calendar (http://www.uoguelph.ca/registrar/calendars/undergraduate/2012-2013/c02/c02-learningobjectives.shtml). The primary learning objective of this course is to gain an appreciation of how the rapid increases in our understanding of endocrinology that have taken place over the last 20-30 years are now gradually being applied in developing new approaches to the management of disease. By the end of the course, students should be able to use their basic knowledge of endocrinology as a foundation for independent research, to develop an understanding of the subject that can be used to inform others, as well as to solve endocrine-related problems. In all the components of the course – the take home assignments, as well as the presentations – the emphasis is on students being able to express themselves individually while exploring their own interests and abilities, rather than following a rigid formula. The only constraint is that there must be a clear link to endocrinology and generally accepted presentation standards/criteria, but within this overall framework there is considerable latitude for students to approach these tasks in the course creatively and flexibly, using whatever approach works best.

5. Course Design
This course will cover all of the major endocrine systems in the body and will emphasize their normal function but will also discuss some pathological conditions. Your lecture materials will be presented via PowerPoint; video clips will also be used in class when appropriate. The slides will be posted; however, students are expected to attend all classes to fill in important information that could be included in examinations and written assignments.

This course also uses the CourseLink for the online component. You can access your lecture materials, sample questions and partial grades through this tool. Note that there is also a Discussion Board that I encourage you to use throughout the semester. There will be announcements and forums posted where you can “Ask Your Professor/TA” specific questions, inquire about “FAQs” that other students might know the answer to and a general “Class Correspondence” where students can arrange study/assignment groups or note exchanges.

6. Recommended Textbooks


The textbook is recommended, BUT NOT REQUIRED. The essential material covered in each lecture will be included in the lecture notes posted to CourseLink, so it should be possible for students to complete the course and do well without purchasing a text book. However, the text book does provide a good, fairly concise and inexpensive (currently around $50 Canadian from Amazon.ca or Chapters) paperback summary of endocrinology (with particular strengths in reproductive endocrinology), which can be useful for both background reading and as a resource if you continue in future to graduate/professional training in endocrinology.

Prior experience has shown that reserve materials were not well used, and therefore no material has been put on reserve. However, the following provides the access numbers for textbooks that might be useful.

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

*Both instructors and TA will strive to respond to e-mail communication within a reasonable period of time, typically within 3 weekdays.

2.1 Instructional Support Team

Instructor: Pawel Bartlewski
Email: pmbart@uoguelph.ca
Telephone: +1-519-824-4120 x53330
Office: OVMX 1677
Office Hours: E-mail for appointment

Instructor and TA

Instructor: Neil MacLusky
Email: nmaclusk@uoguelph.ca
Telephone: +1-519-824-4120 x54073
Office: OVC 1688
Office Hours: Thu 02:00 PM-05:00 PM or e-mail for appointment

Instructor and TA

3 Learning Resources

The textbook is recommended, BUT NOT REQUIRED. The essential material covered in each lecture will be included in the lecture notes posted to CourseLink, so it should be possible for students to complete the course and do well without purchasing a textbook. However, the textbook does provide a good, fairly concise and inexpensive (currently around $50 Canadian from Amazon.ca or Chapters) paperback summary of endocrinology (with particular strengths in reproductive endocrinology), which can be useful for both background reading and as a resource if you continue in future to graduate/professional training in endocrinology.
Prior experience has shown that reserve materials were not well used, and therefore no material has been put on reserve. However, provided below are the access numbers for textbooks that might be useful.

3.1 Recommended Resource(s)


3.2 Additional Resource(s)

[QP 187.T43]

Endocrine Physiology 2000. B Kacsoh (Textbook)
[QP 187.3P49.K33]

Basic and Clinical Endocrinology 2001. FS Greenspan, GJ Strewler (Textbook)
[RC 648.B27.2001]

4 Learning Outcomes

The overall learning objectives of the University can be found in the University of Guelph calendar (http://www.uoguelph.ca/registrar/calendars/undergraduate/2012-2013/c02/c02-learningobjectives.shtml). The primary learning objective of this course is to gain an appreciation of how the rapid increases in our understanding of endocrinology that have taken place over the last 20-30 years are now gradually being applied in developing new approaches to the management of disease. In all the components of the course – the take home assignments, as well as the presentations – the emphasis is on students being able to express themselves individually while exploring their own interests and abilities, rather than following a rigid formula. The only constraint is that there must be a clear link to endocrinology and generally accepted presentation standards/criteria, but within this overall framework there is considerable latitude for students to approach these tasks in the course creatively and flexibly, using whatever approach works best.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Use their basic knowledge of endocrinology as a foundation for independent research.
2. Develop an understanding of the subject that can be used to inform others.

5 Teaching and Learning Activities

This course will cover all of the major endocrine systems in the body and will emphasize their
normal function but will also discuss some pathological conditions. Your lecture materials will be presented via PowerPoint; video clips will also be used in class when appropriate. The slides will be posted; however, students are expected to attend all classes to fill in important information that could be included in examinations and written assignments.

This course also uses the CourseLink for the online component. You can access your lecture materials, sample questions and partial grades through this tool. Note that there is also a Discussion Board that I encourage you to use throughout the semester. There will be announcements and forums posted where you can "Ask Your Professor/TA" specific questions, inquire about "FAQs" that other students might need the answer to (e.g., what lectures does the mid-term cover) and a general "Class Correspondence" where students can arrange study/assignment groups or note exchanges.

### 5.1 Lecture

**Mon, Jan 8**

**Topic(s):** General introduction to the course: scope & goals of the course, evaluation methods, and assignments

**Instructor(s):** NM/PMB

**Wed, Jan 10**

**Topic(s):** Introduction to Endocrine Physiology I

**Instructor(s):** PMB

**Fri, Jan 12**

**Topic(s):** Introduction to Endocrine Physiology II

**Instructor(s):** PMB

**Mon, Jan 15**

**Topic(s):** Organization of the Endocrine System I

**Instructor(s):** PMB

**Wed, Jan 17**

**Topic(s):** Organization of the Endocrine System II

**Instructor(s):** PMB

**Fri, Jan 19**

**Topic(s):** Somatotropic Axis

**Instructor(s):** PMB
Mon, Jan 22

Topic(s): Thyroid Gland I
Instructor(s): PMB

Wed, Jan 24

Topic(s): Thyroid Gland II
Instructor(s): PMB

Fri, Jan 26

Topic(s): Calcium Homeostasis
Instructor(s): PMB

Mon, Jan 29

Topic(s): Adrenal Gland I (Glucocorticoids and Androgens)
Instructor(s): PMB

Wed, Jan 31

Topic(s): Adrenal Gland II (Mineralocorticoids and Catecholamines), Anti-diuretic Hormone and Atrial Natriuretic Peptide
Instructor(s): PMB

Fri, Feb 2

Topic(s): Extragonadal Effects of Sex Steroids
Instructor(s): NM

Mon, Feb 5

Topic(s): Tutorial 1 (written assignments incl. take-home final exam)
Instructor(s): PMB/NM/AM

Wed, Feb 7

Topic(s): Endocrine Pancreas and Major Disorders of Carbohydrate Metabolism I
Instructor(s): PMB

Fri, Feb 9
Topic(s): Endocrine Pancreas and Major Disorders of Carbohydrate Metabolism II
Instructor(s): PMB

Mon, Feb 12

Topic(s): Intestinal Hormones
Instructor(s): NM

Wed, Feb 14

Topic(s): Mid-term review
Instructor(s): PMB

Fri, Feb 16

Topic(s): MID-TERM
Instructor(s): PMB/NM/AM

Mon, Feb 26

Topic(s): Tutorial 2 (oral presentations)
Instructor(s): PMB/NM/AM

Wed, Feb 28

Topic(s): Introduction to Reproductive Physiology and Endocrinology I
Instructor(s): PMB

Fri, Mar 2

Topic(s): Introduction to Reproductive Physiology and Endocrinology II
Instructor(s): PMB

Mon, Mar 5

Topic(s): Introduction to Reproductive Physiology and Endocrinology III
Instructor(s): PMB

Wed, Mar 7
Guest lecture I
Instructor(s): Dr. G. Mastromonaco

Fri, Mar 9

Topic(s): Student presentations I
Instructor(s): PMB/NM/AM

Mon, Mar 12

Topic(s): Student presentations II
Instructor(s): PMB/NM/AM

Wed, Mar 14

Topic(s): Student presentations III
Instructor(s): PMB/NM/AM

Fri, Mar 16

Topic(s): Student presentations IV
Instructor(s): PMB/NM/AM

Mon, Mar 19

Topic(s): Student presentations V
Instructor(s): PMB/NM/AM

Wed, Mar 21

Topic(s): Guest lecture II
Instructor(s): Dr. L. Komer

Fri, Mar 23

Topic(s): Student presentations VI
Instructor(s): PMB/NM/AM

Mon, Mar 26

Topic(s): Student presentations VII
Instructor(s): PMB/NM/AM

Wed, Mar 28
6 Assessments

6.1 Assessment Details

Mid-term (20%)
Date: Fri, Feb 16, 12:30 PM - , 1:20 PM
There will be 40 multiple choice questions (a-e) organized chronologically and covering material from lectures 2 to 12 and 14 to 16. Distribution of questions will be fairly uniform (approximately 4 questions per lecture) and each question will be worth 1 mark. For all questions only one answer will be correct. Four to five questions may involve a diagram, illustration or a schematic. All answers must be transferred to a scantron sheet.

Assignment 1 (15%)
Date: Mon, Mar 12
These assignments are mandatory as they are viewed as essential tools that facilitate your learning and provide you with a continued indication as to your progress and comprehension of the course material. They will employ a take-home, short-essay based format, in which students will be presented with case scenarios (or open ended questions) and required to develop answers (variable length but generally not exceeding 2-3 pages per question, double spaced) using the class notes as a starting point, but also involving reference to the original scientific and clinical endocrine literature (reference lists will not count toward the page limit). For each assignment, students will be required to choose 1 of 3 questions/scenarios. All questions/scenarios will be accessible to the students from the first week of February. The specific formats and evaluation criteria will be discussed using the CourseLink announcements as well as during the tutorial scheduled for February 05, 2018.
Assignment 2 (15%)
**Date:** Sat, Mar 24
These assignments are mandatory as they are viewed as essential tools that facilitate your learning and provide you with a continued indication as to your progress and comprehension of the course material. They will employ a take-home, short-essay based format, in which students will be presented with case scenarios (or open ended questions) and required to develop answers (variable length but generally not exceeding 2-3 pages per question, double spaced) using the class notes as a starting point, but also involving reference to the original scientific and clinical endocrine literature (reference lists will not count toward the page limit). For each assignment, students will be required to choose 1 of 3 questions/scenarios. All questions/scenarios will be accessible to the students from the first week of February. The specific formats and evaluation criteria will be discussed using the CourseLink announcements as well as during the tutorial scheduled for February 05, 2018.

Oral Presentations (15%)
**Date:** Fri, Mar 9 - Wed, Apr 4
12:30 PM-01:20 PM

The groups of students (preferably 5 students per group) are to develop a short oral slide presentation (~15 minutes, leaving 3-5 minutes for questions), to be given in class, at which time you will be expected to outline your topic and answer questions from the instructor, TA and fellow students. The schedule for the presentations is somewhat flexible, so that if students have specific days on which they cannot present, or conversely a specific date on which they would prefer to present, this can be communicated to the course coordinator and every attempt will be made to arrange the schedule accordingly. However, the constraints of the schedule do of course mean that it may not be possible to accommodate all requests (not everyone can choose to present on the last day of classes!). Therefore, if there are specific dates in the student presentation schedule on which your group cannot present, let the course TA know as soon as possible.

A list of presentation topics will be posted on the course website by the end of January. This year, the topics of oral presentations will be directly related to the theme “Hormones and reproduction”. Please review the topics and make first and second choices, which should be communicated to the course coordinator/TA via e-mail (along with the names of the group participants and any preferences regarding presentation dates; see below). Students are encouraged to choose their own team members early in the course. Discussion and message sections will be available on the CourseLink to allow people to contact one another and coordinate setting up groups for the presentations. If students are not able to find a group to work with, they will be assigned to groups by the course coordinator. More detailed instructions and guidelines for the preparation of oral presentations will be posted to the CourseLink and discussed during the tutorial on February 26, 2017.

As far as possible, students will be assigned their first choice of topic, but some flexibility in this would be appreciated – obviously, we don’t want multiple groups all presenting the same subject. All topics can initially be developed based on course lecture materials, but in this case it is expected and necessary that the presentation will include information based on your own research that goes beyond what has been presented in the lectures. There are
many current issues in reproductive endocrinology that have achieved considerable public attention in recent years, many of them controversial, and presentations based on such issues can be both effective and of real interest to the rest of the class. Presentations can either be based on an in depth summary and evaluation of a single source (e.g., textbook or review article) or they can review a specific area of research, covering more than one specific source – the only limitation is that whatever you present, it must be possible to summarize it in a presentation that does not extend much beyond 15 minutes, so that there is time for discussion within the 20-25 minutes available for each group. As a general rule, the most effective presentations are those based on a genuine interest in the subject by the group participants, so choose something that interests you!

Once your choices have been made and approved, you will be expected to work as a team to prepare a PowerPoint presentation on the assigned topic. You can ask the faculty or the course TA for assistance in developing it: examples from previous years of the course and from other courses will be posted. In order for each group to have approximately the same time to prepare their presentations, each team will be informed about the specific presentation date exactly 3 weeks in advance.

The presentation file(s) must be submitted electronically to the course coordinator/TA at least 3 days before your presentation is scheduled, so that they can be distributed to the rest of the class for other students to be able to review the slides before the in-class presentation.

All members of the team must be in class for the presentations. Team members who are absent will be assigned a grade of zero for this component of the course, unless they are able to provide documentation of personal or medical problems that preclude attendance. The course instructors will review the presentations, and ask pertinent questions of each team. Other students in the class will also be encouraged to ask questions and engage in discussion of the subject presented. To assist the course instructors in making a final assessment, the course instructors will retain electronic copies of each presentation, for review.

**Evaluations (5%)**

**Date:** Fri, Mar 9 - Wed, Apr 4
12:30 PM-01:20 PM

Each student will also be required to evaluate the PowerPoint presentations from the other student groups. Students are not expected to attend all presentations by every other student group, although this is highly desirable for the reasons indicated above. However, all students will be obliged to submit evaluations of at least 16 of the other group presentations including at least one presentation scheduled for the second last or a final day of in-class oral presentations.

**Final Take-home Exam (30%)**

**Date:** Sat, Apr 14
The final assignment will include a plethora of different formats and topics to choose form, some of them following the same format as the intra-term assignments, others resembling a scientific paper (e.g., mini-review) or containing more specific questions. Students will
have at least three weeks from the date on which the final is posted to the Courselink to complete the assignment and submit it. Each student will have to choose one question covering various aspects of reproductive or non-reproductive endocrine physiology.

7 Course Statements

7.1 Missed Examinations and/or Assignments

If any intra-term assignment deadline, a mid-term examinations or a final examination deadline are missed, proper documentation must be provided to the course coordinator (mid-term and assignments) or to your program counselor (final exam). An alternate mid-term will be scheduled or deadline extension granted to all individuals who provide proper documentation. Please e-mail your course instructor or TA ASAP, ideally within 24 hours of the examination date/assignment deadline to inform him of your absence. At the latest, the course coordinator must be informed of the situation and adequate documentation submitted within a week after the exam or following the date when the assignment is due. Failure to comply with this request in a timely manner will result in a 0% mark for the examination or assignment.

7.2 Academic Misconduct

Although the course is based in part on group assignments and there is nothing wrong with doing research in groups on the assignment questions, the written reports MUST be your own, individual work. It is completely inadmissible to submit someone else’s written work under your own name. For this reason, in the oral in-class presentations as well as in the take-home assignments, if you cite statements or results from other people, you must indicate the original source and cite it in your reference list.

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
8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for course registration are available in the Undergraduate and Graduate 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

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.

More information can be found on the SAS website
https://www.uoguelph.ca/sas

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