



School of Medicine  
and Public Health  
UNIVERSITY OF WISCONSIN-MADISON

## *Medicine 720*

### Endocrinology and Metabolism

**Credits:** 2

**Canvas Course URL:** <https://canvas.wisc.edu/courses/141823>

**Meeting Time and Location:** 2:30 pm - 4:30 pm, Tuesday; 1202 HSLC, 750 Highland Avenue

**Instructional Mode:** This course is conducted face-to-face and does not involve any blended learning.

**Specify how Credit Hours are met by the Course: Option A** - Class will meet for one two-hour session per week over the semester, and carries the expectation that students will work on course learning activities (reading papers, watching course videos when applicable, studying, exams) outside of normal classroom meeting. In total, students are expected to spend about 4 hours per week on activities outside of the classroom.

#### **INSTRUCTORS AND TEACHING ASSISTANTS**

##### **Course Directors**

Dudley Lamming, Assistant Professor of Medicine (Endocrinology)

[dlamming@medicine.wisc.edu](mailto:dlamming@medicine.wisc.edu), C3127/151 Veterans Administration Hospital, 2500 Overlook Terrace (office hours available upon request)

Matthew Merrins, Assistant Professor of Medicine (Endocrinology)

[mmerrins@medicine.wisc.edu](mailto:mmerrins@medicine.wisc.edu), UW Medical Foundation Centennial Bldg, 1685 Highland Avenue (office hours available upon request)

This course is team-taught by lecturers with expertise in each given subject area. Consistent with the endocrinology theme of this course, at least half of the instructors are from the Department of Medicine. Specific instructors for 2019 are listed in the course meeting table below.

**Instructor/s Availability:** Course directors will regularly attend class meetings to ensure course objectives are met and student performance is evaluated consistently. Office hours are available upon request. Course directors and instructors will have direct student contact throughout this course.

#### **COURSE DESCRIPTION**

Designed to provide students with a broad grounding in endocrinology and metabolism at the graduate level, with an emphasis on human and human-related disorders wherever possible. This course complements Reproductive Endocrine Physiology - OBS&GYN 710. Explores further the physiological and molecular mechanisms by which the endocrine regulation of metabolism acts to preserve mammalian health, and how dysfunction in these mechanisms leads to disease, with an emphasis on diabetes, obesity and hypertension. Lectures are accompanied by instructor-assigned reading consisting of landmark papers and recent findings.

**Requisites:** Graduate/Professional Standing

### Learning Activities/Course Hours

#### General format:

- Faculty/Lab sessions 1 2-hour class per week (~28 hours)
- Independent reading, on-line learning modules (e.g., Enduring Learning Objects, “ELOs”), paper critiques and take home exams 4 hours per week (~56 hours)

Sample Class Schedule: Note this is an ongoing course; the schedule may change during the semester.

Week	Date	Topic	Instructor
1	January 22, 2019	Introduction, History of Endocrinology	Lamming
<b>Module on Obesity, Diabetes, Insulin Resistance and Related Disorders</b>			
2	January 29, 2019	$\beta$ -cell biology and diabetes	de Souza
3	February 5, 2019	Metabolism of obesity and satiety	Davis
4	February 12, 2019	Insulin signaling & insulin resistance	Lamming
5	February 19, 2019	mTor & Regulatory Nodes	Lamming
6	February 26, 2019	Aging and metabolic disease	Lamming
7	March 5, 2019	Regulation of host metabolism by the gut microbiome	Cross
<b>Exam 1</b> (take home, due March 7)			
<b>Module on Cardiovascular and Lipid biology</b>			
8	March 12, 2019	Alzheimer's and other degenerative diseases	Anderson
March 19, 2019 Spring Break – No Class			
9	March 26, 2019	Glycerolipid/Free Fatty Acid cycle; hormonal regulation of lipolysis; lipid droplet biology	Merrins
10	April 2, 2019	Organismal Lipid and Cholesterol Metabolism	Parks
11	April 9, 2019	Cold exposure and thermogenesis	Merrins
<b>Module on Adrenal, Kidney, and Thyroid (Renin-Angiotensin and Cortisol) and Cancer</b>			
12	April 16, 2019	Regulation of metabolism by the thyroid	Long
13	April 23, 2016	Metabolic regulation by adrenal and kidney hormones	Karaman
14	April 30, 2016	Cancer Metabolism	Cantor
<b>Exam 2</b> (take home, due May 2)			

#### Instructors

Rozalyn Anderson, Associate Professor of Medicine (Geriatrics)

Jason Cantor, Assistant Professor of Biochemistry

Tzu-Wen L Cross, Postdoctoral Trainee, Cardiovascular Research Center

Dawn Davis, Associate Professor of Medicine (Endocrinology)

Arnaldo de Souza, Research Associate, Medicine (Endocrinology)

Rowan Karaman, Clinical Instructor of Medicine (Endocrinology)

Dudley Lamming, Assistant Professor of Medicine (Endocrinology)

Matthew Merrins, Assistant Professor of Medicine (Endocrinology)

Brian Parks, Assistant Professor of Nutrition

Federico Rey, Assistant Professor of Microbiology

## COURSE LEARNING OUTCOMES

1. Develop knowledge of how endocrinology and metabolism act to promote health at the physiological and molecular level, with an emphasis on humans wherever possible.
2. Learn common mechanisms by which endocrine and metabolic dysfunction contribute to the pathophysiology of disease, including diabetes, obesity, and hypertension.
3. Develop knowledge of cutting-edge research findings and common approaches to developing new treatments for metabolic disease and endocrine disorders.
4. Evaluate primary research articles and demonstrate critical reasoning with regards to methods and conclusions.
5. Demonstrate critical thinking with regards to course material through in-class interactive discussion with peers and faculty.
6. Integrate instruction material and personally-researched scientific texts to formulate individual thoughts on topics not directly covered in lecture.

This is consistent with Endocrinology and Reproductive Physiology (ERP) Program outcomes in that, by graduation, ERP students are expected to thoroughly understand endocrine systems and reproductive physiology from the whole animal level down to the subcellular signaling proteins and pathways responsible for physiological outcomes. This course focuses primarily on whole animal/human endocrinology and organ systems regulating adult human health. Basic concepts of cell biology and biochemistry are also covered as a precursor to advanced topics courses to be taken later in the course of graduate study in ERP. This course bridges basic science with clinical outcomes and exposes students to adult endocrine pathologies as well as case studies for real-world applications of course material.

## GRADING

Grades are assigned based on the following scale:

Participation	25%
Completion of Group Exercises	25%
First exam	25%
Second exam	<u>25%</u>
	100%

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**Participation.** Students are required to actively participate throughout the semester. Students are expected to ask clarifying questions, probe scientific implications and contributions, help make connections between topics, and provide thoughtful analyses of reading assignments. Outstanding participants will always achieve these benchmarks; a good contributor will usually achieve these benchmarks; an adequate contributor will sometimes achieve these benchmarks; an unsatisfactory participant rarely achieves these benchmarks.

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**In-Class Group Exercises.** Some instructors will ask students to complete group exercises in-class; these exercises will be graded. Exercises will consist of long-format questions designed to apply the knowledge gained during the immediately preceding lecture (and in any readings or videos assigned for that lecture). Students may access any course material while completing the exercise, including notes, textbooks, readings, and videos; and it is expected that students may discuss their thoughts, answers, and approaches with other students as well as the instructor while completing the exercises. Sample in-class exercise grading key attached.

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**Take-Home Exams.** There will be two take-home, non-cumulative, open book, and open note exams during the semester; access to electronic devices will not be permitted. Make-up exams will be permitted in case of documented illness or if the permission of the course director is secured in advance.

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There is no graded homework; however, reading papers assigned by the instructor and preparation of manuscript critiques as directed will be essential.

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This course is graded on the A-F grading scale.

A: 90%-100%

A/B: 85%-89%

B: 75%-84%

B/C: 70%-74%

C: 57%-69%

D: 45%-56%

F: 0-44%

Criteria for grading participation:

Outstanding contributor (Full 25% of grade)

Contributions reflect exceptional preparation. Ideas offered are always substantive, providing one of more major insights, as well as direction for the class. Challenges are well substantiated and persuasively presented. If this person were not a member of the class, the quality of discussion would be markedly diminished



Good contributor (20%)

Contributions in class reflect thorough preparation. Ideas offered are usually substantive; provide good insights and sometimes direction for the class. Challenges are well substantiated and often persuasive. If this person were not a member of the class, the quality of discussion would be diminished.



Adequate contributor (15%)

Contributions in class reflect satisfactory preparation. Ideas offered are sometimes substantive; provide generally useful insights but seldom offer a new direction for the discussion. Challenges are sometimes presented, fairly well substantiated, and are sometimes persuasive. If this person were not a member of the class, the quality of discussion would be diminished somewhat.



Unsatisfactory Contributor (10%)

Contributions in class reflect inadequate preparation. Ideas offered are seldom substantive; provide few if any insights and never a constructive direction for the class. Integrative comments and effective challenges are absent.



Non-participant (0%)

This person says little or nothing in class. Hence, there is not an adequate basis for evaluation.

## **REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS**

This course is taught by many contributors with different areas of endocrinology and metabolism research. Individual instructors are responsible for providing relevant readings or other material in advance of the course. These readings will be made available to students free of charge and will be available through Canvas. There is no recommended textbook. As this is a graduate course, knowledge gained from other, scientifically relevant classes should provide a broad basis for understanding of the topics.

## **RULES, RIGHTS & RESPONSIBILITIES**

- See the Guide's [Rules, Rights and Responsibilities](#)

## **ACADEMIC INTEGRITY**

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to [studentconduct.wiscweb.wisc.edu/academic-integrity/](http://studentconduct.wiscweb.wisc.edu/academic-integrity/).

## **ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES**

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

## **DIVERSITY & INCLUSION**

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.