

Syllabus

OBS&GYN710: Reproductive Endocrine Physiology (001) FA24

Credits: 3

Meeting Time and Location: 3:30pm-4:30pm, MWF. CSC H4/670.

Instructional Mode: This course is conducted synchronously, in person.

How this course meets the credit hour policy standard: Option A - Class will meet for 3 hours per week over the semester, with required reading for each lecture. Exams will take place outside of normal virtual classroom meeting. In total, students are expected to spend 6-8 hours per week on activities outside the classroom.

Course Designations and Attributes: Graduate Standing Only. Grad 50%.

INSTRUCTORS AND TEACHING ASSISTANTS

Course Director:

Manish Patankar, PhD, Vice Chair of Research of Obstetrics and Gynecology

patankar@wisc.edu, 600 Highland Ave, CSC / H4 654 (office hours available upon request)

This course is team-taught by lecturers with expertise in each given subject area. Consistent with the reproductive theme of this course, at least half of the instructors are from the OBGYN department; additional instructors are Endocrinology and Reproductive Physiology graduate training program faculty. Specific instructors for 2023 are listed in the course meeting table below.

Instructor/s Availability: Instructors will have direct student contact throughout this course. Office hours are available upon request.

COURSE DESCRIPTION

Designed to provide students with a broad grounding in reproductive endocrine physiology at the graduate level, with an emphasis on human and human reproductive health wherever possible. Encompasses an overview of fundamental concepts in endocrinology, the hypothalamic-pituitary axis, steroidogenesis, early embryonic development, pregnancy and maternal-fetal adaptations, and pathologies associated with endocrine disruption and dysregulation. Provides more focus on pathologic pregnancies because such pregnancies lead to a higher risk of adult onset diseases including hypertension, obesity, and metabolic syndrome. By covering pregnancy and pathologic pregnancy in detail, this course complements Endocrine and Reproductive Physiology Program training in endocrinology and metabolism. Lectures are accompanied by instructor-assigned reading consisting of landmark papers and recent findings, provided before each lecture to guide in-class discussion of presented materials.

Requisites: Graduate/Professional standing, or consent of instructor.

Learning Activities/Course Hours

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

Lecture Number	Date	Topic	Faculty	Location	Time
Module 1: Fundamental concepts in Endocrinology I					
1	September 4, 2024	Course Introduction. Fundamental concepts in Endocrinology I	Patankar	CSC H4/670	3:30 pm - 4:30pm
2	September 6, 2024	Fundamental concepts in Endocrinology II	Patankar	CSC H4/670	3:30 pm - 4:30pm
3	September 9, 2024	Fundamental concepts in Endocrinology III	Patankar	CSC H4/670	3:30 pm - 4:30pm
4	September 11, 2024	Control of Cell/ Zone Specific Steroid Synthesis in Adrenal and Ovary	Bird	CSC H4/670	3:30 pm - 4:30pm
5	September 13, 2024	Hypothalamus/Pituitary I	Levine	CSC H4/670	3:30 pm - 4:30pm
6	September 16, 2024	Hypothalamus/Pituitary II	Levine	CSC H4/670	3:30 pm - 4:30pm
7	September 18, 2024	Hypothalamus/Pituitary III	Levine	CSC H4/670	3:30 pm - 4:30pm
8	September 20, 2024	Renin/A2/Aldosterone	Kumar	CSC H4/670	3:30 pm - 4:30pm
9	September 23, 2024	Exam I			3:30 pm - 7:30pm
Module 2: Fundamental concepts in Endocrinology II					
10	September 25, 2024	Ovarian Cycle I	Wiltbank	CSC H4/670	3:30 pm - 4:30pm

11	September 27, 2024	Ovarian Cycle II	Wiltbank	CSC H4/670	3:30 pm - 4:30pm
12	September 30, 2024	Ovarian Cycle III	Wiltbank	CSC H4/670	3:30 pm - 4:30pm
13	October 2, 2024	Ovarian Cycle IV	Wiltbank	CSC H4/670	3:30 pm - 4:30pm
14	October 4, 2024	Gonadal development	Zhao	CSC H4/670	3:30 pm - 4:30pm
15	October 7, 2024	Testicular Function	Zhao	CSC H4/670	3:30 pm - 4:30pm
16	October 9, 2024	Organogenesis of Prostate	Vezina	CSC H4/670	3:30 pm - 4:30pm
17	October 11, 2024	Hormonal regulation of early embryonic growth and development-I	Atwood	CSC H4/670	3:30 pm - 4:30pm
18	October 14, 2024	Hormonal regulation of early embryonic growth and development-II	Atwood	CSC H4/670	3:30 pm - 4:30pm
19	October 16, 2024	Exam II			3:30 pm - 7:30pm

Module 3: Pregnancy and Maternal-fetal adaptations

20	October 18, 2024	Pregnancy I and II (Embryogenesis and Implantation)	Zheng	CSC H4/670	3:30 pm - 4:30pm
21	October 21, 2024	Pregnancy I and II (Embryogenesis and Implantation)	Zheng	CSC H4/670	3:30 pm - 4:30pm
22	October 23, 2024	Pregnancy III Hormonal Changes During Pregnancy	Zheng	CSC H4/670	3:30 pm - 4:30pm
23	October 25, 2024	Open Date- Happy Homecoming Weekend!			3:30 pm - 4:30pm

24	October 28, 2024	Pregnancy IV and V Maternal Recognition of Pregnancy	Stanic-Kostic	CSC H4/670	3:30 pm - 5:30pm
25	October 30, 2024	Pregnancy VI Maternal Adaptation to Pregnancy	Zheng	CSC H4/670	3:30 pm - 4:30pm
26	November 1, 2024	Pregnancy VII Maternal Adaptation to Pregnancy	Zheng	CSC H4/670	3:30 pm - 4:30pm
27	November 4, 2024	Pregnancy VIII Uterine Quiescence and Parturition	Zheng	CSC H4/670	3:30 pm - 4:30pm
28	November 6, 2024	Pregnancy IX Lactation	Hernandez	CSC H4/670	3:30 pm - 4:30pm
29	November 8, 2024	Low Birth weight: Barker Hypothesis and adult consequences, Diet and Imprinting of fetus.	Boeldt	CSC H4/670	3:30 pm - 4:30pm
30	November 11, 2024	Low Birth weight: Barker Hypothesis and adult consequences, Diet and Imprinting of fetus.	Boeldt	CSC H4/670	3:30 pm - 4:30pm
31	November 13, 2024	Exam III			3:30 pm - 7:30pm
Module 4: Pathology associated with Endocrine disruption/dysregulation					
32	November 15, 2024	Pathophysiology of preeclampsia	Patankar	CSC H4/670	3:30 pm - 4:30pm
33	November 18, 2024	Endocrinology and Cancer	Patankar	CSC H4/670	3:30 pm - 4:30pm
34	November 20, 2024	Diabetes in Pregnancy	Hoppe	CSC H4/670	3:30 pm - 4:30pm
35	November 22, 2024	PCOS	Cooney	CSC H4/670	3:30 pm-4:30 pm
36	November 25, 2024	Endocrine Disrupters	Virumbrales-Munoz	CSC H4/670	3:30 pm - 4:30pm

37	November 27, 2024	Thanksgiving Break			
38	December 2, 2024	Hormone Therapy	Cooney	CSC H4/670	3:30 pm - 4:30pm
39	December 4, 2024	Infertility and Ovulation Induction	Cooney	CSC H4/670	3:30 pm - 4:30pm
40	December 6, 2024	Assisted Reproduction/IVF	Beyhan	CSC H4/670	3:30 pm - 4:30pm
41	December 9, 2024	Thyroid in Reproduction	Adams	CSC H4/670	3:30 pm - 4:30pm
42	December 11, 2024	Bioengineering and Endocrinology	Virumbrales-Munoz	CSC H4/670	3:30 pm - 4:30pm
	TBD	Exam IV			3:30 pm - 7:30pm

COURSE LEARNING OUTCOMES

1. Recall and summarize fundamental concepts in reproductive endocrinology and physiology, with an emphasis on human and human reproductive health.
2. Gain insights into clinical perspectives of pathologies associated with reproductive endocrinology and physiology. Integrate fundamental concepts with clinical perspectives and apply to case studies.
3. Evaluate primary research articles and demonstrate critical reasoning with regards to methods and conclusions.
4. Demonstrate critical thinking with regards to course material through in-class interactive discussion with peers and faculty.
5. 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 reproduction and pregnancy. 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 endocrine pathologies as well as case studies for real-world applications of course material.

GRADING

Grades are assigned based on the following criteria:

Exam 1:	20%
Exam 2:	20%
Exam 3:	20%
Exam 4:	20%
Participation:	<u>20%</u>
	100%

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. Classes devoted to case studies will be highly dependent on student participation and students should be ready to carry the conversation for longer periods of time. Outstanding participants will always do 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.

Exams. Examination will consist of one in class exam for each module (non-cumulative). Students may utilize any resources at their disposal in order to construct their answers. Answers will be graded with this in mind and sufficiently researched and in-depth answers with originally constructed ideas will be expected as a result. Each exam will consist of 1-2 essay questions per lecture/topic and students will be expected to answer a set of questions over a 4 hours take home exam session. Answers for each question will be graded by the instructor of that lecture and returned within 1-2 weeks.

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: 60%-69%

C/D: 55%-59%

D: 45%-54%

F: 0-44%

REQUIRED READING & RECOMMENDED TEXTS

There is no assigned textbook. This is a group-taught course, involving many instructors who will assign readings specific to their lecture material. Because this course is taught at a graduate level on topics under intense current research, we encourage lecturers to provide both historically important reading materials in addition to current cutting edge research. These readings will be made available to students free of charge.

It is also expected that students will seek out further primary source readings which will be cited in their exam answers. Reading materials provided by the instructors will serve as a blueprint for the type of sources that should be independently researched.

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/.

ACCOMODATIONS FOR STUDENS 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 AND 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.