"Systems Biology of Reproduction"

Spring 2022 (Even Years) – Course Syllabus
BIOL 475/575 Level Undergraduate/Graduate (3 Credit)
SLN: (475) – 05504, (575) – 05505
Time - Tuesday and Thursday 10:35 am-11:50 am
Course Lectures in person and and on Canvas/Panopto and Discussion Sessions in person and on WSU Zoom for all campuses
Room – CUE 418
Course Director – Michael Skinner, Abelson Hall 507, 335-1524, skinner@wsu.edu
Co-Instructor – Eric Nilsson, Abelson Hall 507, 225-1835, nilsson@wsu.edu
Learning Objective -
Current literature based course on the Systems Biology of Reproduction. Learning Systems approaches to the biology of reproduction from a molecular to physiological level of understanding.
Schedule/Lecture Outline –

January	11 & 13	Week 1	Systems Biology Introduction
	18 & 20	Week 2	Molecular/ Cellular/ Reproduction Systems
	25 & 27	Week 3	Sex Determination Systems
February	1 & 3	Week 4	Male Reproductive Tract Development & Function
	8 & 10	Week 5	Female Reproductive Tract Development & Function
	15 & 17	Week 6	Gonadal Developmental Systems Biology
	22 & 24	Week 7	Testis Systems Biology
March	1 & 3	Week 8	Ovary Systems Biology
	8 & 10	Week 9	Epigenetics and Transgenerational Gonadal Disease
	14 – 18	**Week 10**	**Spring Break**
	22 & 24	Week 11	Gametogenesis/ Stem Cells/ Cloning
	29 & 31	Week 12	Hypothalamus-Pituitary Development & Function
April	5 & 7	Week 13	Reproductive Endocrinology Systems
	12 & 14	Week 14	Fertilization & Implantation Systems
	19 & 21	Week 15	Fetal Development & Birth Systems
	26 & 28	Week 16	Assisted Reproduction/Contraception
May	3 & 5	Week 17	Exam or Grant Review

Instruction Format –

- One 1.5 hour overview/lecture per week (In person and Panopto Recording)
- One 1.5 hour literature review presentations/discussion session per week (In person and Live and Zoom session Thursdays 10:30-Noon)

Course Requirements –

1. Attendance
2. Participation in literature and discussion sessions

Graduate Students:

3. Grant Proposal (12 page limit) due week 16
4. Student Grant Review session week 17

Undergraduate Students:

3. Two take home exams (weeks 9 & 17)

Late Work is discouraged but can be arranged if notified ahead of time for uncontrolled circumstances, such as health issues.

Grading Policy –

- Both in class attendance (10%) and discussion participation (25%) and (graduate students) the proposal (65%) or (undergraduate students) exams (65%) will be factors considered.
- Grading scale A(90%), B(80%), C(70%), D(60%), F(<60%)

References and Textbooks –

- Reading literature and references provided one week prior to session
- No required textbook (suggested reading provided from selected literature and review articles)

Conjoint Course Requirements –

1) Undergraduate –
    1) Attendance (10%)
    2) Participation and presentation in literature and discussion session (25%)
    3) 2 exams (Midterm and Final), tested on lectured material (65%)

2) Graduate –
    1) Attendance (10%)
    2) Participation and presentation in literature and discussion session (25%)
    3) Grant proposal (12 page limit) and Grant review session participation (65%)

3) Same lecture and literature discussion session for both 475 and 575 level students.

4) Same discussion session for both 475 and 575 level students.

The 475 and 575 students present specific literature (provided by instructor) overviews and leading discussion on that literature with questions provided by instructor to facilitate.

The 475 and 575 students participating in discussion and are provided selected questions regarding the literature reviewed to answer during class and hand back after class.

5) Students may receive credit in only one component of the conjoint listed course.

SBS 475 level Systems Biology of Reproduction 3 (Spring even Years). Pre req Biol 301 or instructor approval. Current literature based course on the systems biology of reproduction that will involve a molecular to physiological level of understanding of mammalian reproduction. Credit not granted for both 475 and 575.

SBS 575 level Systems Biology of Reproduction 3 (Spring even Years) Current literature based course on the systems biology of reproduction that will involve a molecular to physiological level of understanding of mammalian reproduction. Credit not granted for both 475 and 575.

Graduate Students

Grant Proposal

Outline:

- Title
- Abstract
- Specific Aims Page
- Background
- Preliminary Results
- Experimental Design and Methods (Approach)
- References (not part 12 pages)

(12 page maximum single-spaced typed limit)

Key Points:

- Specific aims should be focused, concise and investigate hypothesis
- Be as concise and direct as possible
- Work significance of proposal into grant when appropriate
- Use only critical preliminary results (literature derived results fine)

Additional Information:

- Propose short-range studies to address long-range goals
- Write grant for 3 to 4 year period to complete studies
- Feasibility of success is critical, ask right type of question
- Experimental design needs to address hypothesis

Score/Rating:

Factors involved: Type question addressed, organization of thoughts, preliminary results, feasibility, reasonable completion expectations, focus of aims and proposed studies.

Score		
1.0 - 1.5	**Outstanding**	Funded
1.5 - 2.0	**Excellent**	Probably Funded
2.0 - 2.5	**Good**	Accepted, but not Funded
2.5 - 3.0	**Satisfactory**	
3.0 - 3.5	**Adequate**	
3.5 - 4.0	**Fair**	
4.0 - 5.0	**Acceptable**	

Review:

NIH Study Section style review with all students/fellows participating in the review. Primary and secondary reviewers will be selected and all grants will be critiqued.

Note:

Welcome to use opportunity to prepare grants for student orals or fellowship applications.

SBS Student Learning Outcomes
The School of Biological Sciences has adopted a standardized set of learning outcomes for our courses. We expect each undergraduate student who has a major in Biology or Zoology to have achieved the following outcomes at the time they graduate with a B.S. from our program:

1. Understand and explain major biological concepts.
2. Use critical thinking and scientific skills to analyze and solve problems.
3. Effectively communicate biological problems and solutions to both the scientific community and the public at large in writing and in discussion.
4. Formulate logical hypotheses and test them by designing and running appropriate experiments or observational studies and analyses.
5. Identify the central body of knowledge in biology or zoology (including knowledge from molecular biology, genetics, evolution, ecology and organismal biology,).
6. Use scientific literacy and knowledge of biology or zoology to analyze contemporary social, cultural, and environmental issues and contribute to informed opinion.

Students with Disabilities
Reasonable accommodations are available for students with documented disabilities or chronic medical conditions. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center at Washington Building 217; Phone: 509-335-3417 to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist on your home campus.

Pullman or WSU Online: 509-335-3417 http://accesscenter.wsu.edu, Access.Center@wsu.edu

Academic Integrity
Academic integrity is the cornerstone of higher education. As such, all members of the university community share responsibility for maintaining and promoting the principles of integrity in all activities, including academic integrity and honest scholarship. Academic integrity will be strongly enforced in this course. Students who violate WSU's Academic Integrity Policy (identified in Washington Administrative Code (WAC) 504-26-010(3) and -404) will receive [insert academic sanction (e.g., fail the course, fail the assignment, etc.)], will not have the option to withdraw from the course pending an appeal, and will be reported to the Office of Student Conduct.

Cheating includes, but is not limited to, plagiarism and unauthorized collaboration as defined in the Standards of Conduct for Students, WAC 504-26-010(3). You need to read and understand all of the definitions of cheating. If you have any questions about what is and is not allowed in this course, you should ask course instructors before proceeding.

If you wish to appeal a faculty member's decision relating to academic integrity, please use the form available at conduct.wsu.edu.

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Campus safety and Emergency Notification
Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "Alert, Assess, Act," protocol for all types of emergencies and the "Run, Hide, Fight" response for an active shooter incident. Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT in the most appropriate way to assure your own safety (and the safety of others if you are able).
Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's Run, Hide, Fight video and visit the WSU safety portal.

COVID-19 Statement: Students are expected to abide by all current COVID-19 related university policies and public health directives, which could include wearing a cloth face covering, physically distancing, self-attestations, and sanitizing common use spaces. All current COVID-19 related university policies and public health directives are located at https://wsu.edu/covid-19/. Students who do not comply with these directives may be required to leave the classroom; in egregious or repetitive cases, students may be referred to the Center for Community Standards for university disciplinary action.