"Systems Biology of Reproduction"

Spring 2020 (Even Years) – Course Syllabus
BIOL 475/575 Level Undergraduate/Graduate (3 Credit)
SLN: (475) – 06061, (575) – 06062
Time - Tuesday and Thursday 10:35 am-11:50 am
(Course Lectures on Blackboard/Panopto and Discussion Sessions 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	14 & 16	Week 1	Systems Biology Introduction
	21 & 23	Week 2	Molecular/ Cellular/ Reproduction Systems
	28 & 30	Week 3	Sex Determination Systems
February	4 & 6	Week 4	Male Reproductive Tract Development & Function
	11 & 13	Week 5	Female Reproductive Tract Development & Function
	18 & 20	Week 6	Gonadal Developmental Systems Biology
	25 & 27	Week 7	Testis Systems Biology
March	3 & 5	Week 8	Ovary Systems Biology
	10 & 12	Week 9	Epigenetics and Transgenerational Gonadal Disease
	16 – 20	**Week 10**	**Spring Break**
	24 & 26	Week 11	Gametogenesis/ Stem Cells/ Cloning
	31 & 2	Week 12	Hypothalamus-Pituitary Development & Function
April	7 & 9	Week 13	Reproductive Endocrinology Systems
	14 & 16	Week 14	Fertilization & Implantation Systems
	21 & 23	Week 15	Fetal Development & Birth Systems
	28 & 30	Week 16	Assisted Reproduction/Contraception
May	5 & 7	Week 17	Exam or Grant Review

Instruction Format –

- One 1.5 hour overview/lecture per week
- One 1.5 hour literature review/discussion session per week

Course Requirements –

1. Attendance
2. Participation in literature and discussion sessions

Graduate Students:

3. Grant Proposal (12 page limit) due week of April 28
4. Student Grant Review session on May 5

Undergraduate Students:

3. Two Exams

Grading Policy –

- Both in class participation (10%) and discussion participation (15%) (undergraduate) the presentation (25%) the exams (50%) or (graduate) the in class participation (10%) and discussion presentations (15%) proposal (50%) 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 books and review articles)
- Class website: https://skinner.wsu.edu/2020-biol-475-575-systems-biology-of-reproduction/

Conjoint Course Requirements –

1) Undergraduate –
    1) Attendance (10%)
    2) Participation and presentation in literature and discussion session (40%)
    3) 2 exams (Midterm and Final), tested on lectured material (50%)

2) Graduate –
    1) Attendance (10%)
    2) Participation and presentation in literature and discussion session (40%)
    3) Grant proposal (12 page limit) and Grant review session participation (50%)

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 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

Reasonable Religious Accommodation

Washington State University reasonably accommodates absences allowing for students to take holidays for reasons of faith or conscience or organized religious activities conducted under the auspices of a religious denomination, church, or religious organization. Reasonable accommodation requires the student to coordinate with the instructor on scheduling examinations or other activities necessary for course completion. Students requesting accommodation must provide written notification within the first two weeks of the beginning of the course and include specific dates for absences. Approved accommodations for absences will not adversely impact student grades. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. Students who feel they have been treated unfairly in terms of this accommodation may refer to Academic Regulation 104 - Academic Complaint Procedures."

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.

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.