

## **Reproductive and Developmental Toxicology**

**11:067:491:01 (3 cr); Fall 2017**

**Tu/Th 3:55-5:15 pm, Foran 138A**

**INSTRUCTORS:** Office hours are by appointment. It is best to contact me in class or by email. Dr. Troy Roepke; Bartlett 301-A; 848-932-9454; ta.roepke@rutgers.edu

**COURSE DESCRIPTION:** Application of toxicological principles in reproductive studies and instruction on the effects of toxicants on male and female reproduction, and on the developing embryo/fetus. Critical evaluation of reproductive toxicity studies and development of mechanistic approaches to understanding how chemical exposure can adversely affect reproduction.

### **LEARNING GOALS:**

- Acquire basic knowledge of reproductive and developmental actions of toxicants
- Apply standard exposure models and risk assessments to assess the effects of toxicants
- Engage critical thinking to evaluate the literature and generate a hypothesis for oral presentation

**PHILOSOPHY:** In this course, you will be presented with principles of reproduction and development and how environmental contaminants can impact the normal functions of both. The emphasis here will be on the cellular and physiological mechanisms and pathways that are impacted by toxicants on model species (rodents, etc.), wildlife and human populations. The information will also address the various problems surrounding experimental design, dosage, application and assessment.

**REQUIRED TEXTS:** *Essential Reproduction* (Sixth Edition). Martin H. Johnson\* and *Ecological Developmental Biology: Integrating Epigenetics, Medicine and Evolution*, Scott F. Gilbert & David Epel. Other selected reading from various texts will be provided via online course website. \* not necessary if you have *Pathways to Pregnancy & Parturition* (Animal Reproduction Text).

**COURSE WEBSITE:** To access go to URL: [sakai.rutgers.edu](http://sakai.rutgers.edu). Enter your NET ID and password. After you have logged in, select Reproductive & Developmental Toxicology (11:067:491). If you cannot access the Sakai website, email [sakai@rutgers.edu](mailto:sakai@rutgers.edu) or call 848-445-8721 for help. Powerpoint of lectures will be available the day before the lecture.

**GRADING/EXAMS:** Grades will be assigned based on the results three exams (3 x 25% = 75%), an oral presentation (15%), and class participation (10%). Exam format will be a combination of short answers, multiple choice, T/F and 1-2 full essay questions. The grading scale for the exam and the course is as follows: A = 90 to 100; B+ =85 to 89; B = 80 to 84; C+ = 75 to 79; C = 70 to 74; D = 60 to 69; F = 59 and below.

**ASSIGNMENTS:** The first part of the course consists of lectures covering basic aspects of Reproductive and Developmental Toxicology and case studies including examples from wild-life populations and human health. Additional reading material from the literature will be distributed to ALL students to read prior to lecture and discuss during lecture time. During the first 3/4 of the course, undergraduates should select a topic to review in a 20-minute (15 min + 5 min for questions) oral presentation. Oral presentations must be a synthesis of a current topic in Reproductive & Developmental Toxicology. During the oral presentations, each student will be required to participate in peer review of each oral presentation.

**ATTENDANCE:** Students are expected to attend all classes. Information will be presented in class that is not in the text or on the website and you are responsible for all the information. If you have a legitimate excuse for missing an exam, Dr. Roepke must be notified at least 24 h prior to the exam and the excuse must be substantiated and students should also use the RU absence reporting system.

**ACADEMIC INTEGRITY:** Academic dishonesty includes, but is not limited to, cheating, plagiarism, unauthorized prior possession of exams and submitting work of another as your own. Academic dishonesty will be dealt with according to the procedures outlined in the Rutgers University Policy on Academic Integrity (<http://academicintegrity.rutgers.edu>).

**Reproductive Toxicology**  
**Fall 2017**  
**Undergraduate Schedule of Topics and Exams**

<u>Lecture</u>	<u>DATE</u>	<u>TOPIC</u>	<u>Instructor</u>
1	Sept 5 Tu	Intro & Principles of Toxicology	Roepke
2	7 Th	Hormones & Receptors	Roepke
3	12 Tu	Neuroendocrinology of Reproduction	Roepke
4	14 Th	Male Reproduction	Roepke
5	19 Tu	Female Reproduction	Zama
6	21 Th	Fertilization to Lactation	Roepke
7	26 Tu	Puberty and Sex Behavior	Roepke
	<b>28 Th</b>	<b>EXAM 1: Lectures 1 through 6</b>	
8	Oct 3 Tu	Endocrine Disruptors	Roepke
9	5 Th	Male Reproductive Toxicology	Roepke
10	10 Tu	Female Reproductive Toxicology	Uzumcu
11	12 Th	Pharmaceutical Reproductive Toxicology Testing	Thompson
12	17 Tu	Analysis of Toxicity Testing	Thompson
13	19 Th	Maternal-Fetal Transfer	Aleksunes
14	24 Tu	Embryonic Defenses	Roepke
	<b>26 Th</b>	<b>EXAM 2: Lectures 7 through 13</b>	
15	31 Tu	Developmental Toxicology - Teratology	Roepke
16	Nov 2 Th	Developmental Neurotoxicology	Magby
17	7 Tu	Developmental Cardiotoxicology	Stapleton
18	9 Th	Repro & Dev. Tox in Non-Mammalian Models	Roepke
19	14 Tu	Dev. Programming and Epigenetics	Zama
20	16 Th	Impacts on Wildlife	Roepke
21	21 Tu	Impacts on Humans	Barrett
	<b>28 Tu</b>	<b>EXAM 3: Lectures 14 through 20</b>	
22	30 Th	Oral presentations	Roepke
23	Dec 5 Tu	Oral presentations	Roepke
24	7 Th	Oral presentations	Roepke
25	12 Tu	Oral presentations	Roepke