Instructor: Dr. Brian Barnes, office 270 Arctic Health Building, tel 474 6067, email fbmb@ualaska.edu
3 lectures per week: M, W, F at 10:30-11:30am in NSCI 204.
Office Hours: Monday and Wednesday, 11:30-12:30, 270 Arctic Health Building.

Required text: Essential Reproduction. Johnson and Everitt, Fourth Edition. Available at the UAF Bookstore. In addition there will be an optional text: Behavioral Endocrinology. Nelson, Second Edition, available after 10 September at the UAF Bookstore. There will be selected review and research papers to be read most weeks. These will be available for check out and/or copying at the Biomedical Library in the Arctic Health Building.

Grading will be based on

- a quiz (20 pts, 5%), Sept 29
- a midterm (120 pts, 30%), Oct 20
- a term paper (120 pts, 30%), due Nov 24.
- a final comprehensive examination (140 pts, 35%), Dec 17.

Total possible points = 400.
Your grade will depend on the percentage of the total possible points that you accumulate and, to a small degree, your participation in class discussions. Material for the exams will be drawn from lectures, the required textbook, and the articles left on reserve.

The term paper is to be at least 10 pages, double-spaced, on a topic in reproductive biology of your choice or drawn from a selection that I will provide. The paper must include references to primary research articles. More information on the format and expected content will be forthcoming.

We will have occasional Special Lectures by UAF faculty guests emphasizing their current research on reproductive biology in Alaskan animals and a field trip to the Large Animal Research St. to observe rutting morphology and behavior in musk ox and a caribou.

Lecture outline and reading assignments (ER = Essential Reproduction; IBE = Introduction to Behavioral Endocrinology)

Lecture Schedule:

Fri, 3 Sept. Introduction to class; why study reproductive biology; a historical tale about monkey testes, the elixir of life, and why the dog didn’t bark.
Wed, 8 Sept. Why sex?; sexual vs. asexual reproduction; parthenogenesis; ER Ch 1 (p 1-5)
Fri, 10 Sept. Field Trip to Large Animal Research Facility.
Mon, 13 Sept. Genetic and environmental determination of sex. Chemical integration I; what is a hormone, how do they work?, how do you measure one? ER Ch 2, IBE Ch 1 (pp20-25), Ch 3 (pp 122-123).
Wed, 15 Sept. Chem integ II; sex steroids and protein hormones; mechanisms of action ER Ch 2; IBE Ch 2
Fri, 17 Sept. Special guest: Dr. Terence Dawson Reproduction in other mammals
Chem Integ III ER Ch 2; IBE Ch 2
Mon, 20 Sept No lecture today (American Association for the Advancement of Science – Arctic Division meeting in Denali Park, Alaska.
Wed, 22 Sept. Male reproductive anatomy and function
ER Ch 1 (p 5-12); IBE Ch 3
Fri, 24 Sept. Spermatogenesis. ER Ch 3
Mon, 27 Sept. Female reproductive anatomy and function. ER Ch 4
Wed, 29 Sept. Oogenesis; QUIZ (last 20 min) ER Ch 4
Mon, 4 Oct. Hormonal regulation of gonadal systems I; hypothalamic-pituitary-gonadal system
ER Ch 5 (p 79-101)
Wed, 6 Oct. Hormonal regulation II; control over gametogenesis
Fri, 8 Oct. Puberty and environmental and social influences
ER Ch 6; IBE Ch 10
Mon, 11 Oct. Mating and fertilization; sperm competition
ER Ch 8
Wed, 13 Oct. Pregnancy I; placentation
ER Ch 9
Fri, 15 Oct. Pregnancy II; comparative systems
ER Ch 10
Mon, 18 Oct. Parturition; timing of birth; determination of clutch size
ER Ch 12
Wed, 20 Oct. MIDTERM
Fri, 22 Oct Special Lecture: Dr. Jan Rowell
Reproduction and pregnancy in caribou and musk oxen
Mon, 25 Oct. Lactation; hormonal control
ER Ch 13
Wed, 27 Oct. Other parental care; Introduction to hormones and behavior
Fri, 29 Oct. Pheromones and the estrous cycle
Mon, 1 Nov. 9 Estrous cycles (cont); ER Ch 4
Wed, 3 Nov. Special Lectures: Dr. Alison York
Brain sex I. ER Ch 1 (p 12-17); IBE Ch 4
Fri, 5 Nov. Brain sex II
Mon, 8 Nov. Stress and reproduction.
IBE Ch 11
Wed, 10 Nov. Stress II; endocrine disrupters
Fri, 12 Nov. Introduction to adaptive environmental influences
ER Ch 5 (p 101-110); IBE Ch 10
Mon, 15 Nov. Seasonal rhythms
Wed, 17 Nov.) Photoperiodism, refractoriness
Fri, 19 Nov. Special Lecture. Dr. Ed Murphy
Reproduction and breeding synchrony in murres
Mon, 22 Nov. Circadian mechanisms
Wed, 24 Nov. Melatonin. TERM PAPER DUE.
Fri, 26 Nov. No Class: Thanksgiving Holiday
Mon, 29 Nov. Special Lecture, Dr. Nicholas Hughes: Evolution of Reproduction in Alaskan Fish
Wed, 1 Dec Circannual Rhythms in arctic ground squirrels
Fri, 3 Dec Nutrition and reproduction
Mon, 6 Dec Energetics of reproduction
Wed, 8 Dec. Reproduction and Life Histories
Fri, 10 Dec Catch up.
Mon, 13 Dec. Last day of instruction., review.
Fri, 17 Dec, 10:15am-12:15pm, NSCI 204, Final Examination.

Happy Holidays and New Year!
Please come by and see me after the holidays to pick up your final exam.