

Course: BISC 605/KAAP 615 Advanced Mammalian Physiology Fall 2015
Time: Tuesday/Thursday – 4:00-5:30
Location: 318 Wolf Hall

Instructors: Randall L. Duncan, Ph.D.
229 McKinly Hall
e-mail: rlduncan@udel.edu

William Farquhar, Ph.D.
201T STAR campus
wbf@udel.edu

Office Hours: By appointment only

Learning Management System: Sakai (<http://www.udel.edu/sakai/>)

Course description:

This course will focus on cell, organ and systemic physiology of three selected systems; renal, cardiovascular and blood/pulmonary, with particular emphasis on human physiology. Included in this course are discussions of primary literature in the field of physiologic research and case studies of pathophysiology. There are three goals for the student in this course: 1) to be able to integrate the principles and concepts learned from each system into an understanding of the physiology of the organism, 2) to learn to research the literature and other available resources to answer a problem and 3) to logically and succinctly defend an answer to a problem.

Text:

There is no required text for this course. Suggested reading will be provided through Sakai. If students want to purchase a reference text, I suggest *Textbook of Medical Physiology, 11th Edition*, (eds) Guyton and Hall, Elsevier-Saunders, Philadelphia, PA, 2006.

Grading:

Quizzes: Weekly quizzes (10pts) will be given at the first of class on each Tuesday (4 quizzes/section) to test the students grasp of the concepts taught during the prior week. These quizzes will be 10 min and will be multiple choice and/or short answer questions.

Testing – Examinations will be open book/open note/open internet and will be administered following the completion of each section through Sakai. Each exam is worth 100 points and will be available for download after the last class of the section. Each question on the test will have a word limit that will be indicated with each question. Providing drawings, sketches and graphs to support your answer to a question is encouraged and will not count against the word limit. Collaboration between students on the test is prohibited. Exams are to be uploaded through Sakai prior to the times indicated in the syllabus. Each test will be comprehensive in that the principles and concepts learned from the previous sections(s) that are relevant can be included in the test. There will be no comprehensive final exam since each section is comprehensive.

Oral Case Studies – Students will be divided into groups and assigned a case study for oral presentation to the class. These will be presented in a problem-based learning format and the students are expected to work in groups to provide a complete, but succinct, discussion of the problem, including graphs, figures and calculations. Each group will hand in a hardcopy of the assignment prior to the class they are scheduled to present their case study. Presentations will be limited to 20 min with an additional 5 minutes for questions from the class. Grading will be

based on the complete presentation of the case study, the logic behind the clinical tests and assays to test the groups' hypothesis and the diagnoses and treatment regimen decided on by the group. Presentation of these case studies will be worth 100 points.

Extra-Credit – Extra credit can be earned by attending seminars from either UD faculty or visiting faculty presented within the Department of Biological Sciences or in other departments or programs across campus that are biology based. Schedules of these seminar programs will be posted on the BISC 605 Sakai site. Other seminar opportunities that are not part of these programs will be presented in class and posted on Sakai: Announcements. To receive this credit, the student must submit a summary of the seminar and their own conclusions (limited to 300 words) to the Sakai site 72 hrs after the seminar. Each summary is worth 2 points with a maximum of 5 summaries allowed per testing period (10 pts).

Final Grades – Grades will be administered as a percentage of 400 total points with percentages rounded to the nearest whole percentage point. Letter grades will be assigned as follows:

A ≥ 94%	A- 90-94%	
B+ 88-90%	B 84-88%	B- 80-84%
C+ 78-80%	C 74-78%	C- 70-74%
D+ 68-70%	D 64-68%	D- 60-64%
F < 60%		

Plagiarism:

Plagiarism is defined in the Student Guide to University Policies (<http://www.udel.edu/stuguide/06-07/code.html#honesty>). While I expect the student to incorporate previously published data and conclusions into their assignments, exams and extra credit summaries; paraphrasing and summarizing previously published or written reports can also be considered plagiarism without proper documentation¹. Each reference must be cited in a bibliography presented at the end of each assignment. A good reference for the proper documentation of sources can be found at the Curtin University of Technology website². Students must present their own interpretation of the data and a logical argument for their conclusions for each assignment, separate from their referenced citations. Failure to do so will result in a failed grade for that assignment. A second violation could result in university prosecution that may culminate in dismissal from the University of Delaware.

1. *Defining and Avoiding Plagiarism: The WPA Statement on Best Practices*, 2003. Retrieved August 29, 2006 from <http://www.ilstu.edu/~ddhesse/wpa/positions/WPAplagiarism.pdf> .
2. Curtin University of Technology, Library and Information Services. *Harvard Referencing* 2005. Retrieved August 29, 2006 from <http://startup.curtin.edu.au/lis/guides/harvard.pdf> .

Disabilities:

The University of Delaware seeks to ensure that all students receive a fair opportunity for education. Should a student believe they have a learning disability, they can contact the Office of Academic Enrichment (http://www.aec.udel.edu/LD_ADHD_students.html) to determine the appropriate course of action.

**BISC 605/KAAP 615: Advanced Mammalian Physiology
Course Syllabus – Fall 2015**

Date	Lecturer	Topic	Available on Sakai
SECTION 1: RENAL PHYSIOLOGY			
9/1	Duncan	Lecture 1: Transport processes	
9/3	Duncan	Lecture 2: Fluid Compartments and GFR	
9/8	Duncan	Lecture 3: Renal Tubular Transport	
9/10	Duncan	Lecture 4: Concentration of the Urine	
9/15	Duncan	Lecture 5: Effective Circulating Volume and Euvolemia	
9/17	Duncan	Lecture 6: Regulation of Electrolytes by the Kidney	Case studies available for section 1
9/22	Duncan	Lecture 7: Acid-Base Balance	
9/24	Duncan	Lecture 8: Hormonal Regulation of Kidney Function	
9/29	Duncan	Lecture 9: Catch-up and Review	
10/1	Student presentations	Case study presentations	Test 1: 5PM Upload 10/8 5PM
Section 2: Cardiovascular Physiology			
10/6	Farquhar	Lecture 10: Heart as a pump / cardiac excitation and the ECG	
10/8	Farquhar	Lecture 11: Pressure, flow, resistance / vascular distensibility	
10/13	Farquhar	Lecture 12: The microcirculation and lymphatic system	
10/15	Farquhar	Lecture 13: Local and humoral control of blood flow	
10/20	Farquhar	Lecture 14: Nervous system regulation of the circulation	
10/22	Farquhar	Lecture 15: Long-term control of blood pressure	Case studies available for section 2
10/27	Farquhar	Lecture 16: Cardiac output, venous return, and their regulation	
10/29	Farquhar	Lecture 17: Cardiac failure and shock	

11/3	Farquhar	Lecture 18: Acute CV responses to exercise	
11/5	Student presentations	Case study presentation and review	Test 2: 5PM Upload 11/12 5PM
Section 3: BLOOD AND PULMONARY PHYSIOLOGY			
11/10	Duncan	Lecture 19: Red Blood Cells: Production, Anemia and Polycythemia	
11/12	Duncan	Lecture 20: WBC's and infection	
11/17	Duncan	Lecture 21: Immunology	
11/19	Farquhar	Lecture 22: Pulmonary Ventilation / pulmonary circulation, edema and pleural fluid	Case studies available for section 3
11/20	Thanksgiving Break		
12/1	Farquhar	Lecture 23: Physical principles of gas exchange	
12/3	Farquhar	Lecture 24: Transport of oxygen and carbon dioxide in the blood and tissues	
12/5	Farquhar	Lecture 25: Pulmonary lecture	
12/8	Farquhar	Lecture 26: Pulmonary lecture	
12/10	Student Presentations	Case study presentations	Test 3: 5:00 Upload 12/17 5:PM