

**SYLLABUS**  
**BIEN 115**  
**Quantitative Physiology**  
**Spring 2017**

**Course Time: Lecture: Tues, Thur 2:10 – 3:30 pm (Sproul 1102)**

**Discussion 1 (Last name before “LE”: Mon 8:10-9 am (CHASS  
Interdisciplinary North 1002)**

**Discussion 2 (Last name after “LEE”: Mon 8:10-9 am (Physics 2104)**

**Instructor**

Dr. Jin Nam

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**TA**

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**Prerequisites**

BIEN110; or consent of instructor

**Course Description**

Analyzes engineering aspects of physiological systems of respiratory, renal, and endocrine systems.

**Learning Objectives**

1. Students will be able to understand physiology, and acquire the capability to apply advanced mathematics (including differential equations and statistics), science, and engineering to solve the problems at the interface of engineering and biology.
2. Students will be able to make physiological models on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems.

## **Methodology**

Lectures and discussion will be used to facilitate students' learning that will be evaluated by exams, quizzes and homework.

## **Course Textbook**

Quantitative Human Physiology: An Introduction  
Joseph Feher  
Academic Press  
ISBN 978-0-12-382163-8

## **Evaluation and Grading**

Evaluation of Student Performance

Midterm 1 In-Class Exam	25%
Midterm 2 In-Class Exam	25%
Final In-Class Exam	30%
Homework	10%
Quizzes	10%
Total	100%

## **Course Policies**

Late submission of assignments will not be accepted.

Make-up exams for midterms and final can only be requested prior to the exam date with valid proof of excuses.

No make-up for quizzes (one worst quiz will be dropped for final grading).

Cheating on exams and/or plagiarism in homework will result in an F grade for the course.

## **Exam/Report Schedule**

**TBD**

## Course Outline

Weeks	Lectures	Chapter
	Topics	
1	Course introduction and backgrounds	Chap 1
2	Diffusion and electrochemical potential	Chap 1
3	Membranes and transport	Chap 2
4	Midterm 1	
5	Physiology of cells (action potential and motor control)	Chap 3
6	Respiratory system	Chap 6
7	Renal system	Chap 7
8	Midterm 2	
9	Renal system 2	Chap 7
10	Endocrine system	Chap 9