

PM 530: Biological Basis of Disease

**Department of Preventive Medicine
Keck School of Medicine
University of Southern California**

Summer 2022: Tuesdays 5-7pm and Thursdays 5-7pm

Instructor: Sheela Rao, MD
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I respond to emails within 48 hours. I do not check email from Friday night 6pm to Monday morning at 9am.

Teaching Assistant: TBD

Course Units: 4 units
Office Hours: before class in zoom meeting room at 4pm Tuesday/Thursday and by appointment in Zoom

Course Overview

This is a course designed for PhD and MPH students to examine the biological basis of diseases and relevant health risks. The goal of the course is to expose students to important biological, ecological, developmental and behavioral concepts in clinical settings. As such, it is not designed to prepare students for the practice of medicine, but to increase their knowledge of concepts that are fundamental to public health research. Emphasis will be placed on the biological and behavioral aspects of disease processes as well as the mitigating interdisciplinary partnerships that promote public health and health promotion. The course will be taught using a case-based approach that encourages active learning and information processing. Understanding of principles outweighs the need for memorization. Class participation and group learning are highly valued.

Catalogue Course Description

This is a course aimed at introducing students to the physiological basis of disease and deductive thinking approaches that frame allopathic medicine. It provides an important underpinning for public health students to understand common preventable diseases affecting the United States and other countries on a population level and to draw implications for health promotion on a population level. Ideally students who are not currently traversing through medical school are eligible to enroll in this course.

Student Learning Objectives

Students who complete this course will be able to:

1. Identify important biological and behavioral factors related to disease processes.
2. Describe the physiology of important diseases for U.S. populations.
3. Follow patterns of clinical reasoning to assess potential treatment options
4. Critique some population-based interventions to manage disease

Required Text:

Essentials of Anatomy and Physiology (8th edition/ Paperback) by **Scanlon & Sanders** (2018); This textbook is readily available in Norris Medical Library.

Recommended Resources:

Access to PubMed and Norris Library. For Summer 2021 we will be conducting live sessions in Zoom as Los Angeles County gradually transitions to reopening. Students will need to participate in this virtual classroom setting at the scheduled times in Zoom in order to achieve the contact hours for this graduate course. Internet connectivity along with a webcam and microphone are recommended to optimize the online experience. Blackboard is the appropriate platform to use for all deliverables (assignments, discussions, quizzes, activities, exams, presentations). If there are challenges with Blackboard, please contact Blackboard Help at (213) 740-5555.

Academic Integrity

Students are expected to familiarize themselves with policies concerning academic integrity. Please refer to guidelines outlined in SCampus.

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be certain the letter is delivered to me as early in the semester as possible. DSP is located in on the University Park campus in STU 301 and is open 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number is (213) 740-0776.

Electronic Course Management

Blackboard is the online learning portal through which many USC professors provide electronic copies of their course materials, including syllabuses, readings, and handouts. Students may obtain online access at <https://blackboard.usc.edu/webapps/login/> and use their USC student user name and password to access the Blackboard portal page. All courses that students are enrolled

in that are using Blackboard will appear on the page as a link. Simply follow the class link to access online course materials and grades.

Other Policies

If students were to submit assignments late due to unforeseen and credible reasons, no penalty will be reflected in the grading of the assignment. Unexcused late assignments will have 10% dropped from the final grade for each day that the assignment is late. After three missed class days, the assignment will no longer be accepted for a grade. Group presentations **MUST** be submitted in time. If late, 10% will be taken off from the final grade for all members of the group. Students are expected to attend class in the Zoom virtual classroom setting or in-person pending directives from department leadership. There will be an allowance for 2 excused absences at the discretion of the instructor. **Three or more absences will warrant a 5 percent deduction from the total grade because of missed in-class activities.** There will be no make-up class sessions for students who miss class outside of the scheduled class time. Recordings of the live Zoom sessions will be made available to students with excused absences at the instructor's discretion.

In terms of technology, students are allowed and encouraged to use the internet on their laptops during class to research class-related information with which the class may not be familiar. This information will enrich class discussions and facilitate a better understanding of class concepts. Students can also access Blackboard during class. Links will be set up in Blackboard for all deliverables. Students should be prepared to share their screens in zoom sessions to simulate the discussions that would be taking place in person on campus.

If you need to contact the professor or TA, please contact us by email to set up a zoom meeting. If that time is not available, you can email your questions to us, and we will do our best to answer within 48 hours, with the intention of responding in 24.

Course Outline – see attached assignment grid for more details of readings This schedule is subject to change based on availability of guest speakers.

Week 1 Thursday (05/19/22) *The Logic of Biology*

Homeostasis

Important Biological Factors-Objective 1

Chapters 1-2

Introduction to Case-based learning

Week 2 Tuesday (05/24/22) *Biochemistry Chapters 3-4*

Human Systems

In-class activity

Discussion Responses

Week 2 Thursday (05/26/22) Clinical Reasoning- no reading **Online Quiz 1 on first 2 weeks**
Homework Case 1 Assignment- due following Tuesday

Week 3 Tuesday (05/31/22) Review Case 1, start Genetics Overview

Week 3 Thursday (06/02/22) Key Speaker complete genetics case consultation as in-class activity with genetics counselor

Week 4 Tuesday (06/07/22) **Host vs Pathogen** Infectious Diseases
Reading Chapter 14
Discussion Online

Week 4 Thursday (06/09/22) **Host Defenses and Liabilities, Immunology**
Reading Chapter 22 Key Speaker???

Week 5 Tuesday (06/14/22) Common Conditions Part 1 The Heart Reading Chapter 12

Week 5 Thursday (06/16/22) CV system and disease Chapter 13 **Online Quiz 2 genetics**

Week 6 Tuesday (06/21/22) The Endocrine System Diabetes

Week 6 Thursday (06/23/22) Key Speaker Cynthia Munoz **Midterm (online open book)**
Midterm exam released after class for completion in 48 hours
Introduce Group Presentation Assignment
Midterm will not include week 6 material

Week 7 Tuesday (06/28/22) Nutrition and Metabolism

Readings: Chapter 10 and portions of 17 **Readings: Chapter 10, 17(will revisit in more detail in weeks to come)*
Article: Metabolic Adaptation 6 years post BL

Week 7 Thursday (06/30/22) Common Conditions Part 3 Obesity and Metabolic Disorders
Online Quiz 3 Diabetes endocrine system Maybe Key Speaker Nutritionist

Week 8 Tuesday (07/05/22) introduction to Mental Health disorders

Lecture on Neurobiology of Toxic Stress
Reading: Chapter 8 the Nervous System
Pain (substance abuse disorder) Keynote Speaker***

Week 8 Thursday (07/07/22) ACEs Speaker **Guest Presenter: Dr. Mona Varsha Puri**
Biological Impact of Childhood Trauma and the ACES study
Reading: Felitti et al ACES study

Week 9 Tuesday (07/12/22) Intertwining Biological and Psychological Factors in Chronic Conditions **Guest Presenter: Dr. Jennifer Rafeedie**
Zero to Eighty in Five Years: Long Term Effects of Toxic Stress
HW on ACEs study reviewed

Week 9 Thursday (07/14/22) Cancer Paradigms and Life Course Model Introduce Group Presentation **Quiz 4 on ACES and Toxic Stress**

Week 10 Tuesday (07/19/22) Hot Topics Guest Presenter Zarine Balsara

Week 10 Thursday (07/21/22) Environmental Health related conditions Flint water crisis

Week 11 Tuesday 07/26/22 Loose Ends/ Group Presentations

Week 11 Thursday 07/28/22 Guest Speaker Sigita Cahoon

Week 12 Tuesday 08/02/22 Group Presentations

Thursday 08/04/2022 Final Review last day of class

Final Exam released online Thursday August 5 after class to be completed in 48 hours.

Assignment Rubrics

Weekly homework assignments receive full credit if completed on time with appropriate references included if indicated. Discussion boards will receive full credit if individual post is placed as well as reply to at least one other classmate's post.

The group presentation rubric will be included in a separate document posted in Blackboard.

Description of Grade Allocations

The course will utilize a lecture/discussion format. The assigned readings for each week are aimed to help students prepare for the class session, therefore students are encouraged to **review all readings prior to class** – this will allow students to be more prepared for the cases. Students will be evaluated on the basis of the following:

Top 3 scores of 4 Quizzes	10%
Blackboard Online Checks for Understanding (multiple choice assessments)	5%
In-class activities submitted by end of class	5%
Online Midterm exam open book	20%
Individual Homework Assignments/ Discussions	15%
Group PowerPoint Presentations on Cases	15%
Final Exam open book**	30%
Total	100%

****The final will consist of a written exam based *cumulatively on textbook, cases presented in course*, group presentations, articles and important clinical concepts which will be identified in class discussions.**

Grading Scale

A 93-100 %

A- 90-92

B+ 87-89

B 83-86

B- 80-82

C+ 77-79

C 73-76

C- 70-72

D+ 67-69

D 63-66

D- 60-62

F <60

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298
equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.