PHYL 5030
Biology of Pain
Spring 2020

CLASS DAYS and TIME: Wednesdays, 9:00 am – 10:30 am

CLASSROOM: Pharmacology Small Conference rm. - 2.663U

COURSE DIRECTORS

Dr. Shivani Ruparel, UTHSA

OFFICE LOCATION and HOURS: Dr. Shivani Ruparel, Old Dental Bldg. 2.388S, UTHSA. By appointment

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TELEPHONE: Dr. Shivani Ruparel 210-567-4413

COURSE FACULTY (Tentative):

Dr. Kenneth Hargreaves
Dr. Charles France
Dr. Armen Akopian
Dr. Anibal Diogenes
Dr. Nikita Ruparel
Dr. Kelly Berg
Dr. Nathaniel Jeske
Dr. Shivani Ruparel
Dr. Somaya Ramamurthy
Dr. Ameet Nagpal

READ THIS DOCUMENT CAREFULLY –
YOU ARE RESPONSIBLE FOR ITS CONTENTS.

COURSE DESCRIPTION AND OBJECTIVES

Biology of Pain is a 2.0 credit hour course that provide students with fundamentals of sensory transduction and pathways for pain. It covers the basic principles of how sensory neurons are regulated at the periphery as well as centrally, how pain is perceived in the brain and different therapeutic options of pain management. This course will be divided into specific lectures focused on neuronal and non-neuronal involvement, peripheral and central pathways of pain, assessment, pharmacology and treatment of pain as well as several important clinical states causing pain in various diseased conditions. Upon successful completion of this course, students will have a comprehensive knowledge of the core principles of physiology, basic biology and pharmacology of pain.

Pre-requisites – IBMS 5000 or at the discretion of the course directors

Semester credit hours – 2.0

By the end of this course, each student should be able to describe and discuss:

- Sensory neuronal physiology at the peripheral and central level
- Major neuronal and non-neuronal regulators of pain
- Regulation of sensory neurons in different pain models
- Approaches and technologies used in the field of pain research
- Conventional and novel treatment options for pain
- Important clinically painful diseased conditions
- Discuss and critically review current literature

COURSE ORGANIZATION

The main teaching modalities used in this course include:

1) Conventional didactic lectures, 2) Discussion of Research Articles and 3) Student participation

Materials – Handouts and assigned readings by faculty, where appropriate

Computer Access – Assigned readings can be accessed online

Reading Assignments – As assigned by faculty

ATTENDANCE

In order to achieve the expected level of competency, students must be fully engaged. Therefore, attendance at every class session is expected. Part of the course grade will be based on attendance and participation in class discussion.

TEXTBOOKS

Required: As assigned by faculty

Recommended: As assigned by faculty

GRADING POLICIES AND EXAMINATION PROCEDURES

Each section will include at least one examination that, together with discussion participation, will be used to determine each student's overall course grade. The format of the examination will be at the discretion of the course faculty members.

Missed examination policy

Make-up examinations **may** be offered in case of emergencies at the discretion of the course directors. An email to the course directors is required. Failure to comply with the policies as outlined above will result in a score of 0 (zero) for the examination in question. If the student is allowed to take a make-up examination, it must be taken within one week of the original examination date. The format of make-up examination is at the discretion of the course directors. The maximum percentage point obtainable on a make-up examination is 70%.

Grading System

The final course grade will be assigned according to the grading system within the Graduate School of Biomedical Science as follows:

A = 90-100% B = 80-89.9% C = 70-79.9% F = < 69.9%

REQUESTS FOR ACCOMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100) to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at http://uthscsa.edu/eeo/request.asp.

ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at
http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/

TITLE IX AT THE UNIVERSITY OF TEXAS HEALTH SAN ANTONIO (UTHSA)

Title IX Defined:
Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

University of Texas Health San Antonio's Commitment:
UTHSA is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UTHSA does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at http://students.uthscsa.edu/titleix/

EMAIL POLICY

Every student is issued a University e-mail address and account at the time of enrollment. As a matter of University Policy, communications between students and faculty that occur using the student's University e-mail address is considered official business. Therefore, students are expected to check their university email inboxes on a regular basis so that any announcements, instructions, or information regarding this course will be received in a timely way. Missed communications due to inadequate monitoring of incoming emails on the University's email server will never be a valid excuse for unsatisfactory academic progress.

USE OF RECORDING DEVICES

Recording of lectures and other learning activities in this course by any means (e.g., video, audio, etc.) is only permitted if approved by the instructor or required for compliance with Americans with Disabilities Act (ADA).

ELECTRONIC DEVICES

Cell phones must be turned off during all class meetings and exams. Computers and electronic tablets are allowed only for participating in classroom activities (e.g., viewing slides presented in lecture or conference materials). No texting, tweeting, emailing, web-surfing, gaming, or any use of electronic devices that is not directly connected with classroom activities is permitted.

PHYL 5030 - Biology of Pain

TENTATIVE Semester CLASS SCHEDULE

Wednesdays, 9 – 10:30 am (1.5 hour lecture, once a week and four 2 hour in-class exams)

Week 1 (8th Jan)	**Overview of Pain**	**S. Ruparel**
Week 2 (15th Jan)	**Models and Assessment**	**Jeske**
Week 3 (22nd Jan)	**Peripheral Mechanisms of Pain -1 (Transducers, stimuli and subtypes)**	**Yu Shin Kim**
Week 4 (29th Jan)	**Peripheral Mechanisms of Pain -2 (Functional and Molecular Responses to Injury, Inflammatory Mediators)**	**Hargreaves**
Week 5 (5th Feb)	**Peripheral Mechanisms of Pain-3 (Receptors/GPCR competence)**	**Berg**
	Take Home Exam	
Week 6 (12th Feb)	**Central Mechanisms of Pain-Spinal Cord**	**Ramamurthy**
Week 7 (19th Feb)	**Central Mechanisms of Pain-Brain**	**Ramamurthy**
Week 8 (26th Feb)	**Immune System, Glia and Pain**	**Akopian**
Week 9 (4th Mar)	**Autonomic and Endocrine Contribution to Pain**	**Akopian**
	Take Home Exam	
Week 10 (11th Mar)	**Clinical Inflammatory Pain Conditions**	**N Ruparel**
Week 11 (18th Mar)	**Clinical Neuropathic Pain Conditions**	**Lococo**
Week 12 (25th Mar)	**Headache and Migraine**	**Akopian**
Week 13 (1st Apr)	**Musculoskeletal Pain**	**Yu Shin Kim**
Week 14 (8th Apr)	**Cancer and Cancer-Associated Pain**	**S. Ruparel**
	Take Home Exam	

Week 15 (15th Apr)	**Pharmacological Management of Inflammatory Pain**	**Diogenes**
Week 16 (22nd Apr)	**Pharmacological Management of Neuropathic Pain**	**Nagpal**
Week 17 (29th Apr)	**Pharmacological Management of Cancer Pain**	**S Ruparel**
Week 18 (6th May)	**Drug Abuse**	**France**
Week 19 (13th May)	**Non-Pharmacological Management of Pain**	**Nagpal**
	Take Home Exam	