

Course Syllabus – PHOL 614
Sleep Physiology – Neurobiology of Sleep/Wake
Spring 2022 - Asynchronous Delivery

Block Coordinators

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Teaching Assistants

Meetings by appointment only

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General Course Description

Participants in this course will gain an understanding of the neural mechanisms contributing to the states of sleep and wakefulness. Contemporary theories regarding why humans need to

sleep will be reviewed. We will also review how perturbations within specific neurotransmitter systems manifest as sleep related disorders and the pharmacological interventions used to normalize activity within those neural pathways.

The course will be offered asynchronously for the Spring semester. Lecture materials and required readings will be provided ahead of time and found on Canvas. All quizzes and exams will be administered on Canvas.

Grade Distribution

Block 1 exam = 20 %
Block 2 exam = 20 %
Block 3 exam = 20 %
Block 4 exam = 20 %
CBL Quizzes = 20%

A = 85% and above
B = 70% - 84.9%
C = 50% - 69.9%
D = 49.9% and below

Academic Policies

Students are expected to observe the University Academic Integrity Policy as described in the Case Western Reserve University Student Handbook and the Department of Physiology and Biophysics Handbook.

Quiz Policy:

There will be 6 clinical case-based-learning (CBL) quizzes throughout the semester. Each quiz will consist of 5 multiple choice questions, administered on Canvas. Quizzes will be completed online. Students will have 15 to take the quiz. Quizzes will be available at 5 pm on Friday. Students will have 48 hours to complete each quiz, which will close at 5:00pm on Sundays.

Please note that all times listed are Eastern Standard Time (EST), and you will need to adjust accordingly for other time zones (i.e. if based in Central Time, quizzes will open and close at 4 pm).

Exam Policy:

Exams will be administered on Canvas using HonorLock.

- **All students:** will take their exam on Canvas through HonorLock, an online proctoring service.
 - A practice, ungraded quiz will be released prior to the Midterm Exam to ensure student compliance and computer performance. Additionally, the first quiz will be administered with HonorLock enabled to prepare students to take their exams with HonorLock
 - For appropriate HonorLock function, students are required to use Chrome, have a webcam on and uncovered, no headphones, and no notes visible to the student.
- **Make-up Exams:** A valid, signed medical note is required to justify whether a student is excused from taking the exam at the indicated time, and reschedule the exam(s) for the make-up day. Documentation must be submitted to Dr. Decker, Director of the course.

For the academic Spring semester 2022, the make-up day for any missed exam is May 2nd 2022. Final grades are due on May 7th at 11:00 AM.

- o **Note:** Make-up exams will be different from those administered as scheduled on the syllabus.
- **Reviewing Exams:** All students will have the opportunity to review their exams one-on-one with the TAs via appointment within a provided deadline.

Excused Absences:

If a student misses a quiz or exam for a valid reason (illness, family emergency), the course director must be informed by 12pm EST the missed day (at the latest) for approval. Tests and CBL quizzes are mandatory. The proper procedure, as outlined above, must be followed if inquiring about an excused absence. At that time, the Instructor of Record has the option to grant a make-up exam or quiz.

Online Lectures:

Pre-recorded lectures will be posted onto the Canvas calendar.

Online Course Topics:

All materials will be uploaded to canvas, including lecture slides, assigned readings, and pre-recorded lectures.

Optional Readings:

There are readings listed on the syllabus that correspond with the material for each week. These readings are optional and are there to supplement the recorded lectures and review presentations.

In order to access the texts, you must be either on the Case Western internet/ Case Western VPN or click log in, select Case Western Reserve University under other institution, and sign in using your Case Western login ID and password.

Resources:

1. Fundamentals of Sleep Medicine by Richard Berry (FSM)
 - a. Location: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20090389977>
2. Sleep Medicine Pearls by Richard Berry (SMP)
 - a. Location: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20120035429>
3. Principles and Practice of Sleep Medicine (PPSM)
 - a. Location: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20120035430>
4. Additional Readings for further explanation
 - a. Provided Articles
 - b. Principle and Practice of Sleep Medicine (PPSM), Sixth Edition by Meir Kryger

i. Location: <https://www.clinicalkey.com/#!/browse/book/3-s2.0-C20120035430>

- c. Scammell, Thomas E., et al. "Sleep Disorders." *Harrison's Principles of Internal Medicine, 20e* Eds. J. Larry Jameson, et al. New York, NY: McGraw-Hill
<http://accessmedicine.mhmedical.com/content.aspx?bookid=2129§ionid=192344545>

Schedule

January 10th – April 25th, 2022

	Date	Topic	Optional Reading
Week 1 Jan 10-14		Intro to Course & Syllabus Review	
		Disorders of Sleep	SMP: Ch. 79-80
		Hypothalamus Pt. 1 Hypothalamus Pt. 2	FSM: Ch. 7 PPSM: Ch. 19-21 PPSM: Ch. 20, 132
		Week 1 Review	
	Friday Jan 14	CBL Quiz	
Week 2 Jan 18 -21		Intro to Neuroanatomy	FSM: Ch. 1-4, 6-7 PPSM: Ch. 57-61, 131
		Diagnostic Methods	SMP: Ch. 117-122
	Friday Jan 21	Week 2 Review	
Week 3 Jan 24 -28		UCLA Sleep Function: An Evolutionary Perspective	
		EEG Interpretation	FSM: Ch. 12-14 PPSM: Ch. 160-164, 169, 171

		Week 3 Review	
Week 4 Jan 31 - Feb 4		Block 1 Review and Q&A with Course Directors and TAs	
		Block 1 Exam	
Week 5 Feb 7 -11		Circadian Rhythm	
		Parasomnias	FSM: Ch. 24, 28 PPSM: Ch. 100-106 SMP: Ch. 101-109
		Week 5 Review	
	Friday Feb 11	CBL Quiz	
Week 6 Feb 14 -18		Restless Leg Syndrome	FSM: Ch. 23 PPSM: Ch. 95 SMP: Ch. 81-85
		NIH: Inflammation Effects on the Brain and Behavior Sleep Apnea	FSM: Ch. 15-16, 21-22 PPSM: Ch. 13-18 SMP: Ch. 19-26
		Week 6 Review	
	Friday Feb 18	CBL Quiz	
Week 7 Feb 21-25		Upper Airway	
		Neuroimaging of the Sleep Disordered Patient	

		Week 7 Review	
	Friday Feb 25	CBL Quiz	
Week 8 Feb 28-March 4		Block 2 Review and Q&A with Course Directors and TAs	
		Block 2 Exam	
Week 9 March 7-11	SPRING BREAK		
		Sleep and Memory	PPSM: Ch. 22-23
		Why We Dream	PPSM: Ch. 48-56
Week 10 March 14-18		Week 10 Review	
	Friday March 18	CBL Quiz	
		Sleep & Diabetes	
Week 11 March 21-25		Sleep & Obesity NIH: Exercise-Induced Fatigue & Recovery	
		Week 11 Review	
	Friday March 25	CBL Quiz	
		Sleep & Pregnancy	PPSM: Ch. 142-147
Week 12 March 28-April 1		Sleep in Children	PPSM: Ch. 142-147

		Week 12 Review	
Week 13 April 4-8		Block 3 Review and Q&A with Course Directors and TAs	
		Block 3 Exam	
Week 14 April 11-15		Sleep at High Altitude	PPSM: Ch. 156-159
		Glymphatic System NIH: Role of Glymphatics in Sleep and Fatigue NIH: Neural and Cerebrospinal Fluid Dynamics in Sleep	
		Week 14 Review	
Week 15 April 18-22		Neurostimulation - Dr. Damato Neurostimulation - Dr. Strohl	
		Sleep in the Military	
		Week 15 Review	
Week 16 April 25-29		Block 4 Review and Q&A with Course Directors and TAs	
		Block 4 Exam	