



SCHEDULE

Monday, Wednesday, Friday
9:00am – 9:50am

ROOM

TAWES 1320

PROFESSOR

Dr. David Yager

ddyager@umd.edu

Office:

2123L Biology–Psychology Bldg.

Office hours:

Monday and Wednesday
2:00pm – 3:00pm

WebEx appointments:

better than regular office hours
– schedule through CANVAS

PREREQUISITE

PSYC 301 OR NEUR 200 OR
PSYC 202 OR PSYC 309U

CREDITS

Three

PSYC 414

The Science of Sleep and Biological Rhythms

Fall, 2021

Sleep is a dominating presence in our biological and social lives. It is both a pleasure and a burden. It alters and challenges the way we experience the passage of time. It incorporates two of the three normal states of consciousness. It is intimately tied to remembering and forgetting. It can occur even when you think you are awake. It affects how long we live and how much we enjoy our lives. It is not optional. Yet no one fully understands the physiological mechanisms underlying sleep, or even why we sleep.

Biological rhythms coordinate virtually all the physiological and behavioral components of our existence. As just one example, normal sleep depends on at least three different, intertwined rhythms. Working with your biological rhythms rather than against them elevates your mood, reduces traffic accidents, enhances your social life, vastly increases job productivity, helps college students pass tests, and keeps you alive longer.

We are going to study the nature of biological rhythms and sleep, emphasizing the biological processes that create and control them. We will focus on the wealth of research during the last five years that has changed profoundly the ways we think about sleep and its relationships to memory, plasticity, cognition, emotional regulation, creativity, and overall health. The developmental neurobiology of rhythms and sleep provides fascinating clues regarding the function(s) of sleep.

The societal significance of biological rhythms and sleep cannot be overestimated. Throughout history, artists, writers, philosophers, clerics, and scholars have acknowledged these forces, sometimes with celebration, sometimes with scorn, always with respect. In the artificial light of contemporary society, it is easy to believe that we are emancipated from internal rhythms. That is a delusion with pervasive and profound negative consequences. Throughout the course, we will touch on such societal concerns and their relationships to the biological realities.

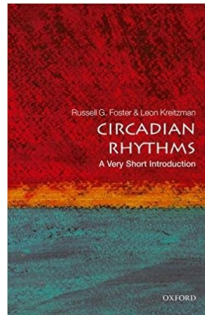
At the end of the course, you will, at minimum, be able to:

- propose useful approaches to common rhythm issues (work/school scheduling, jet lag, etc.) using the basic principles of chronobiology
- describe alterations in brain, body, and behavior that occur during a night of sleep and how they change across the lifespan
- explain the relationships between sleep and memory, emotional balance, and cognitive function, providing support from the results of recent research
- discuss the impacts of rhythms and sleep on at least five societal issues/questions, current and historical

READINGS

There is no textbook for this course.

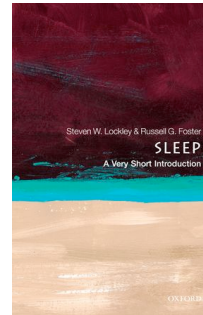
The two books below can provide a convenient, efficient review of the basic concepts of biological rhythms and sleep to complement your class notes.

**Circadian Rhythms: A Very Short Introduction**

by: Till Roenneberg

ISBN:

978-0198-71768-3

List price: **\$10.00****Sleep: A Very Short Introduction**

by: Lockley and Foster

ISBN:

978-0199-58785-8

List price: **\$12.00**

The PSYC 414 ELMS-CANVAS site is an extension of this syllabus. It describes in great detail all aspects of class activities, policies, and assessments.

You really, really, **really** need to understand all of the policies and instructions presented both here and on the CANVAS site.

COURSE DESIGN

Summary

I'll provide the overall structure, but the course design will be a joint effort. Within the basic framework, decisions about specific topics and activities will come largely from the students. So ...

We will be exploring the major concepts of biological rhythms and sleep by reading, writing about, and discussing contemporary papers from the primary literature and other sources. The vast majority of our readings will be from the last 2-3 years.

The course will have three 'units:' biological rhythm basics, sleep basics, and advanced topics, particularly concerning the functions of rhythms and sleep.

Each unit will begin with one or more lecture/discussions to be sure we are all up to speed on the most important concepts. We will devote the remaining classes in each unit to analysis of research papers and to 'Chosen Topic' presentation/discussions. This means that groups of 2-4 students select a specific topic based on their own interest, choose the papers for the class to read, create a brief presentation, and lead the class discussion.

Each week on Friday, we will analyze an issue in rhythms and sleep science. I will choose an article and/or video that emphasizes an issue or concept with a focus on more practical, personal, or societal questions. You will comment on the materials in a journal, and then we will spend the Friday class discussing the issue.

ASSESSMENTS

Assessments like exams, quizzes, and writing assignments have the dual roles of helping you learn and demonstrating your skills and mastery of the material. Assessments are opportunities for feedback on how you are doing and ways in which you can improve. They are also an important motivational force. PSYC 414 this semester has three assessment types:

Exams

There will be **two midterm examinations** during the course, each worth **250 points (500 points for the course)**. The exams will include short-answer questions of various types, often involving diagrams. They will be non-cumulative and cover the material from lectures and readings since the start of the course or the previous exam

There will be a **cumulative final exam (350 points)** on **Saturday, December 18th at 8:00am-10:00am**.

Journals

Each Thursday by 11:59pm you will submit a **journal** (400 words) commenting on the assigned reading for the week. See the CANVAS site for the specific requirements and extensive guidance.

Each journal will be worth **60 points (12 @ 60 pts = 720 points for the course)**.

Chosen Topics

Teams of 2-4 students will prepare a topic of their own choosing for class discussions (**Chosen Topic projects**). Each student will do this twice during the semester (**300 points each; 600 points for the course**). The team will have five tasks:

- 1) become knowledgeable on their topic;
- 2) choose 1-2 papers for the whole class to read in preparation for the discussion;
- 3) create an annotated outline of the topic;
- 4) prepare a 5-minute presentation to introduce the discussion
- 5) lead the 50-minute class discussion.

I will post detailed instructions and a list of possible topics on ELMS. Each student in the group will get the same grade. However, unexcused absence from leading the discussion will incur a 20-point penalty for the student, i.e. the assigned score minus 20 points.

Participation

The success of the course depends on active participation by everyone in the various discussions. I understand that each student has their own style of participation and respect those differences. Nonetheless, everyone should come to every class prepared, and contribute in some way to all class activities.

I'm not going to formally score participation. I'll be happy to talk with anyone about how best to adapt their participation style this particular course.

Course grades

Your final course score will simply be the total number of points earned as a percentage of the total points possible (**1920**).

Letter grades will be assigned from the percentage course score using an equal divisions scale, e.g. 80.00 to 83.29 = B-, 83.30 to 86.69 = B, 86.70 to 89.99 = B+

LEARNING RESOURCES

Lectures

A few lectures at the beginning of each segment of the course will remind you of the basics and go a bit deeper into important topics than you did in your introductory neuroscience courses. This is not, however, primarily a lecture course, so we will be quite flexible about topics and even the number of lectures.

Lecture slides

I will post the images used in each lecture up on CANVAS in the **Modules** section. These will be in PowerPoint and in PDF formats. It is not possible to post every video I show in lectures because some of the files are very large.

WebEx appointments

Traditional office hours have many advantages, but my experience this past year is that one-on-one consultations work better. I will be available during about 14 hours every week for individual appointments scheduled through WebEx on our CANVAS site. Students from my other course will also be using these appointment times, so it will be a good idea to plan in advance and sign up at least 1-2 days ahead of time.

An exhortation!

Successful students know it. TAs know it. Faculty know it. It's simply a fact:

Students who attend office hours learn more and improve their performance in their courses.

So, why are review sessions and office hours such underused resources? Beats me ...

Emails

I am happy to respond to emails for class business, confirming appointments, and **brief** questions about course content. I am almost always able to respond within 24 hours, and usually much sooner.

COURSE POLICIES

PSYC 414 will adhere to the University-wide [Policies for Undergraduate Courses](#). What follows are policies specific to this course and brief descriptions of some of the University policies for your convenience.

Classroom community

It's simple: you will treat all your classmates with respect and consideration. All the time. No exceptions. Healthy intellectual discourse often involves disagreement, and everyone should feel free to express their opinions with the assurance that theirs will be heard and fairly evaluated. Neither I nor the students in the class will tolerate comments or actions that are, explicitly or by implication, disparaging, demeaning, discriminatory, or disrespectful in any way.

For more information, visit the [Psychology Department Diversity and Inclusiveness site](#).

PSYC 414 online

To reiterate this very important point: We have an ELMS-CANVAS site that is the heart of the course. Consider the information in the CANVAS site an essential part of the syllabus.

Be sure to read **everything** related to each activity and assessment. It is truly sad how often students lose points simply because they didn't read the relevant material on CANVAS.

To access CANVAS, go to [ELMS](#). If you need assistance, there are online tutorials and the folks at the [DIT Help Desk](#) can also help

Do this



Go to your CANVAS Account and be sure your notification setting for Announcements is 'Right Away' so that you don't miss time-critical information like deadline changes or technical issues.

Electronics in the classroom

Except for presentations, you may not use electronic devices of any kind during class. No computers, no phones, no tablets, no iPads - no electronics at all.

I am especially intolerant regarding phones. **Your phone should always be off or in airplane mode during lecture.**

(Students with ADS accommodations should contact me during the first week of classes to discuss their particular needs.)

Extensions and missed assessments

COVID-19

The sad reality is that the pandemic is still with us. We can't ignore that.

You have an essential responsibility to yourself and to the people around you to adhere to the [University rules and guidelines regarding COVID-19](#).

For our class, two of the precautions are especially relevant:

- 1) Everyone will wear a mask whenever they are in the classroom. I will as well, except when I am actually lecturing. Even then, I will stay back away from the first rows of students.
- 2) If you are experiencing any symptoms that even remotely resemble those of COVID-19, do not come to class. There will normally be Panopto recordings of lectures, and you can contact me directly to be sure you don't miss anything important.

Resilience and academic success

Please make your personal well-being your top priority.

Sleeping long and well, exercising regularly, being thoughtful about what you put into your body, and enjoying meaningful connections with others will make you resilient and help you engage more fully in your academic experiences.

Beyond being a student, you are a unique person carrying your own history, thoughts, emotions, and identities with you. It is important to acknowledge any stressors you may be facing, be they social, emotional, physical, cultural, or financial. There are ways to reduce the impacts of such stressors on your academic and personal well-being. Don't be hesitant about asking for help in pursuing the ways that best fit your own situation. The [UMD Basic Needs Security pages](#) list a broad range of helping resources. A good place to find non-judgemental listeners is the [Counseling Center](#), and [there are many other options as well](#).

Accessibility

If your effective learning requires accommodation of any type, you can find information and assistance at [Accessibility and Disability Services](#). Each semester students with documented needs should apply to ADS for accommodation. **There is a new system that makes ADS logistics especially easy.**

Good communication is crucial so we can work together to optimize your learning experience. Be sure to keep me posted on how the course is going for you.

Special arrangements for specific assessments should be made at least a week ahead of time.

Religious observances

The University System of Maryland policy provides that students should not be disadvantaged because of observances of their religious beliefs. When assignments or assessments overlap with religious obligations, we will work out a way to accommodate both.

Good communication is crucial. Let me know your plans as far ahead of time as possible.

By University policy, it is the responsibility of the student to inform the instructor in advance of any intended absences for religious observances. This normally means at the beginning of the semester or course.

Academic integrity

I'm including below the official policy statement on academic integrity, but first, my personal opinion based on long experience with students, plus many years on the PSYC Undergraduate Committee and as Associate Chair for Undergraduate Education:

Cheating is just plain dumb. For so many reasons.

There are many ways to cheat in any course. I won't make it easy to do and anyone I catch will face severe consequences. However, my baseline stance is that you are all honorable and are all smart enough to understand that the short-term benefits of cheating are overwhelmingly negated by the long-term consequences.

OK, here's the official blurb:

Essential to the fundamental purpose of the University is commitment to the principles of truth and academic honesty. Accordingly, the Code of Academic Integrity is designed to ensure that the principle of academic honesty is upheld. Although all members of the University share this responsibility, the Code of Academic Integrity is designed so that special responsibility for upholding the principle of academic honesty lies with the students.

It is the responsibility of each student to understand what actions constitute a violation of the Code and understand the consequences of Code violation.

The University of Maryland Honor System is fully described at [Office of Student Conduct](#).

I highly recommend the [MIT Handbook for Academic Integrity](#) for excellent and thorough explanations of all academic integrity topics, but especially plagiarism.

Course evaluations

CourseEvalUM will be open from approximately December 1st through 15th for you to complete your evaluations for Fall'20 courses. Your feedback is confidential. You can go to the website directly ([CourseEvalUM](#)) or access it through CANVAS.

The learning context for PSYC 414 is new to all of us, so your comments and opinions are vital to guide its continuing improvement. **If you have a suggestion, don't wait for the formal course evaluation - let me know right away!** We can talk about it and see if it might be possible to implement an improvement immediately.

Copyright

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All course materials, including instructions, presentations, assessments, content outlines, and similar materials are the intellectual property of the course instructor and protected by legal copyright. You may take notes and make copies of course materials for your own personal use. You may not, nor may you allow others to distribute lecture notes and course materials publicly, whether or not a fee is charged, without the express written consent of the instructor. For example, it is a violation of this copyright and therefore illegal to upload to or provide for posting on the internet any assessment questions or answers to such questions.



Class Schedule

The lecture topics are for general reference and are likely to change in their details based on class discussions.

Week of	Monday	Wednesday	Friday
August 30th	Rhythm basics Definitions, free-run, tau, sleep propensity	Rhythm basics Phase, chronotype, lifespan changes	Paper discussion #1
Week of	Monday	Wednesday	Friday
September 6th	Labor Day	Rhythm basics Entrainment, zeitgebers, phase response curve	Paper discussion #2
Week of	Monday	Wednesday	Friday
September 13th	Chosen topic	Chosen topic	Paper discussion #3
Week of	Monday	Wednesday	Friday
September 20th	Chosen topic	Chosen topic	Paper discussion #4
Week of	Monday	Wednesday	Friday
September 27th	Chosen topic	Sleep basics Definition(s), sleep architecture, SWS, REM,	Paper discussion #5
Week of	Monday	Wednesday	Friday
October 4th	Sleep basics Sleepiness, misperceptions, two-factor model	Sleep basics CNS systems for falling asleep and waking up	First exam
Week of	Monday	Wednesday	Friday
October 11th	Sleep deprivation Chronic partial, deficits, misperceptions, recovery	Chosen topic	Paper discussion #6
Week of	Monday	Wednesday	Friday
October 18th	Chosen topic	Chosen topic	Paper discussion #7

Week of	Monday	Wednesday	Friday
October 25th	Chosen topic	Chosen topic	Paper discussion #8
Week of	Monday	Wednesday	Friday
November 1st	Sleep and memory Critical timing of enhancement, limits	Sleep and memory Enhancement, stabilization of emotional memory	Paper discussion #9
Week of	Monday	Wednesday	Friday
November 8th	Sleep and memory Theories about mechanisms, replay	Chosen topic	Paper discussion #10
Week of	Monday	Wednesday	Friday
November 15th	Chosen topic	Chosen topic	Second exam
Week of	Monday	Wednesday	Friday
November 22nd	Chosen topic	Thanksgiving	Thanksgiving
Week of	Monday	Wednesday	Friday
November 26th	Dream basics Definition(s), types of dreams, characteristics	Chosen topic	Paper discussion #11
Week of	Monday	Wednesday	Friday
December 6th	Chosen topic	Chosen topic	Paper discussion #12
Week of	Monday	Wednesday	Friday
December 13th	Chosen topic		
December 18th	Final exam	8:00 - 10:00 am	