

<b>FAU</b> <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW COURSE PROPOSAL</b> <b>Undergraduate Programs</b>		UUPC Approval <u>11-03-25</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____	
	Department N/A College Wilkes Honors College (To obtain a course number, contact <a href="mailto:erudolph@fau.edu">erudolph@fau.edu</a> )			
Prefix PCB  Number 3840	(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)  Lab Code	Type of Course Lecture	Course Title Honors Intro to Neuroscience	
Credits (See Definition of a Credit Hour) 3	Grading (Select One Option) Regular <input checked="" type="radio"/> Sat/UnSat <input type="radio"/>	Course Description (Syllabus must be attached; see <a href="#">Template</a> and <a href="#">Guidelines</a> ) This course provides a broad, integrated introduction to the mammalian nervous system. Topics span multiple levels of analysis: nervous-system organization and anatomy, neuronal and glial properties underlying excitability and synaptic communication, systems neuroscience of sensation, perception, and movement, and how circuit function gives rise to behavior. We emphasize core mechanisms including how signals are transduced, encoded, and integrated across central and peripheral pathways, and practice reading figures and arguments from the literature.		
Effective Date (TERM & YEAR) Fall 2026	Prerequisites, with minimum grade* None		Corequisites None	Registration Controls (Major, College, Level) Honors College
*Default minimum passing grade is D-. Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course				
WAC/Gordon Rule Course <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See <a href="#">WAC Guidelines</a> .		Intellectual Foundations Program (General Education) Requirement (Select One Option) None  General Education criteria must be indicated in the syllabus and approval attached to the proposal. See <a href="#">Intellectual Foundations Guidelines</a> .		
<b>Minimum qualifications to teach course</b> Ph.D. in Neuroscience, Biology, or a related field				
Faculty Contact/Email/Phone Casey Spencer/Cspenc27@fau.edu/5617998555		List/Attach comments from departments affected by new course CoS Biology Department		
<b>Approved by</b> Department Chair <u>Tony Ph...</u> College Curriculum Chair <u>Terje Hall</u> College Dean <u>Julie...</u> UUPC Chair <u>Korey Sorge</u> Undergraduate Studies Dean <u>Dan Macroff</u> UFS President _____ Provost _____			<b>Date</b> <u>11/24/25</u> <u>10-24-2025</u> <u>10/24/25</u> <u>11-03-25</u> <u>11-03-25</u> _____ _____	

Email this form and syllabus to [mienning@fau.edu](mailto:mienning@fau.edu) seven business days before the UUPC meeting.

**PCB 3840**  
**Honors Intro to Neuroscience**  
Fall 2026  
3 credits  
T/Th 9:30-10:50am  
Classroom: SR 272  
Professor: Dr. Casey Spencer  
Email: [Cspenc27@fau.edu](mailto:Cspenc27@fau.edu)  
Office hours: RE 106, TBD

**Course description**

This course provides a broad, integrated introduction to the mammalian nervous system. Topics span multiple levels of analysis: nervous-system organization and anatomy, neuronal and glial properties underlying excitability and synaptic communication, systems neuroscience of sensation, perception, and movement, and how circuit function gives rise to behavior. We emphasize core mechanisms including how signals are transduced, encoded, and integrated across central and peripheral pathways, and practice reading figures and arguments from the literature.

**Note of Honors Distinction**

This course differs substantially from a non-Honors version. First, and most importantly, the course is an agreement between the student and instructor that they will work together collaboratively to ensure a significantly enriched learning experience in a manner consistent with other Honors-designated courses at FAU. This means the course will produce substantive work that reflects interdisciplinarity and connections among academic fields, research and direct access to sources of knowledge pertinent to the field, leadership, creative and critical thinking, and engagement with the world outside the university. Secondly, the writing component of the course will be much more demanding and will prepare students for upper-division college writing and for work on the Honors Thesis.

**Instructional Method**

In-Person. There is no remote option for this course.

Anything covered on this syllabus is subject to change and that changes will be announced through Canvas. Enable all notifications in Canvas so you receive announcements related to this course. Students are also required to check their FAU e-mail regularly. If you have any technical issues or questions about Canvas or other technical issues, be sure to contact OIT (<http://www.fau.edu/oit/index.php>). The instructor cannot provide tech support.

PowerPoints and other readings will be posted to Canvas following lectures. Posted slides are not a substitute for attending class.

Please note that in the unlikely event that a portion of the course must temporarily be moved online (for example, if the instructor is isolating/quarantined and temporarily cannot teach in person or if changes are mandated by the university), Zoom would be used as the videoconferencing tool for the course. As such, students should have a computer and reliable internet access to access materials in Canvas (and Zoom if needed). Students may also be expected to view a recorded lecture, which may fill in for an in-person lecture.

### **Prerequisites**

*(not required but useful to excel in the course)*

BSC 1010 (Honors Biological Principles)

### **Course Objectives**

In this course, students will:

- Classify major neural cell types (neurons and glia) and relate their morphology to function.
- Explain how neural properties (resting potential, action potentials, synaptic transmission) contribute to network communication and predict how perturbations (ions, drugs, mutations) can alter signaling.
- Identify the gross organization of the mammalian nervous system and describe key regions and tissue types.
- Understand how sensory systems (visual, auditory/vestibular, somatic, chemical) transduce and encode information.
- Trace information flow through central and peripheral circuits.
- Synthesize anatomical and physiological principles to understand how neural activity gives rise to perception and behavior.

### **Grading-**

3 exams:	100 points each
Group worksheets	
(Total of 8; lowest score dropped)	105 points (15 points each)
Discussions	
(Total of 7)	35 points (5 points each)
Final exam:	100 points
<b>Total:</b>	<b>540 points</b>

### **GRADING SCALE:**

Grade	Percentage (%)
A	>93%

A-	>90% - 93%
B+	>87% - 90%
B	>83% - 87%
B-	>80% - 83%
C+	>77% - 80%
C	>73% - 77%
C-	>70% - 73%
D+	>67% - 70%
D	>63% - 67%
D-	>60% - 63%
F	<60%

## Policy on Makeup Tests, Late Work, and Incompletes

Make-up exams or worksheet activities will be given only if the student contacts the instructor either before the exam or discussion activity or within 48 hours after the exam or discussion activity and arranges to provide appropriate documentation (such as a doctor's note, e-mail advisory from Student Health, a walk-in clinic, etc. to isolate, etc.). **DO NOT COME TO CLASS** if you are feeling ill. You have the opportunity contact student health, go to a walk-in clinic (there are two right near campus) or other doctor's office, and/or schedule a telehealth appointment with SHS or another clinic if you feel ill and need documentation, so there are many options available to you to get appropriate documentation. If you miss a lecture due to illness, the class materials will be posted to Canvas, and I'd be happy to discuss the material with you by appointment during office hours if you have questions about what you missed.

**Please remember that even though the clinic on the Jupiter campus is only open a few days per week, you can call the MAIN SHS number 561-297-3512 during business hours on weekdays for assistance or to request a telehealth appointment.**

If a student misses one regular exam and does not provide appropriate documentation of a university approved excuse to the instructor within 48 hours of the missed exam (in order to schedule a make-up exam), that exam grade will be graded at 0 points. This same policy holds true for in class worksheet activities. Please note there will be no dropped exam grades.

**Please contact the instructor if you have questions or concerns about your specific situation.** If a conflict (such as a medical school interview) is known in advance, please contact your instructor immediately with a written excuse, and alternate plans may be arranged. Reasonable accommodation will be made for students participating in a religious observance.

Please note that scheduled vacations are not a valid reason for an excused absence. If a student is unable to complete the required coursework for health or family reasons, an 'incomplete' may be issued for the course following approval. Note that an incomplete cannot be given to students who have less than a C- in the course.

The University policy states that a student who is passing a course but has not completed all work due to exceptional circumstances, may, with consent of the instructor, temporarily receive a grade of incomplete ("I"). The assignment of the "I" grade is at the discretion of the instructor but is allowed only if the student is passing the course with a C- or better.

## **Classroom Etiquette Policy**

Disruptive behavior is defined in the FAU Student Code of Conduct as "... activities which interfere with the educational mission within classroom." Students who disrupt the educational experiences of other students and/or the instructor's course objectives in a face-to-face or online course are subject to disciplinary action. Such behavior impedes students' ability to learn or an instructor's ability to teach. Disruptive behavior may include but is not limited to non-approved use of electronic devices (including cellular telephones); cursing or shouting at others in such a way as to be disruptive; or, other violations of an instructor's expectations for classroom and online conduct.

For more information, please see the [FAU Office of Student Conduct](#).

## **Policy on the Recording of Lectures**

Students enrolled in this course may record video or audio of class lectures *for their own personal educational use*. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. *Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.*

## **AI Prohibited Policy:**

**The use of AI to assist in any work assigned in this specific course is prohibited.**

## **AI Policy**

FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original

work. FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment.

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the Florida Atlantic Code of Academic Integrity, Regulation 4.001.

## **Attendance Policy**

*Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating in an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence - by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.*

## **Counseling and Psychological Services (CAPS) Center**

*Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>*

## Disability Policy

*In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/).*

## Code of Academic Integrity

*Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).*

Plagiarism is unacceptable in the University community. Academic work must be an original work of your own thought, research, or self-expression. When students borrow ideas, wording, or organization from another source, they must acknowledge that fact in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass off such work as one's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized. If in doubt, cite your source.

Wilkes Honors College Honor Code: All students agree to adhere to the honors code, available online at: <http://www.fau.edu/honors/academics/honor-code.php>

## Required Texts/Readings

***Neuroscience: Exploring the Brain, Enhanced 4<sup>th</sup> Edition***

Author(s): Mark F. Bear; Barry W. Connors; Michael A. Paradiso

Publisher: Jones and Bartlett Learning

ISBNs- **9781284211283** (physical textbook + online resources); **9781284211276** (eBook + online resources)

### Required articles throughout the semester:

Yuste R. From the neuron doctrine to neural networks. Nat Rev Neurosci. 2015 Aug;16(8):487-97. doi: 10.1038/nrn3962. Epub 2015 Jul 8. PMID: 26152865.

Cardozo D. An intuitive approach to understanding the resting membrane potential. Adv Physiol Educ. 2016 Dec;40(4):543-547. doi: 10.1152/advan.00049.2016. PMID: 27836859.

Glasgow SD, McPhedrain R, Madranges JF, Kennedy TE, Ruthazer ES. Approaches and Limitations in the Investigation of Synaptic Transmission and Plasticity. *Front Synaptic Neurosci.* 2019 Jul 24;11:20. doi: 10.3389/fnsyn.2019.00020. PMID: 31396073; PMCID: PMC6667546.

Ohla K, Yoshida R, Roper SD, Di Lorenzo PM, Victor JD, Boughter JD, Fletcher M, Katz DB, Chaudhari N. Recognizing Taste: Coding Patterns Along the Neural Axis in Mammals. *Chem Senses.* 2019 Apr 15;44(4):237-247. doi: 10.1093/chemse/bjz013. PMID: 30788507; PMCID: PMC6462759.

Blumberg J, Kreiman G. How cortical neurons help us see: visual recognition in the human brain. *J Clin Invest.* 2010 Sep;120(9):3054-63. doi: 10.1172/JCI42161. Epub 2010 Sep 1. PMID: 20811161; PMCID: PMC2929717.

McGregor MM, Nelson AB. Circuit Mechanisms of Parkinson's Disease. *Neuron.* 2019 Mar 20;101(6):1042-1056. doi: 10.1016/j.neuron.2019.03.004. PMID: 30897356.

### **Supplementary articles (optional):**

Rust NC, Cohen MR. Priority coding in the visual system. *Nat Rev Neurosci.* 2022 Jun;23(6):376-388. doi: 10.1038/s41583-022-00582-9. Epub 2022 Apr 11. PMID: 35410358.

Powerpoint slides and additional materials, such as activities, review sheets, and research articles will be posted to Canvas. A “Resources” module will contain helpful material including resources to support students, and as the semester progresses, it will be updated with information on scholarships, research, scientific lectures, and other professional development opportunities. I will review the use of Canvas and expectations for the course with you during the first day of class.

## **Time Commitment per Credit Hour**

This course has 3 credit hours. For traditionally delivered courses, one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work per week (including reading and studying) is expected *for each credit hour*. Equivalent time and effort are required for Summer Semesters, which usually have a shortened time frame. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

## **Course Communication Policy**

EXPECTATIONS FOR STUDENTS



### Announcements/e-mail

You are responsible for reading all announcements and e-mails sent by the instructor. Check the course announcements each time you log in. You are responsible for reading all your course email and responding in a timely manner. Be sure to set up notifications in Canvas so that you receive all notifications for the course. Students should use check their FAU e-mail regularly and use that e-mail address when communicating with the instructor. **Always use your FAU e-mail account or Canvas to e-mail me – do not use other accounts, such as your personal g-mail account.**

### Electronic Communication Policy

In addition to the University's policy, please consider the following:

- Privacy, confidentiality, and security in all electronic communications.
- All electronic communication resources must be used for the course and in alignment with to the University mission.
- Prohibited use of false identity, false identity pseudonyms, or anonymous (sender's name or electronic identification is hidden).
- Access without consent, disruption of services including introducing computer contaminants (viruses), and harassment of any kind are prohibited

Please see the Office of Information Technology's policies on Cyber Security Awareness.

**Office hours:** See the first page of the syllabus for office hours. I encourage students to see me during office hours with any questions or concerns. Appointments are strongly recommended. If your class schedule prevents you from meeting during my posted office hours, let me know, and I will do my best to work something out.

### Course-Related Questions

Questions are welcome! In addition to asking questions in class, you may also e-mail me at [cspenc27@fau.edu](mailto:cspenc27@fau.edu) or come to office hours with questions. Except on weekends and holidays, the instructor will generally answer questions within 48 hours. Please don't hesitate to reach out - I'm here to help!

## Course Topical Outline

## Honors Intro to Neuroscience

Textbook: **Neuroscience: Exploring the Brain 4<sup>th</sup> ed. Bear et al.**

### Course Outline

\*This outline is subject to change by the instructor, and will be updated accordingly during the semester\*

<u>Day/Date</u>	<u>Topic</u>	<u>Materials</u>
Tuesday, Aug 19	Introduction/overview	Syllabus
Thursday, Aug 21	Lec 1: Neuroscience: Past, Present, and Future	Ch 1; <i>follow up reading- Yuste 2015</i>
Tuesday, Aug 26	Lec 2: Neurons and Glia	Ch 2
Thursday, Aug 28	Lec 3: The Neuronal Membrane at Rest	WS 1; Ch 3; <i>follow up reading- Cardozo 2016</i>
Tuesday, Sep 2	Lec 4: The Action Potential	Ch 4
Thursday, Sep 5	Lec 5: Synaptic Transmission	WS 2; Ch 5; <i>follow up reading- Glasgow et al 2019</i>
Tuesday, Sep 9	Exam 1 review	In class discussion; Review submission
Thursday, Sep 11	Exam 1	Covers Ch 1-5
Tuesday, Sep 16	Lec 6: Neurotransmitter Systems	Ch 6; <i>follow up readings linked in Lec 6 final slide</i>
Thursday, Sep 18	Lec 7: The Structure of the Nervous System	Ch 7
Tuesday, Sep 23	Lec 8: The Chemical Senses	WS 3; Ch 8; <i>follow up reading- Ohla et al 2019</i>
Thursday, Sep 25	Group Review Worksheet	Covers Ch 6-8
Tuesday, Sep 30	Lec 9: The Eye	Ch 9
Thursday, Oct 2	Lec 10: The Central Visual System	WS 4; Ch 10; <i>follow up reading- Blumberg and Krieman 2010. Optional reading- Rust and Cohen 2022</i>
Tuesday, Oct 7	Exam 2 Review	In class discussion; Review submission
Thursday, Oct 9	Exam 2	Cover Ch 6-10
Tuesday, Oct 14	Lec 11: The Auditory and Vestibular Systems	Ch 11
Thursday, Oct 16	Lec 12: The Somatic Sensory System	WS 5; Ch 12 pt 1
Tuesday, Oct 21	Lec 13: The Somatic Sensory System	Ch 12 pt 2
Thursday, Oct 24	Lec 14: Spinal Control of Movement	WS 6; Ch 13
Tuesday, Oct 28	Lec 15: Brain Control of Movement	Ch 14; <i>follow up reading- McGregor and Nelson 2019</i>
Thursday, Oct 30	Exam 3 Review	In class discussion; Review submission
Tuesday, Nov 4	Exam 3	Covers Ch 11-14

Thursday, Nov 6	Lec 16: Chemical Control of the Brain and Behavior	Ch 15
Tuesday, Nov 11	NO CLASS- Veteran's Day	
Thursday, Nov 13	Lec 17: Brain Rhythms and Sleep (guest lecture by Ph.D candidate Joey Wasserman)	Ch 19
Tuesday, Nov 18	Lec 18: Memory System; Molecular Mechanisms of Learning and Memory (guest lecture by Dr. Cesar Ceballos- Postdoc in Pena lab)	WS 7; Ch 24; 25; <i>follow up reading- TBD</i>
Thursday, Nov 20	Memory Review Paper; TBD	WS 8; Paper Discussion
Tuesday, Dec 2	(reading day) Optional Zoom Final review	Submit Completed Final Review
Thursday, Dec 4	Exam 4 (Final exam)  7:45am-10:15am  *Note different time, but same classroom*	Cumulative