

**ADVANCED TOPICS IN NEUROSCIENCE
FALL 2016**

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Faculty profile:	http://www.uta.edu/psychology/
Course number:	BIOL/PSYC 4421-001
Time and place for Lecture:	Tuesday and Thursday 9:30 - 10:50 AM, LS 428
Office hours for lecture:	Monday 11:00 AM - 12:00 PM or by appointment, ERB 434
Teaching Assistant for Lab:	Rahul Ravi (rahul.ravi2@mavs.uta.edu)
Time and place for Lab:	Wednesday 2:00 - 3:50 PM, LS 101
Office hours for lab:	Monday 11:00 AM - 12:00 PM, ERB 442

1. COURSE DESCRIPTION AND LEARNING OUTCOMES:

This course will cover advanced topics in neuroscience using an integrative and participatory format that includes a lecture portion and a laboratory section. The course is favorable for individuals who have a general background in neuroscience (BIOL/PSYC 3322) and/or neuropharmacology (BIOL/PSYC 4309), and will focus on specific content that is especially relevant to gain a deeper understanding of how the nervous system works and what underlying mechanisms control our behaviors. The lecture portion will be combined with a lab discussion, which will provide a forum to discuss neuroscience research-related issues. Students are expected to develop a deeper understanding of the nature of Neurobiology, and learn how basic neuroscience is linked to clinical uses. Completion of the course is essential for students who are interested in pursuing a career in neurobiology research or clinical practice.

2. COURSE PREREQUISITES:

BIOL/PSYC 4309 and/or BIOL/PSYC 3322

3. REQUIRED TEXTBOOK AND OTHER COURSE MATERIALS:

- 1) Purves D. et al. Neuroscience, 5th Edition. Sinauer Associates, 2012. ISBN 978-0-87893-695-3. Please refer to the Book Website: www.sinauer.com/neuroscience5e. Please also refer to “**DESCRIPTIONS OF LECTURE SCHEDULE AND MAJOR ASSIGNMENTS**”.
- 2) All other readings will be provided through Blackboard.

4. DESCRIPTIONS OF LECTURE SCHEDULE AND MAJOR ASSIGNMENTS:

A. Tentative lecture and topic schedule

8/25 – 12/7/2016, TR 9:30-10:50 AM, LS 428

WK	Date (Lecture)	Lecture Topics (Every Tuesday and Thursday)	Date (Lab Session)	Lab Discussion (Every Wed)	Lab Assignment Due
1	8/25	Neural Signaling: (Ch 2,3) Voltage-dependent membrane permeability		No lab	
2	8/30, 9/1	Neural Signaling: (Ch 4,5) Channels and transporters, Synaptic transmission	8/31	Introductory lab	
3	9/6, 8	Neural Signaling: (Ch 6) Neurotransmitters and their receptors	9/7	Lab 1	9/05 before 11:59 pm
4	9/13, 15	Neural Signaling: (Ch 6,7) Neurotransmitters and their receptors Molecular signaling within neurons	9/14	No Lab	
5	9/20, 22	Neural Signaling: (Ch 7,8) Molecular signaling within neurons Synaptic plasticity	9/21	Lab 2	9/19 before 11:59 pm
6	9/27, 29	Neural Signaling: (Ch 8) Synaptic plasticity Sensation/Sensory Processing: (Ch 9) Somatic sensory system	9/28	Lab 3	9/26 before 11:59 pm
7	10/4 10/6	Sensation/Sensory Processing: (Ch 9,10) Somatic sensory system, Pain Exam 1 (Oct 6, Thursday, at LS 428) Chapters 2 ,3, 4, 5, 6, 7, 8)	10/5	Lab 4	10/3 before 11:59 pm
8	10/11, 13	Sensation/Sensory Processing: (Ch 10) Pain Sensation/Sensory Processing: (Ch 11) Vision	10/12	Lab 5	10/10 before 11:59 pm
9	10/18, 20	Sensation/Sensory Processing: (Ch 11) Vision Sensation/Sensory Processing: (Ch 12) Vision pathways	10/19	Lab 6	10/17 before 11:59 pm
10	10/25, 27	Sensation/Sensory Processing: (Ch 12) Vision pathways	10/26	Lab 7	10/24 before 11:59 pm
11	11/1, 3	Movement/Its Central Control: (Ch 16) Lower motor neurons circuits and motor control Movement/Its Central Control: (Ch 17) Upper motor neurons control of the brainstem and spinal cord	11/2	Lab 8	10/31 before 11:59 pm
12	11/8, 10	Movement/Its Central Control: (Ch 17) Upper motor neurons control of the brainstem and spinal cord Movement/Its Central Control: (Ch 18,19) Modulation of movement by the basal ganglia	11/9	Lab 9	11/7 before 11:59 pm
13	11/17	Movement/Its Central Control: (Ch 19) Modulation of movement by the cerebellum	11/16	Lab 10	11/14 before 11:59 pm

14	11/22	Movement/Its Central Control: (Ch 19) Modulation of movement by the cerebellum The visceral motor system (Ch 21)	11/23	Lab 11	11/21 before 11:59 pm
15	11/29, 12/1	The visceral motor system (Ch 21)	11/30	Lab 12	11/28 before 11:59 pm
16	12/5-9	Review Makeup exams (Dec 6, Tuesday)			
17	12/12 - 16	Exam 2 (Chapters 9, 10, 11, 12, 16, 17, 18, 19, 21), at LS 428. Follow UTA final exam schedule: http://www.uta.edu/records/ downloads/fin als/finalexamschedulefall2016.doc.pdf			

B. Weekly papers and lab discussion (LS 101)

A research article or material is provided to everyone via Blackboard. A paper should be generated based on the readings, which should include the following portions:

1) The first part will be a 1-2 page summary of the article set for that week. For a research article, your summary should include (a) a description of the theoretical background and the applied setting of the research; (b) summary of methods; (c) major findings of each individual experiment; You will also demonstrate your own creativity and insights (d) summarize the “take-home message” from the article as a whole, and (e) offer some suggestions for future, related research. A more specific rubric will be provided in lab.

2) The second part of each paper will be a list of 3-4 substantive questions from the reading for that week. “Substantive” means that your question indicates a mature thoughtfulness and a critical examination of the paper. It also means that you must attempt to offer up some kind of a response to your own question, based on your individual efforts to discover the answer. Please submit your questions on the last page of your summary and also bring them to the lab for further discussion.

Please note:

1) Weekly papers are individual (not group) projects. Please work alone, and do not plagiarize from other people or readings.

2) These will be due by **11:59 PM on MONDAY** of each week beginning in week 3 (September 5, 2016). Papers must be uploaded via Blackboard.

3) Papers including content of the questions will be discussed in the lab session on Wednesday of each week.

C. Lab presentation (LS 101)

Everyone enrolled in this course is responsible for giving a 30-minute presentation using Powerpoint slides to the lab on the topic of the article assigned that week.

D. Lab attendance (LS 101)

Lab attendance and participation are required in this course (please refer to “**ASSESSMENTS**”).

5. ASSESSMENTS OF EXAMINATIONS, WEEKLY PAPERS, PRESENTATION, AND PARTICIPATION:

A. Examinations (250 points)

There will be TWO close book examinations, including the final exam. The final exam will NOT be comprehensive. The format for exams will be short-answer questions. Each exam will be worth 125 points. You are required to take all two exams. **Please note:** You are expected to be in class on time during examination dates. Exams will not be given to any late coming students after the first exam has been turned in. If you come after this point to take the exam, it will be considered a “missed” exam. If you miss an exam, no grade will be given.

B. Weekly papers (72 points)

Twelve of these papers are required, corresponding to each of the 12 research articles. Papers will be worth 6 points each, for a total of 72 points.

C. Lab presentation (16 points)

Presentation will be judged by five criteria: Slide preparation (3 points), Clarity (3 points), Critiques (3 points), Presentation (3 points), and Understanding (4 points) for a total of 16 points.

D. Lab attendance and participation (26+26=52 points)

Lab attendance and participation (13 sessions) are required in this course. Attendance points: 2 points per session, beginning in the second week. 26 points possible (2 points x 13 week’s sessions).

Lab participation points: Earn 2 additional points per session by speaking in the lab, including (but not limited to) asking questions based on articles that are assigned to read, respectfully responding to another member of the class, raising a relevant issue for discussion, etc. Remaining silent earns zero points. 26 points possible (2 points x 13 week’s sessions).

6. GRADING POLICY:

The final course grade will be determined by dividing the total number of earned points on your exams, papers, presentation, attendance and participation by the total number of possible points (390).

Two exams	250 (125 each)
Papers	72
Lab presentation	16
Lab attendance	26
Lab participation	26
Total	390

Grades will be determined as follows:

A ≥ 90%, B ≥ 80%, C ≥ 70%, D ≥ 60%, F < 60%.

Please note: There will be no extra credit work to make up the grade. Please do not ask.

7. ATTENDANCE:

At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance.

Please note: As the instructor of this course, I have established the attendance policy as below: **1)** Attendance for lectures is technically NOT mandatory. However, students who miss a lecture(s) due to absence, or portions of a lecture(s) due to tardiness or early departure will still be held accountable for all the material that is covered during those sessions. **2)** Lab attendance and participation are required in this course (please refer to "**ASSESSMENTS**").

8. MAKEUP WORK:

If you miss an exam, a grade of zero will be given. There is no provision for taking a make-up exam in this course unless documentation for a University-approved excuse must be received within five days of the missed exam date (see Catalog <http://www.uta.edu/catalog/general/academicreg>). All makeup exams will be offered in the week right before the final exam week (see **TENTATIVE LECTURE AND TOPIC SCHEDULE**). Makeup exam is **ONLY** for those students who miss the *first* exam.

9. DROP POLICY:

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aaofao/>).

10. DISABILITY ACCOMMODATIONS:

UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and

Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.*

11. Title IX policy:

The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.*

12. Academic Integrity:

Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

13. ELECTRONIC COMMUNICATION:

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Please note: Students are responsible for checking their MavMail and Blackboard regularly, so that you will be aware of course update and announcements.

14. CAMPUS CARRY:

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>.

15. STUDENT FEEDBACK SURVEY:

At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

16. FINAL REVIEW WEEK:

For semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

17. STUDENT SUPPORT SERVICES:

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

18. The IDEAS Center (2nd Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. <http://library.uta.edu/academic-plaza>.

19. EMERGENCY EXIT PROCEDURES:

Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.