



BSC 425.01E Fundamentals of Neuroscience
Spring 2024 Course Syllabus CRN: 20494

Course Location and Times: TR, 12:30pm-1:45pm; EDS 135

INSTRUCTOR INFORMATION

Instructor: Hunkar Gizem Yesilyurt, PhD

Email: HunkarGizem.Yesilyurt@tamuc.edu

Office Location: STC 255

Office Hours: TR 10AM-12PM, for other times, please email for an appointment.

Preferred Form of Communication: Email

Communication Response Time: less than 48 hours

COURSE INFORMATION

Textbook (Required): Bear, Mark F., Connors, Barry W. and Paradiso, Michael A. Neuroscience: Exploring the Brain; Fourth Edition. Baltimore: Lippincott, Williams and Wilkins, 2016. ISBN: 9781284211283

Course Description: BSC 425 Fundamentals of Neuroscience – Three semester hours. This course is intended for advanced undergraduate biology students who understand genetics and cell biology/biochemistry. The course is a survey introducing various aspects of neuroscience and is textbook based. The cell types of the nervous system are introduced, with emphasis on the molecular specializations used for these cells to function and develop connections to other cells. The structure, function, and processing of all 6 senses (including kinesthesia) are covered, as are muscle control circuits. More complex functions of the nervous system, including control of eye movements, hunger, sleep, addiction, speech, and learning and memory are also covered. Prerequisites: BSC 301 and 304.

The syllabus/schedule are subject to change.

Student Learning Outcomes

1. Describe unique and common characteristics of unifying concepts of neurons (foundations) including:
 - Cellular components of neurons
 - Functional Role of Glia
 - Membrane Potential, Action Potentials and Neurotransmitters
 - Receptors and Postsynaptic Integration
2. Understand sensory motor systems, particularly:
 - Chemical Senses
 - The Eye
 - The Somatic Motor System
3. Apply principles of neuroscience to demonstrate an understanding of the brain and behavior, particularly:
 - Sex and the Brain
 - Brain Mechanisms of Emotion
 - Mental Illness
4. Describe the concepts of complex neural processes (the changing brain) including:
 - Wiring the Brain
 - Molecular Mechanisms of Learning and Memory

Course Requirements:

- Proficiency in using the D2L Brightspace Learning Management System through myLeo Online
- Proficiency in use of Microsoft Word, Excel, and PowerPoint
- Potential usage or installation of relevant graphics programs or third-party programs for viewing PowerPoint slides

Instructional Methods: Instruction will consist of in-class lectures and discussions. Learning will also be achieved through at-home reading of relevant chapters in the textbook and laboratory exercises and observations. PowerPoints of all lectures will be made available in the D2L Learning Management System at myLeo Online, posted within 24 hours after that day's lecture. Class announcements and reminders for important events will also be regularly posted through this system. They will also be announced in class. Course progress can be monitored through the online system.

Student Responsibilities:

- Read chapters in the textbook for relevant materials covered each week in class as noted in course schedule.
- Regularly check both myLEO Online and university email accounts for announcements or class emails.
- Attend and participate in discussions during lecture
- Attend quizzes and exams
- Other responsibilities as described in the laboratory component of the course by the laboratory instructor

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Grading Scale:

A = 89.5-100%

B = 79.5-89.49%

C = 69.5-79.49%

D = 59.5-69.49%

F = <59.5%

Assessments (total of 500 points)

Three Term Exams – 75 pts each = 225 points

Comprehensive Final Exam = 100 points

15 Little Chapter Quizzes – 5pts each = 75 points,

2 Assignments – 25 pts each = 50 points

Bonus for a Group/Individual Presentation: 15 points

Total = 450 points (100%).

COURSE AND UNIVERSITY PROCEDURES/POLICIES**Course Specific Procedures/Policies**

Quizzes and Assignments: Quizzes will be approximately every week from each chapter and will be administered online at D2L (15 quizzes worth 75 points). At home assignments will be assigned two times during the semester (50 points). In addition, a group or individual presentation on a selected topic in physiology or on a selected research paper related to physiology will be your contribution to the active learning process (15 points; details to be discussed in the class). Be sure to check D2L announcements for updates.

Exams: Consist of multiple-choice questions (70-80%) and short answer questions (20- 30%). The term exams will be taken at the date and time specified in the course schedule below and the final exam will be cumulative and follow the university final exam schedule. Some questions for quizzes and exams from a given chapter may be derived from the same Test Pool and repeated.

Attendance: Repeated unexcused absences will negatively affect grades (especially if borderline); similarly good attendance and behavior will be rewarded via attendance/participation credit.

Makeup Policy: The student is responsible for requesting a makeup when they are unable to attend the regularly scheduled examination and must schedule the makeup within 2 days of the absence. Makeup exams will be scheduled only in the event of an EXCUSED absence (as defined in the Student's Guidebook). If the test is not made-up, the student will receive a zero for that exam.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

The syllabus/schedule are subject to change.

Tentative Course Schedule (Subject to Change)

| Class of | Topics (Book Chapters) |
|--------------|--|
| Jan 11 | Syllabus/Welcome Chapter 1: Introduction |
| Jan 16-18 | Chapter 1: Introduction (cont'd) Chapter 2: Neurons and Glia |
| Jan 23-25 | Chapter 3: The Neuronal Membrane at Rest Chapter 4: The Action Potential |
| Jan 30-Feb 1 | Chapter 4: The Action Potential Chapter 5: Synaptic Transmission |
| Feb 6-8 | Exam #1 (Tue, Feb 6th; (Ch: 1-4)) Chapter 5: Synaptic Transmission cont'd |
| Feb 13-15 | Chapter 6: Neurotransmitter Systems <u>Assignment #1 due Feb 18th (Sunday midnight)</u> |
| Feb 20-22 | Chapter 6: Neurotransmitter Systems cont'd Chapter 7: The Structure of the Nervous System |
| Feb 27-29 | Chapter 7: The Structure of the Nervous System Chapter 17: Sex and the Brain |
| Mar 5-7 | Exam #2 (Tue, March 5th ; (Ch: 5, 6, 7)) Chapter 18: Brain Mechanisms of Emotion |
| Mar 12-14 | No classes (Spring Break) |
| Mar 19-21 | Chapter 18: Brain Mechanisms of Emotion Chapter 22: Mental Illness |
| Mar 26-28 | Chapter 8: The Chemical Senses |
| Apr 2-4 | Chapter 9: The Eye Chapter 12: The Somatic Sensory System |
| Apr 9-11 | Exam # 3 (Tue, Apr 9th; (Ch: 17, 18, 22, 8, 9)) Chapter 12: The Somatic Sensory System cont'd |
| Apr 16-18 | Chapter 23: Wiring the Brain <u>Assignment #2 due Apr 21st (Sunday midnight)</u> |
| Apr 23-25 | Chapter 25: Molecular Mechanisms of Memory and Learning |
| Apr 30 | Big Picture/Current Hot Topics in the Field/Review |
| May 1-3 | Study Days |
| Finals Week | Final Exam – May 9th 10:30am-12:30pm 50% cumulative + 50% from Chapters 12, 23, 25, Hot Topics |

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University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: Netiquette

<http://www.albion.com/netiquette/corerules.html>

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

Graduate Student Academic Dishonesty 13.99.99.R0.10

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

AI Use in Course: Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

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In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

<https://inside.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

13.99.99.R0.10 Graduate Student Academic Dishonesty

<https://inside.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/graduate/13.99.99.R0.10.pdf>

ADA Statement

Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Waters Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: Office of Student Disability Resources and Services

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status.

Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

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For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

TECHNOLOGY REQUIREMENTS

Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

☑ Ensure that your browser has JavaScript and Cookies enabled.

☑ For desktop systems, you must have Adobe Flash Player 10.1 or greater.

☑ The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

| Desktop Support Browser | Supported Browser Version(s) | Maintenance Browser Version(s) |
|-------------------------------|------------------------------|--------------------------------|
| Microsoft® Edge | Latest | N/A |
| Microsoft® Internet Explorer® | N/A | 11 |
| Mozilla® Firefox® | Latest, ESR | N/A |
| Google® Chrome™ | Latest | N/A |
| Apple® Safari® | Latest | N/A |

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| Tablet and Mobile Support Device | Operating System | Browser | Supported Browser Version(s) |
|----------------------------------|------------------|-----------------------|--|
| Android™ | Android 4.4+ | Chrome | Latest |
| Apple | iOS® | Safari, Chrome | The current major version of iOS (the latest minor or point release of that major version) and the previous major version of iOS (the latest minor or point release of that major version). For example, as of June 7, 2017, D2L supports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version. Chrome: Latest version for the iOS browser. |
| Windows | Windows 10 | Edge, Chrome, Firefox | Latest of all browsers, and Firefox ESR. |

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
 - o 512 MB of RAM, 1 GB or more preferred
 - o Broadband connection required courses are heavily video intensive
 - o Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- **For Zoom Meeting sessions 8 Mbps is required.** You must have a:
 - o Sound card, which is usually integrated into your desktop or laptop computer
 - o Speakers or headphones.
 - o *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The

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most current version of Java can be downloaded at: JAVA web site
<http://www.java.com/en/download/manual.jsp>

- Current anti-virus software must be installed and kept up to date.
- Running the browser check will ensure your internet browser is supported.
 - Pop-ups are allowed.
 - JavaScript is enabled.
 - Cookies are enabled.
- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:

o Adobe Reader <https://get.adobe.com/reader/>

o Adobe Flash Player (*version 17 or later*) <https://get.adobe.com/flashplayer/>

o Adobe Shockwave Player <https://get.adobe.com/shockwave/>

o Apple Quick Time <http://www.apple.com/quicktime/download/>

- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

Brightspace Support

Need Help?

Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

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Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or click on the **Live Chat** or click on the words “click here” to submit an issue via email.

System Maintenance

D2L runs monthly updates during the last week of the month, usually on Wednesday. The system should remain up during this time unless otherwise specified in an announcement. You may experience minimal impacts to performance and/or look and feel of the environment.

Interaction with Instructor Statement

The grading of the assignments, quizzes, and exams will be completed within 1-5 days depending on the length of the assignment or test. In most cases, the grading will be completed within 24 hours and the questions will be discussed during the next class period. Students are encouraged to make an appointment with the instructor outside the office hours to discuss any issue related to the course individually or in groups.