

Neuroscience Undergraduate Elective
Neuroscience and Brain_Health (NCS_4v90)
aka Preventive Neurology
Spring 2025

General Information

Instructor: Steven Small, M.D., Ph.D.
Office and Laboratory: TI-BMES Building, UTSW Campus
Contact Email: small@utdallas.edu
Virtual Office Hours: By Appointment
Lab Web Site: <https://labs.utdallas.edu/braincircuits/>

Meeting Time: Monday and Wednesday, 10-11:15AM, CRA 12.120

Suggested Prerequisites

PSY 2301 Introduction to Psychology

NSC 3361 Introduction to Neuroscience

One Statistics Course

Texts

There are no required textbooks for this course. Some relevant information can be found in the books that are listed on the eLearning site. The chapters and articles used to develop the lectures are listed in separate reference files for each lecture on that site. One particularly useful textbook on cognition and aging and another on the basic neuroscience of aging (more of an encyclopedic reference) are listed here (and in eLearning).

Cabeza, R., Nyberg, L., & Park, D. C. (Eds.). (2016). *Cognitive Neuroscience of Aging: Linking Cognitive and Cerebral Aging*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199372935.001.0001>.

Hof, P. R., & Mobbs, C. V. (2009). *Handbook of the Neuroscience of Aging*. Elsevier Science & Technology. <http://ebookcentral.proquest.com/lib/utd/detail.action?docID=477376>.

Course Modality and Expectations

This course will operate as a traditional in-person lecture course. It will be possible to prepare for the lectures by reading articles that will be the basis of lectures, but all required material will be present in the lectures themselves, including material in the slides as well as information conveyed orally during the presentation. Attendance is required.

Course Overview

This course will be in traditional lecture format — the course director will prepare a formal

lecture for each class, with each slide presentation augmented by verbal commentary. Topics covered will include the nature of brain health and preventive neurology, why it is important, the adverse effects of impairments to brain health, and significantly, how to maintain brain health throughout the lifespan. At least half the course will emphasize issues of prevention, i.e., how to adjust medical parameters and change lifestyle factors to refocus from a long “lifespan” to a long “health span”. As the course wraps up, we will address the topic of commercial marketing of “brain health” aids — drugs, devices, programs — that are backed by little or no substantive clinical data.

Course General Aims: An overall aim of this course is to understand the role of biology, medicine, and behavior in maximizing the lifespan of healthy cognitive, motor, and sensory function.

Course Learning Objectives: Upon completing this course, students should be able to:

- Describe and explain the rudiments of brain health.
- Understand the role of both medical and lifestyle factors in contributing to brain health.
- Describe and understand the pathophysiology of neurodegenerative diseases and stroke, the two most important contributors to chronic neurological impairments.
- Know the basic science underlying sleep, exercise, diet, and social connectedness, and how changes in these factors can improve healthy aging.
- Understand how to modify the main medical risk factors to improve health aging.
- Critically analyze the evidence supporting putative “brain health” interventions.

Readings

There are no required readings for this course. Optional readings will be listed in the course schedule for those who wish to enhance their understanding and/or to have context for understanding better the course lectures. All of the adjunctive articles are available free of charge from the UTD McDermott Library. Many of the links to these articles will be available on the course website on eLearning.

Course Requirements

Examinations (84% of grade). After every few lectures, there will be a multiple choice test, to be taken in class. The questions on the exams will be based solely on the material discussed during class time. The class session immediately preceding each examination will be devoted to an open discussion and review of the topics on the examination.

There will be five examinations. The four best examination grades count toward the final grade. Thus, it is possible to miss one examination without any penalty.

Therefore, each examination counts for 21% of the final grade.

Attendance (16% of grade). There are twenty scheduled sessions. One point will be awarded

for attendance at each session up to 16 total points. Thus, it will be possible to miss four classes without penalty.

Extra Credit (5% bonus). A one-page analysis (no more than 500 words) of the brain health of one real person (de-identified) known to the student. The discussion should include 10% demographic overview, 20% risk factors for impaired brain health, 20% suggestions for improving brain health, and 50% summary of how recommendations will affect risk factors, mitigate chronic disease and improve healthy aging. At most five references should be included, and do not count toward the one page 500 word limit.

Grading of Extra Credit

- Length and reference requirements met
- Complete relevant demographics
- Completeness and accuracy of risk factor summary
- Completeness and relevance of suggestions
- Informed and reasoned analysis of suggestions
- Quality and relevance of references

Course Policies

Grades: As detailed above, the final grade will be based on examinations (84% of grade) and attendance (16% of grade), with the possibility of extra credit through a one-page brain health analysis (5% bonus). Examination grades will be based on absolute performance, not on the relative performance of others in the class (i.e. there will not be a curve). Thus, everyone in the class has the potential to achieve a top grade in the class.

At the end of the semester, final grades will be computed by taking the proportion of the points earned for the course requirements. If your final score has a fractional part that is exactly 0.5 or greater, the value will be rounded up to the nearest whole number. If your score has a fractional part lower than 0.5, it will be rounded down. Your final letter grade will be based on the following grading scale: A 93-100%; A- 90-92; B+ 87-89; B 83-86; B- 80-82; C+ 77-79; C 73-76; C- 70-72; D 60-69; F <60.

Feedback. All grades will be posted on the course website as soon as they are available. Every effort will be made to keep an up-to-date and accurate reflection of your course grade on eLearning. Occasional grading errors may occur, so please bring concerns about your grade to the course director's attention (privately) as soon as possible.

Additional Credit. Please do not ask for additional opportunities to receive credit. One extra credit opportunity is included in the course organization, and no others will be granted.

Class Attendance: Students are expected to attend and participate in every class session in person. There is no virtual option. Please be courteous to your instructor and classmates by arriving promptly for class and quietly excusing yourself if necessary. If for any reason you must miss a class, you are responsible for notifying the instructor immediately. The organization of

the class is such that up to four absences will not affect your grade. If there are any additional absences, you will not achieve credit for attending and discussing on that day.

Unforeseen Circumstances: There are five examinations and only four count. So you can miss one examination for any reason whatsoever., but you cannot miss more than one examination without having your grade suffer as a result. The only exception to this rule is if there are medical reasons to miss more than one exam, in which case every absence must be accompanied by a letter from a medical doctor (M.D. or D.O.). In this case, and only this case, a comprehensive final exam will be available at the Student Testing Center to make up for the missed examination(s).

Technical Requirements: In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage.

Course Access and Navigation: This course can be accessed using your UT Dallas NetID account on the eLearning website. Please see the course access and navigation section of the Getting Started with eLearning webpage for more information. To become familiar with the eLearning tool, please see the [Student eLearning Tutorials](#) webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication: This syllabus and the course site on eLearning will be the primary source of information for the course. Course announcements will also be made via email and posted on eLearning. For specific questions that are not answered in the syllabus or on eLearning, you may email the instructor. If you chose to email me, please include "Brain Health Course Question" in the subject line of the email. I will do my best to return emails within 3 working days.

Please do not wait until the last minute to send inquiries. Unanswered last minute inquiries will not excuse you from any obligations in the course. If you would prefer to talk to me directly, please email me for virtual office hours listed on the first page, including "Office Hour Scheduling" in the subject line.

Class Participation: Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to attendance in this class, which is critical since there is no associated textbook, and all educational information is embedded in the real-time course lectures and discussion. Class attendance will be documented by the instructor. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings: Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student

AccessAbility has approved the student to record the instruction, and this has been communicated in writing to the instructor, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation (following written communication to the instructor). Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Materials: The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Academic Challenges: If you are struggling with the course material, it is imperative that you contact the course instructor as soon as possible. It will be possible to help you develop study skills and identify additional resources if you make contact in a timely matter; however, there is little that can be done to help you right before an assessment and even less if you wait until the end of the course. Students who find themselves struggling with the use of academic language are encouraged to check out the resources at the [Writing Center](#).

Server Unavailability or Other Technical Difficulties. The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online [eLearning Help Desk](#). The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Academic Support Resources. Any student who may need an accommodation based on the potential impact of a disability should contact the Office of Student AccessAbility to establish eligibility and to coordinate reasonable accommodations. Accommodation will only be granted to students who have approval of this office and after a formal letter from that office is received by the instructor. For additional information please refer to the [Office of Student AccessAbility](#).

The information contained in the following link lists the University's academic support resources for all students. Please see <http://go.utdallas.edu/academic-support-resources>.

General University Policies

Academic Dishonesty and The Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: "As a Comet, I pledge honesty, integrity, and service in all that I do." Academic honesty is expected of all UTD students. UTD

policy indicates that “Academic dishonesty includes but is not limited to plagiarism, collusion, cheating, fabrication, facilitating academic dishonesty, failure to contribute to a collaborative project, and sabotage” (<https://www.utdallas.edu/conduct/dishonesty/>). If you have questions, please contact the instructor.

Large Language Models (LLMs) and Generative AI

The use of LLMs (e.g., Microsoft CoPilot) to help you to understand the literature is permitted for this course. The use of LLMs to help with any writing for the course is not permitted. This will be checked electronically.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class. Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

Please Note: The descriptions and timelines contained in this syllabus are subject to change at the discretion of the instructor. All changes will be announced in class and updated versions of syllabus will be posted on eLearning.