

PSYC 4803-E / 8890-E Syllabus

Spring 2025 Neuroplasticity in Atypical Development (3 Credits)

Tuesdays and Thursdays 12:30pm - 1:45pm, J. S. Coon 250

Instructor Information

Instructor
Woon Ju Park, PhD

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Drop-in Hours & Location
By appointment

Teaching Assistant
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Drop-in Hours & Location
By appointment

General Information

Description

This course will focus on how the human brain adapts under diverse developmental conditions, such as blindness, deafness, limb loss, ASD, and schizophrenia. Students will gain insights into the mechanisms of plasticity and accompanying behavioral and neural changes.

Pre- &/or Co-Requisites

Basic knowledge in neuroscience/psychology is preferred but not required. I will go over the basics in the first few weeks.

Course Goals and Learning Outcomes

Upon successful completion of this course, you should be able to learn:

1. Theories and mechanisms of developmental plasticity.
2. How behavior and neural processes are altered in atypical development.
3. How developmental experience contributes to cortical function and organization.

And gain the following skills:

1. Critically reading and discussing scientific papers.
2. Clearly communicating ideas orally and in writing.
3. Formulating questions about the human brain in scientific ways.

Course Materials

Course Text

In this course, assigned readings (scientific articles) are a critical component of your learning experience and are required for successful completion of the class. These readings will provide the foundational knowledge necessary for our discussions, assignments, and assessments. All required materials will be made available through the course website, where you will be expected to access them regularly.

Additional Materials/Resources

In the first few weeks of the course, I will cover the basics of the human brain and its development, guided by selected chapters from the book Fundamentals of Human Neuropsychology (Kolb and Whishaw, 7th or 8th ed). While the reading for this module is not required, it is encouraged for those who wish to deepen their understanding of these foundational concepts.

Course Website

We'll use Canvas.

Course Requirements & Grading

Requirements	Date	Weight
Reading Reactions For each article, submit via Canvas: 1) One-paragraph summary (5-6 sentences, 10 sentence max). Restate the background, author's hypothesis, samples, methods, and main findings. 2) One discussion question. Pose a question about the article, to be answered during the class. <i>* 10 out of 19 required. Pass/Fail grading.</i>	By 11:59pm two days before each class (see Course Schedule)	30%
In-class Worksheets One- to two-paragraph(s) reflections on the learned materials based on lectures and group discussions. <i>* 5 required. Pass/Fail grading.</i>	At the end of the class.	10%
In-class Exams In-class exams will cover materials from the lecture, assigned readings, and any relevant in-class discussions. The exams will include true/false, multiple choice, short answers, and short essays. <i>* The best 3 scores out of 4 will be counted towards your grade.</i>	See Course Schedule	60%
EXTRA CREDITS: Term Paper The term paper will build on the materials you read, learned and discussed in class. The prompt and grading criteria for the term paper will be introduced in class. Submit via Canvas.	April 26 th , 11:59pm	5%

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Course Expectations & Guidelines

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on an exam, term paper, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Extensions, Late Assignments, & Missed Exams

No make-ups will be offered for reading reactions and in-class exams - this policy is firm, no exceptions. Remember that only the best 10 out of 19 (reading reactions) and 3 out of 4 (in-class exams) will count towards your final grade. So, if you miss one, you can still receive a good grade in the class. Please be careful in choosing to skip assignments or exams early in the semester: you may be overwhelmed later, get sick, or otherwise need to miss an exam or assignment.

All assignments have a due date listed in the Course Schedule and on Canvas. Due to the intensive grading required, the **extra credit term paper will have a 1-day grace period with a 10% late penalty for papers turned in after 11:59pm on 4/26 and no papers accepted after 11:59pm on 4/27.**

Attendance and/or Participation

All classes will meet in person, as scheduled, unless otherwise noted (via email/Canvas announcement). Although not explicitly graded, I expect all of you to participate actively during class sessions. In-class participation will not only help you learn the course material - it will also strengthen your ability to give constructive feedback and communicate scientific findings with other scientists and the public, just as you would do if you pursued a career in science. It will also help me, the course instructor, to recognize what you understand, and what needs more explanation.

Class participation includes actively engaging in class discussions and asking and answering questions during lectures. If you have any questions, please ask them. Someone else probably has the same question, and our classroom will be a supportive learning environment. To best participate in the class: complete assignments, arrive to class on time, silence your phone before class, and limit your phone/laptop/tablet use to class-relevant activities such as note-taking.

Attendance will greatly aid your ability to contribute productively to your and other students' learning. Any relevant in-class discussions may be used as a basis for questions in the in-class exams.

If you are experiencing life events that are impinging on your ability to fully engage in this class or in your other classes, contact your instructor right away. Often, we can help you if we know about the situation before deadlines have passed. I am more than happy to help you but can only do so if you come to me when you need help during the semester.

Collaboration & Group Work

Here are the things you need to know to ensure that you are working within the constraints of both the university's policy, and my expectations for this course:

1. Reading Reactions:

You are welcome to work with other students in this class on your Reading Reactions, but you must (a) list the names of anyone you work with on your assignment, and (b) write up your own assignment, based on your own understanding of the material.

2. Term Paper:

Your paper should be crafted and written on your own. You may talk with others about your ideas, but you should be working by yourself on the actual outline and content. If you need further assistance with your paper, please consider joining me during my office hours or making an appointment with the Communication Center (<http://www.communicationcenter.gatech.edu/>).

In addition, you are required to cite all sources you use in your paper. This includes both direct quotations and cases where you use someone else's ideas. "Sources" include papers, journals, conversations, anything found on the internet, and so on. Basically, if the thought did not originate from you, you should provide a source.

3. Campus Resources:

You are permitted (and even encouraged) to make use of the academic support services offered by The Center for Academic Success (<http://www.success.gatech.edu/>) and the Communication Center (<http://www.communicationcenter.gatech.edu/>).

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Student Use of Mobile Devices in the Classroom

As research on learning shows, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, pager, laptop, etc. makes noise or is visually distracting during class. That said, many students find it useful to have a mobile device on hand to access course materials.

With this in mind, I allow you to take notes on your laptop, but request that you turn the sound off so that you do not disrupt other students' learning. In addition, if you are doing anything other than taking notes or looking at course materials on your laptop, please sit in the back row so that other students are not distracted by your screen.

Digital Learning Days

When necessary (e.g., in the event of a weather-related event on campus), I will contact all students via email and Canvas about cancelling class or our plans for moving to a digital learning day. Should I opt to hold a digital learning day, I will let you know what technologies we will utilize to access the lecture, course material, assignments, etc. as well as if the day will be asynchronous or if we will meet synchronously at our standard class time in a virtual environment. If we have an exam scheduled for that day, we will move the exam to the next class period.

Should you have concerns about your ability to participate or meet deadlines due to being negatively impacted by specific events (e.g. lack of power, lack of internet connection, or other disruption at home) or if we are using a technology that we have not previously used in this course and you have an accommodation that was not previously disclosed/needed contact me as soon as possible via [preferred communication option] so we can address your needs and concerns.

Following digital learning days, it may be necessary for me to adjust the calendar, due dates, course requirements, syllabus, etc to account for the disruption to our normal semester. If this is the case, I will communicate these changes to you as soon as possible.

Recording Classroom Activities

In order to preserve class integrity, student privacy, and a safe environment to express opinions, recording of our classes using digital, tape, or audio devices is not allowed. You are welcome (and even encouraged) to take notes and photos of the board. This policy can be waived for students with accommodations upon explicit recommendation from the Office of Disability Services.

Use of Artificial Intelligence

Artificial Intelligence (AI) content generators, especially applications like ChatGPT, can be useful tools to help us improve our writing. However, they should never serve as a substitute for your own research, opinion, and voice. Unlike a human, applications cannot think for themselves, and they sometimes provide factually incorrect information, or even entirely invented "facts". This is at odds with the purpose and integrity of scientific communication. It's also important to note that many of the current discussions regarding the development and use of AI content generators raise serious concerns about how these tools contribute to the perpetuation of biased and discriminatory practices, as well as concerns about intellectual rights violations of human creators (e.g. writers and artists) whose work was taken without consent to create the training sets at the heart of generative AI.

Because a key objective of this course is to learn to write about neuroscience, I encourage you to use the resources that work best for you to achieve this objective. Commonly, students choose to work with the Georgia Tech Communication Center. With this example in mind, for this course you may use generative AI only in the ways that a Communication Center tutor might help you. For example, a tutor could correct your grammar, identify a poorly organized paragraph, or ask you a question to help you think creatively about a topic. However, a tutor should never do the writing for you.

Examples of appropriate use of AI in this course include spelling check, grammar check, and synonym identification (e.g. MS Word, Grammarly), recommendations for reorganizing paragraphs, and recommendations for rephrasing sentences to improve clarity.

Examples of inappropriate use of AI in this course include copying entire sentences or paragraphs from the AI output, or having the app write a draft (rough or final) of an assignment for you instead of writing the draft yourself.

Any use of AI in an assignment in this course should be accompanied by a statement (minimum length: 100 words) addressing which AI tool was used, including which prompts were entered and how you used the output. This statement should be submitted as part of your relevant assignment (for both Reading Reactions and Term Paper).

There are many considerations (practical, ethical, and moral) in the discussions currently taking place about the use of AI in various fields, including in the classroom. The policies in this syllabus were developed with the scope and learning objectives of this particular course in mind. Please note that other courses may have different policies, and some may forbid AI use altogether.

Course Schedule

Date	Topic	Reading	Due
1/7	Introduction		
1/9	Mature brain	(K&W Chapters 1, 3)	
1/14	Sensory systems	(K&W Chapter 8)	
1/16	Motor systems	(K&W Chapter 9)	
1/21	Development	(K&W Chapter 23)	
1/23	Methods & stroke	Newport et al., 2022 *	Reading Reaction 1/21 11:59pm

Date	Topic	Reading	Due
1/28	Methods & handedness	Tomasi et al., 2024	Reading Reaction 1/26 11:59pm
1/30	IN-CLASS EXAM 1		
2/4	Effects of environment 1	Blakemore et al., 1970 *	Reading Reaction 2/2 11:59pm
2/6	Effects of environment 2	Gomez et al., 2019	Reading Reaction 2/4 11:59pm
2/11	Effects of environment 3	Meier et al., 2016	Reading Reaction 2/9 11:59pm
2/13	Effects of environment 4	Kilgard et al., 1998	Reading Reaction 2/11 11:59pm
2/18	Blindness	Gougoux et al., 2004	Reading Reaction 2/16 11:59pm
2/20	IN-CLASS EXAM 2		
2/25	Cross-modal plasticity 1	Saenz et al., 2008	Reading Reaction 2/23 11:59pm
2/27	Cross-modal plasticity 2	Pascual-Leone et al., 2001 *	Reading Reaction 2/25 11:59pm
3/4	Cross-modal plasticity 3	Bedny, 2017 *	Reading Reaction 3/2 11:59pm
3/6	Cross-modal plasticity 4	Sharma et al., 2000 *	Reading Reaction 3/4 11:59pm
3/11	Limb loss 1	Striem-amit et al., 2018	Reading Reaction 3/9 11:59pm
3/13	IN-CLASS EXAM 3		
3/18	SPRING BREAK	NO CLASS	
3/20	SPRING BREAK	NO CLASS	
3/25	Limb loss 2 & depression	Flor et al., 1995 *	Reading Reaction 3/23 11:59pm
3/27	Limb loss 3 & hormones	Makin et al., 2015 *	Reading Reaction 3/25 11:59pm
4/1	Deafness	Anderson et al., 2017	Reading Reaction 3/30 11:59pm
4/3	Stress	TBD	Reading Reaction 4/1 11:59pm
4/8	DIGITAL LEARNING DAY	Podcast: What is normal? *	Podcast Reaction [TBD]
4/10	Schizophrenia	Forsyth et al., 2017	Reading Reaction 4/8 11:59pm
4/15	Autism	Hazlett et al., 2017	Reading Reaction 4/13 11:59pm
4/17	IN-CLASS EXAM 4		
4/22	Wrap-up: What's at stake?		
Finals Week	Extra credit paper Due 4/26 11:59pm		

* Recommended

Please note: the dates, topics, and assignments are subject to adjustments as the semester proceeds. Relevant announcements will be made in class and on the course Canvas site.