

## **NROD60H3S Current Topics in Neuroscience: Theories of Hippocampal Function**

University of Toronto Scarborough  
Winter 2021

**Course Instructor:** Sadia Riaz

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**Office hours:** Wednesday 11am-12pm (through BB Collaborate)

*\*by appointment only (email by 11:59pm on Tuesday)*

**Class schedule:** Fridays 11am-1pm, Online- Synchronous (using Zoom)

All classes will be recorded and available for viewing for the duration of the semester.

**Course Prerequisites:** [1.0 credit from the following: NROC34H3, NROC36H3, NROC61H3, NROC64H3, NROC69H3]

### **Course Description:**

The hippocampus has been implicated in a wide variety of functions ranging from emotion regulation to modulating different learning and memory systems. In this seminar course, we will explore selected theories of hippocampal function to ultimately ask the questions “What does the hippocampus really do?” and “Does it have one overarching function or many distinct functions?”. To this end, student groups will each present a different theory of hippocampal function, which will then be compared and contrasted in a written assignment intended to challenge students to think about which theory provides a more comprehensive account of hippocampal function. This class is designed to help equip students with a few key academic skills including effective literature reviews, critical thinking and effectively communicating scientific ideas and arguments in written and oral presentation formats.

### **Learning Outcomes:**

*By the end of this course, students will:*

1. Become familiar with some of the most prominent theories of hippocampal function, including the main tenets and caveats of each theory, as well as knowledge gaps in the field of hippocampal research.
2. Understand the key methodologies commonly used to study each theory.
3. Improve their literature review skills through practice in reading and analyzing scientific articles and evaluating which findings provide the most compelling evidence for or against a given theory.
4. Improve their scientific communication skills in written and oral presentation formats through group presentations, leading and participating in class discussions and written assignments.
5. Develop critical thinking skills, scientific creativity and an evidence-based approach to argumentation through thoughtful class discussions and written assignments designed to compare and contrast different theories of hippocampal function.

6. Improve presentation and public speaking skills through group presentations and in-class discussions.
7. Engage in reflection on their learning process to promote a deeper understanding of the course material, improve their ability to synthesise information from multiple sources into a coherent narrative and thoughtful critiques, and foster enduring positive learning habits.

**Tentative Class Schedule:**

Week	Date	Topic	Deadlines
1	Jan 15	Course introduction and expectations	Sign up for presentation date and written assignment topic
2	Jan 22	<b>Topic: Memory Retrieval</b> <i>(presented by course instructor)</i>	
3	Jan 29	Group Presentation 1 <b>Topic: Explicit (vs Implicit) memory processing</b>	
4	Feb 5	Group Presentation 2 <b>Topic: Approach-Avoidance Conflict processing/Decision making</b>	
5	Feb 12	Group Presentation 3 <b>Topic: Pattern Separation/ Completion</b>	
	Feb 12-19	Reading week	-
6	Feb 26	Group Presentation 4 <b>Topic: Configural association (Conjunctive Representation/ Contextual Memory)</b>	Annotated Bibliography due Feb 26, 11:59pm
7	Mar 5	Group Presentation 5 <b>Topic: Relational memory processing</b>	
8	Mar 12	Writing Retreat	
9	Mar 19	Group Presentation 6 <b>Topic: Spatial memory processing (Cognitive map)</b>	Essay Outline due Mar 19, 11:59pm
10	Mar 26	Group Presentation 7 <b>Topic: Novelty detection</b>	
	Apr 2	Good Friday	-
11	Apr 9	Group Presentation 8 <b>Topic: Perception/ Working memory (beyond Long Term Memory)</b>	
12	Apr 12, Monday (UTSC Friday)	TBD (Closing Remarks)	Final Essay due April 12, 11:59pm

**General Class Format (weeks 2-11):**

Presentation of a selected theory of hippocampal function (60-70min)

Class discussion (20 min)

Closing remarks (5 min)

Post-class reflection (20 min)

**Course Evaluation Scheme:**

- Group Presentation (30%) = Group grade (10%) + Individual Grade (20%)
- Group Discussion (5%)
- Class Participation (20%) = Pre-class Reflection (5%) + In-class Discussion (5%) + Post-class Reflection (10%)
- Written Assignments (45%) = Annotated Bibliography (10%) + Essay Outline (10%) + Final Essay (25%)

**Course Components:**

All assignments submitted to Quercus will be evaluated by Turnitin to detect possible plagiarism.

**1. Group Presentation (30%)**

The class will be split into 8 groups (2-3 students per group), with each group presenting one theory of hippocampal function (see class schedule above). Group presentations will be evaluated for the overall flow and quality of the presentation (group presentation grade: 10%) as well as individual students' contribution to the presentation (individual presentation grade: 20%). Students will be evaluated on their understanding of the literature, ability to summarize and communicate major findings, ability to highlight the limitations of the theory, ability to synthesize an overview of the theory based on the available literature, as well as presentation skills. All group members are expected to contribute comparably to the presentation.

1 week prior to the presentation (due Friday 11:59pm), the group must submit 1 review article as mandatory reading for the class. The choice of article will be evaluated as part of the group presentation grade. The goal of the assigned reading is to give the class a good sense of the general state of research surrounding the assigned theory. All other students (non-presenters) in the class are expected to have read the assigned reading before class. Barring exceptional circumstances, readings will be made available at the start of the week (Monday).

For each theory of hippocampal function, the group presentation should cover the following:

- (1) General terms and concepts necessary to understand the theory
- (2) Historical underpinnings of the theory
- (3) A clear and in-depth discussion of the theory including:
  - Most compelling evidence supporting the theory
  - Caveats/ Evidence against the theory/ major gaps in knowledge
  - A detailed discussion of at least 2 primary articles to demonstrate common methodologies used to study the theory

- A synthesis of the evidence presented (current overview of the theory- should be *in support of* the theory)

(4) The presentation should discuss both animal and human literature (with a focus on animal literature, when possible)

The above components may be discussed in the order deemed most effective by the group, for the assigned presentation topic. The presentation is expected to be ~60-70 minutes long (beginning at 11:10am), followed by a 20-minute discussion led by the presenting group. Please log on to Zoom at 11am on the day of your presentation to avoid any delays. Presentation slides should be submitted on Quercus no later than the day of the presentation (Friday, 11:59pm).

Group work is an invaluable experience in learning to effectively collaborate and communicate scientific knowledge and ideas with others. As a group, you are expected to agree on member responsibilities and a mutual understanding of how to communicate with one another to ensure that each member has their voice heard, is respected, and included in the process. *In the event of an irresolvable group conflict, group members should contact the course instructor (sadia.riaz@mail.utoronto.ca) to raise their concerns as soon as possible (before the assigned presentation date).*

## **2. Group Discussion (5%)**

Following the group presentation, the presenting group will lead a 20-minute class discussion to discuss the current state of knowledge for the given theory. Your presentation should set the stage for an engaging and thoughtful discussion of the assigned theory of hippocampal function. The discussion should aim to help your classmates think about the take-home message from your presentation, while also encouraging critical analysis and further dialogue about any questions that were not clearly addressed in the presentation, ways in which the presentation/ theory can be improved/ expanded, or how the theory may relate to/ compare against (1 or 2 max.) selected theories previously discussed in the class.

The group can decide on the format of the discussion (eg. Q and A/ short quiz/ online activity etc.) and topics to be discussed. If you would like to host a short quiz (no more than 7 questions) or online activity through Quercus, please contact the course instructor 2-3 days before the presentation date.

While the group should work together to generate an effective discussion, presenters will be graded individually on their ability to lead and contribute to the discussion based on their knowledge of the theory and ability to critically think about and answer questions, as well as their ability to engage their peers in the discussion.

## **3. Class Participation (20%)**

For weeks 2-11, class participation of non-presenters will be assessed based on 3 components:

**(1) Pre-class Reflection (5%):** All students are expected to read the assigned reading for the day and submit a short pre-class reflection (due Friday 11am, max 300 words) discussing the main

tenets of the theory for that week. The reflection should aim to address the questions “What are the main principles of the theory?” and “What is some of the most compelling evidence in support of the theory?”

**(2) In-class Discussion (5%):** Students will also be evaluated on their participation during the class discussion based on the quality of their contributions, questions and insights.

*Writing retreat (week 8):*

This class is designed to carve out time to work on your essay outline assignment (due week 9). Participation in this class will be assessed by your ability to come prepared with a draft of your argument which you will work on in class. There will be no student presentations/ discussion, assigned readings or reflections due for this week.

**(3) Post-class Reflection (10%):** The final 20-25 minutes of class time will be dedicated to working on a post-class reflection (due Friday 2pm, max 700 words) that should aim to address some of the following questions: “What have I learnt from today’s presentation that I did not know previously/ based on the assigned reading?”, “What is the biggest limitation of the theory and how can it be addressed?”, “Are there any questions that remain unaddressed by this theory?”, “What is a similarity I have noticed between this theory and another theory previously discussed in the class?”, “How does this theory compare against another theory previously discussed in the class?”.

The reflections may go above and beyond the suggested prompts and will be evaluated for their quality of critical thought and ability to communicate ideas succinctly. They should be written in your own words and submitted in separate word documents by their respective deadlines.

#### **4. Written Assignments (45%)**

The purpose of the written assignments is to help develop scientific creativity, critical thinking and writing skills. As part of the course, we will cover a wide range of proposed theories of hippocampal function. In these assignments, you will critically analyze and compare two competing theories and advocate for one as providing a better account of hippocampal function. You will be randomly assigned a theory to advocate for, against a specific opponent theory. This will be your assigned topic for all 3 written assignments. Topics will be assigned in week 2.

All written assignments should follow APA formatting and be submitted in a word document.

#### **(1) Annotated Bibliography (10%): Due Feb 26, 11:59pm (week 6)**

Students will be conducting comprehensive background research on their assigned topic to select 15 articles to be the focus of their final essay. You may select a maximum of 3 reviews to include in this assignment. The articles selected should cover both animal and human literature (with a focus on animal literature, when possible), and include both older and current research.

For each selected article, you will be expected to provide the article abstract (copied from the article), followed by a (max) 500 word annotation explaining why the paper is relevant to your essay topic and why do you want to include it (i.e. What is the point that you would like to make in your essay that is supported by the paper).

You will be evaluated on your ability to conduct a thorough literature review, ability to identify research that is most pertinent to your topic (you will most likely have to read many articles to narrow down the best 15), ability to critically think about the literature and form a sound and convincing argument supporting your assigned theory, and ability to concisely articulate why the chosen articles are good candidates for supporting the argument to be presented in your final essay.

Note that the annotated bibliography should show reading and scholarship beyond the assigned readings and class presentations (up till the assignment due date). While you may choose to draw from the assigned readings in your final essay, it will not count towards the 15 articles selected for this assignment.

## **(2) Essay Outline (10%): Due Mar 19, 11:59pm (week 9)**

The purpose of this assignment is to help you form a concrete argument for your final essay. Students are expected to submit a 1-page summary (excluding references) of their overall argument, including the following components:

- Brief plan for the introduction (what content will be covered in the introduction, include citations as needed)
- Each main point made in the argument (include subheadings and citations as needed)
- Conclusion (summary of the overall argument)

You will be evaluated on how well you have interpreted the contents of the selected literature and integrated it into your argument, as well as the critical thought, depth, and soundness of the argument presented.

## **(3) Final Essay (25%): Due April 12, 11:59pm (week 12)**

The final essay (~10-15 pages, excluding abstract and references) should clearly present your argument in favor of one theory of hippocampal function against the opponent theory. You will be evaluated on your knowledge and understanding of the relevant literature, ability to construct a critical, thoughtful and logical argument based on the literature, ability to clearly communicate your argument and writing skills.

### **Writing resources:**

The Centre for Teaching and Learning (CTL) is available to support you in your writing and English language needs. It offers online tutoring and consultations and has a variety of helpful online resources. For more information, please visit CTL's Academic Learning Support site at <http://uoft.me/AcademicLearningSupport>

### Course Grading Scheme:

In accordance with the University Assessment and Grading Practices Policy:

<https://governingcouncil.utoronto.ca/secretariat/policies/grading-practices-policy-university-assessment-and-january-1-2020>

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
≥90%	85-89	80-84	77-79	73-76	70-72	67-69	63-66	60-62	57-79	53-56	50-52	0-49

### Course Policies:

#### 1. Classroom conduct

Our virtual classroom is a conducive learning environment where everyone should feel safe, respected and free to express intellectual curiosity. To help create this learning environment, I ask that you use respectful language, minimize potential distractions during presentations and discussions (e.g., off-topic chatting), show up to class on time, support your peers and actively engage in class-discussions.

#### 2. Email policy

Course-related correspondence should be sent to the course instructor at [sadia.riaz@mail.utoronto.ca](mailto:sadia.riaz@mail.utoronto.ca) from your utoronto.ca email, with “NROD60” in the email subject. Generally, emails will be answered within 48 hours (excluding weekends and holidays). If you have questions that may require a longer discussion or back-and-forth, I strongly recommend that you make an appointment to see me during office hours.

#### 3. Contesting a grade

Re-grade requests will only be considered within two weeks of the grade being received. These will only be considered if adequate written justification is provided by the student. If granted, re-grading will consist of re-evaluation of the complete assignment, potentially leading to a change in the grade in either direction, i.e. a grade increase, no change, or decrease. Requests without a solid rationale will not be considered (e.g. higher grade needed for entering grad school, etc.).

#### 4. Copyright of lecture material

As protection of copyright, the unauthorized use, copying, or uploading on the internet of lecture materials (presentation slides, articles etc.) is **strictly prohibited**.

### AccessAbility:

Students with diverse learning styles and needs are welcome in this course! In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible.

AccessAbility Services staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416-287-7560 or email

[ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca)). The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

**Academic integrity:**

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppjun011995.pdf>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement;
- Submitting your own work in more than one course without the permission of the instructor;
- Making up sources or facts;
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

- Using or possessing unauthorized aids;
- Looking at someone else's answers during an exam or test;
- Misrepresenting your identity; and
- When you knew or ought to have known you were doing it.

In academic work:

- Falsifying institutional documents or grades;
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes; and
- When you knew or ought to have known you were doing so.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If students have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, they are expected to seek out additional information on academic integrity from their instructors or from other institutional resources.

Note: You may see advertisements for services offering grammar help, essay editing and proof-reading. Be very careful. If these services take a draft of your work and significantly change the content and/or language, you may be committing an academic offence (unauthorized assistance) under the *Code of Behaviour on Academic Matters*.



It is much better and safer to take your draft to the Writing Centre as early as you can. They will give you guidance you can trust. Students for whom English is not their first language should go to the English Language Development Centre.

If you decide to use these services in spite of this caution, you must keep a draft of your work and any notes you made before you got help and be prepared to give it to your instructor on request.

#### **Turnitin:**

All assignments submitted to Quercus will be evaluated by Turnitin for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.

#### **Psychology Department Missed Term Work Policy, Winter 2021:**

For missed term work (assignments, presentation or class participation) due to illness, emergency, or other mitigating circumstances, please follow the procedures outlined below.

Notes:

- The following reasons are not considered sufficient for missed term work: travel for leisure, weddings, personal commitments, work commitments, human error.
- Instructors cannot accept term work any later than **five business days after the last day of class**. Beyond this date, you would need to file a petition with the Registrar's Office: <https://www.utoronto.ca/registrar/term-work>
- **Course specific policies:**
  - You must inform the course instructor ([sadia.riaz@mail.utoronto](mailto:sadia.riaz@mail.utoronto)) as soon as possible if you are in the process of requesting accommodations for missed term work (this is in addition to the departmental procedures outlined below, which must be followed for consideration for accommodation).
  - Missed term work not granted accommodations will receive a 0% mark
  - Students with a valid excuse will be considered on a case-by-case basis, particularly for in-class components of the course (presentation, discussion and in-class participation). Students granted accommodations may have the possibility for a make-up opportunity, depending on the assignment, circumstance and time of the semester, or the affected grade may be redistributed as deemed appropriate by the course instructor.
  - In the event that a group member is absent on the presentation date, the remaining group members should be prepared to deliver a complete presentation/ discussion, and students are expected to still submit their presentation file prior to the deadline (or as soon as possible afterwards).

#### **Accommodations for Illness or Emergency:**

For missed work due to ILLNESS OR EMERGENCY, please complete the following two-step process:

1. Complete the Request for Missed Term Work Accommodations Form (<http://uoft.me/PSY-MTW>) and email it to Keely Hicks at [keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)
  2. Declare your absence on ACORN (Profile & Settings > Absence Declaration)
- Deadline: You must complete the above steps **within 3 business days of the missed work**.

Note: For this semester, we do not require any additional supporting documentation (ex. medical notes) to support your missed term work accommodation request.

#### **Accommodations for Academic Conflicts:**

For missed term work due to an ACADEMIC CONFLICT (i.e. two quizzes or tests scheduled at the same time), please complete the following process:

1. Complete the Request for Missed Term Work Accommodations Form (<http://uoft.me/PSY-MTW>), choosing "Other" as your reason for missed work and explaining the conflict in the space provided.
2. Take screenshots of your course homepages that demonstrate the conflict.
3. Email the form and screenshots to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)).

Deadline: You should report the conflict to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) **at least two weeks (10 business days) before the date of the activity**, or as soon as possible if it was not possible to identify the conflict earlier.

*Note: Multiple assignments due on the same day are not considered conflicts. Accommodations may only be possible in the case of quizzes and tests that are both scheduled during the same discrete period. Back-to-back tests/quizzes are not considered conflicts.*

*Note: Students are responsible for keeping their course timetables conflict-free. Students who choose to register in two synchronous courses with overlapping lecture/tutorial/lab schedules may not necessarily be accommodated.*

#### **Accommodations for Religious Conflicts:**

For missed term work due to a RELIGIOUS CONFLICT, please complete the following process:

1. Complete the Request for Missed Term Work Accommodations Form (<http://uoft.me/PSY-MTW>), choosing "Other" as your reason for missed work and noting "Religious conflict" in the space provided.
2. Email the form to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)).

Deadline: You should report the conflict to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) **at least two weeks (10 business days) before the date of the activity**, or as soon as possible if it was not possible to identify the conflict earlier.

#### **Accommodations for Time Zone Conflicts:**

If you are physically in a different time zone and a quiz or midterm is scheduled outside of 7:00am to midnight in your local time, please complete the following process:

1. Complete the Time Zone Conflict Form (<https://uoft.me/PSY-TimeZone>), and
2. Email the form to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca))

Deadline: You should report the conflict to Keely Hicks (keely.hicks@utoronto.ca) **at least two weeks (10 business days) before the date of the activity**, or as soon as possible, if it was not possible to identify the conflict earlier.

### **Accommodations for Students Registered with AccessAbility Services:**

For missed ASSIGNMENTS due to ACCESSABILITY REASONS:

- If your desired accommodation is within the scope of your Accommodation Letter (ex. your letter includes “extensions of up to 7 days” and you need 3 days):
  1. Complete the Request for Missed Term Work Accommodations Form (<http://uoft.me/PSY-MTW>).
  2. Email the form and your Accommodation Letter to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)).
- If your desired accommodation is outside the scope of your Accommodation Letter (ex. your letter includes “extensions of up to 7 days” but you need more time than that):
  1. Contact your AccessAbility consultant and have them email Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) detailing the accommodations required.

### **After submitting your documentation:**

Within approximately one to five business days, you will receive a response from your instructor detailing the accommodations to be made (if any). **You are responsible for checking your official U of T email and Quercus course announcements daily, as accommodations may be time-critical.**

You should continue to work on your assignments to the best of your ability, as extension accommodations may be as short as one business day, depending on the nature of the illness/emergency.

If an accommodation has been granted but you are unable to meet the conditions of the accommodation (ex. you need a longer extension, or you missed a make-up test), you will need to repeat the missed term work procedure and submit additional forms to request further accommodation. Note that in the case of a missed make-up test, an opportunity to write a second make-up test may not be provided.

Completion of this form does not guarantee that accommodations will be made. The course instructor reserves the right to decide what accommodations (if any) will be made. Failure to adhere to any aspect of this policy may result in a denial of your request for accommodation.

### **Missed Accommodations**

If an accommodation is granted but a continued illness/emergency prevents you from meeting the requirements of your accommodation, you must repeat the missed term work procedure to request additional accommodations.

(E.g.) If you miss a make-up midterm, you would need to submit another Request for Missed Term Work Accommodations form and declare your extended absence on ACORN.

**Importance of Three Business Day window:**

If you are unable to submit your documents within the **three business day window**, you must email Keely ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) within the three business day window to explain the nature of the delay, and when you will be able to provide your documents. Exceptions to the documentation deadline will only be made **under exceptional circumstances**.

**Questions?**

If you have any questions about this Missed Term Work policy, please contact Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) **well before the date of the assignment deadline** to describe your circumstances and inquire about procedures.