Current Topics in Neuroscience:
Fear Memory Circuits
NROD60H3F

University of Toronto Scarborough
Fall 2018
Thu 1-3pm: IC 326

Prerequisites: NROC61H3 and NROC64H3

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Office hours: Mon 3-5 pm, SW533

Fear learning is essential for survival. It is thus not surprising that fear is one of the most robust and evolutionarily conserved behavioural phenomena, and as such one of the best-studied topics in neuroscience. In this seminar course, we will explore what is known (and not known) about the circuitry of fear and emotional learning, focusing on animal studies as a translatable and powerful model for fear and anxiety disorders in humans. We will explore questions such as 'how are fear memories encoded in the brain?', 'Can we erase fearful or traumatic memories?', 'Does the way we process fear and trauma change across our lifetime?', 'How does the passage of time change fear memories?', 'Can we manipulate fear circuits to treat depression, or anxiety?' We will examine these questions across the synaptic, cellular, circuit and behavioural levels towards a better understanding of the biological basis of fear processing in the brain.

Course Learning Objectives

By the end of this course, students will:

- Understand the basic macro and microcircuitry underlying the encoding, retrieval and extinction of fear memories
- Become familiar with some of the most recent, impactful and cutting-edge research on emotional learning
- Gain the necessary background to critically evaluate the design, analysis, and conclusions of systems neuroscience research
- Understand how molecular, synaptic, cellular and systems neuroscience methods can be applied in research to address the latest challenges within the field
- Write a research grant with their own originally designed experiments
- Review their colleagues' research grants, learning how to evaluate a grant, how to provide constructive feedback, and experience the funding process from both sides
- Practice reading, analysing and presenting scientific articles, as well as leading critical discussion on a topic related to emotional learning
- Think critically and express themselves about unresolved (and resolved) questions in the field

- Improve their oral and written communication skills through individual and group presentations, in-class discussions, grant-writing, grant-reviewing and feedback on oral presentations and written assignments

Course Materials

This course does not use a textbook. It is based on the reading of assigned research papers related to the broad topic of emotional learning. Students are expected to read all the assigned papers in advance of the respective lectures and student presentations, and are encouraged to also read the review paper assigned to each topic of student presentations (see timetable). Assigned papers will be available through the e-reserves module of Course Reserves: https://cr.library.utoronto.ca/

Course Evaluation

Summary of Evaluation:

	Percent of final grade	Date Due
Group Presentation/Discussion	10% (presentation) + 5% (discussion)	According to Topic
Individual Presentation	25%	According to Topic
Grant Proposal	2%(rationale), 8% (objectives) + 25% (final proposal)	Sep27, Oct18, Nov15/29
Review of Grant Proposal	15%	Nov 27
Participation	10%	All classes

Description of evaluation components:

1. Group Presentation (10%) and Discussion (5%)

For each topic, the three students presenting individually on that day must get together and prepare a brief (10 minutes) slide (e.g. powerpoint) **presentation** on the general concepts necessary to understand the general topic of their three individual papers. The group must work together to generate a clear overview of the background knowledge involved in the topic and set the stage for engaging the rest of the class in the individual papers and thoughtful discussion at the end of the class. This should include a general background of the sub-field and research questions (i.e. answer the following questions: *what is the general state of knowledge in this sub-field? What are its main hypothesis? What are the major gaps in knowledge in this sub-field?)*. The presentation may be conducted by one or more students, but must be prepared and agreed upon by all students as they will receive the same collective grade. The group will be graded on their understanding of the readings, ability to summarize the major findings in this field, their presentation skills, as well as highlighting the major gaps that remain to be solved.

In addition, the group will lead a 20 minute **discussion** period at the end of class discussing all three papers and the state of knowledge in the field. This can be done in any way/format the group chooses, but one possibility is to ask the class what they feel is the take-home message for the papers presented, as well as how they could have been improved/expanded. Here you will be graded on your ability to lead and engage your classmates on discussion of your research topic as well as your general knowledge of the field and ability to answer questions/think critically about the issues raised.

All students are expected to read the assigned articles for the day, and to participate in discussion – this will inform your participation mark (10%).

Please arrive exactly on time on the day of you presentation so we can load the files onto the computer before 1:10pm and avoid delays.

2. Individual Presentation (25%)

Each student will be assigned one research paper at the first day of class and will prepare a 20 minute slide (e.g. powerpoint) presentation of that paper. You should remember that, as all students would have read the paper for the presentation day, you do not need to present every single experiment/detail on your paper. Instead, you should focus on answering the following questions:

1) Background: *What is the gap in scientific knowledge that the paper intends to address?*

2) Results: (i) *Which specific research questions are being answered by each major experiment in this paper? (ii) how is the experiment addressing that question (which methods are being used)?, (iii) what are the results, and what is being concluded?*

3) Limitations: *Does the paper satisfactorily answer the questions it identified? Are the conclusions supported by the data? If not, why?*

4) Future directions: *What new research questions does this data raise and what new experiments should address them?*

You will be marked on your ability to understand the paper, the clarity and quality of your presentation, and your ability to answer all of the above four questions.

Each student is free to choose the topic and paper they want to present. However, **you must decide your topic and paper by September 6th.** I will bring a sign-up sheet to class on September 6th. You will then have to fill out your name next to your chosen paper, *on a first-come, first-serve basis***. If you can't make it to class on that day you must email me your top three papers of choice**. Anyone without a topic and paper by the end of class on September 6th will have it assigned to them. Similarly, if your chosen paper has already been picked you must choose another one, or be assigned an alternative.

You will find that many of the assigned papers may be a bit challenging in their methodology. We will cover most of those methods in the lecture component of this course. However, if there are any aspects of your assigned paper that are unclear to you, I highly encourage you to come to office hours and discuss it with me.

3. Grant Proposal [2% (rationale and hypothesis), 8% (objectives) + 25% (final proposal)]

Research is expensive. In order to do research, one needs funds to cover the cost of reagents, equipment, salary of researchers (student stipends, technician/postdoc salaries), animal housing (if doing animal research), etc. Researchers acquire the funds necessary to support their labs mainly by applying to competitive grants, which consist of elaborate research proposals submitted to granting agencies. For this major writing assignment, you will write a grant proposal in the format of the

Discovery Grants from the Natural Sciences and Engineering Research Council of Canada (NSERC), a federal agency of the Government of Canada. NSERC Discovery Grants (http://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/DGIGP-PSIGP_eng.asp) offer up to 5 years of funding, and the majority of Canadian neuroscience lab principal investigators apply for it. As such, your goal with this assignment is to write a compelling, feasible and exciting grant, which merits being funded. To do that, you will have to convince your reviewers to choose your grant over hundreds of others. Your main objectives are to:

1. Identify a pressing gap in scientific knowledge (i.e. here's the state of knowledge in the field, *this* is what is missing and what we need to discover)
2. Identify *how* to fill that gap in knowledge (e.g. what we need to do is to explore behaviour/condition X using new methodology/experimental design Y, which has never been done before)
3. Demonstrate how you will conduct those experiments (i.e. explain the methodology and experimental design)
4. Demonstrate the importance of filling that gap in knowledge (i.e. the potential impact of your findings - big picture)

You can pick any theme and research question within the broad field of emotional learning, as long as it is a legitimate research question, which you can develop in your research grant. To facilitate the writing of your grant proposal, I have scaffolded this assignment in three parts so you can get feedback and write a better grant.

- **Rationale and Hypothesis (2%)** – Due September 27th by 11:59PM

Write a 1-2 paragraph summary of the subject of your grant. Here you should define its topic and the specific research questions you intend to answer. I will provide feedback on feasibility of your research questions to help guide the development of the rest of your grant. To submit your assignment, on Quercus click on Assignments: Grant Proposal: Rationale and Hypothesis.

- **Objectives (8%)** – Due October 18th by 11:59PM

This is your specific aims section. You should have a one-paragraph rationale explaining why and what you intend to do. You should then add 2-3 objectives which will feature the specific experiments you are proposing. For this initial submission, you should think of which experiments you want to do in your grant, and provide a short description. I will provide feedback on their feasibility. To submit your assignment, on Quercus click on Assignments: Grant Proposal: Objectives.

- **Final Grant Proposal (25%)** – For **peer review** due Nov 15th at 1pm
  Final Version due Nov 29th by 11:59PM

Your final proposal must follow the following structure (anything between quotation marks comes directly from NSERC DG guidelines):

Project Title – One sentence, capturing the essence of your proposal, while making it exciting (be creative!)

Overview – A one-two paragraph summary of your application in lay terms. Beware that reviewers read tens of reviews at once, so their attention span is short and they are tired. This is supposed to be clear, capture the main points of your grant and get people excited. You should write this last.

Objectives – This is your specific aims section. You should have a one-paragraph rationale explaining why and what you intend to do, including your long-term objective which would span beyond the specific experiments in this grant. You should then add 2-3 objectives, which will represent the specific experiments you are proposing. You will expand on the methodology of each of these in the methodology section.

Literature Review – "Discuss the literature pertinent to the proposal, placing the proposed research in the context of the state of the art." This section should provide the reader with enough background knowledge to understand your rationale and basic methodology. It should include a minimum of 10 empirical papers (not reviews) directly related to your research question. This section should **not** extend beyond 1-1.5 pages.

Methodology – "Describe the methods and proposed approach, providing sufficient details to allow the reviewers to assess the feasibility of the research activities". You should break this section down per each of your specific objectives, and include sub-sections for each objective which include a *rationale* (explaining why you're doing this experiment and your hypotheses) and *methodology* (containing enough detail for the reviewer to understand exactly what your experiment is, which controls you are going to use, etc).

Abbreviated example:

Objective 1: Determine which FAR neurons encode fear extinction
Rationale: Lesions of the FAR impair extinction in mice and rats. To determine whether a select FAR neuronal population is responsible for encoding extinction, we will assess neuronal activity in FAR in behaving animals during extinction learning. Given that XYZ, we predict that neurons T will exhibit higher activity rates following extinction training.
Methodology: To capture neuronal activity in vivo we will train C57BL6/J mice in contextual fear conditioning, ….(details of design)…. And measure neuronal activity on days X, Y and Z using methodology W.

Explain the methodology in detail, including your control groups and detailed experimental design – what are you comparing to what? What are your predictions?

Impact – "Explain the anticipated significance of the work". This section should convincingly answer the following questions: Why should the reviewers fund this application over any other? What impact will this have on the life of Canadians? What are the long-reaching implications and applications of what you will discover? How will it contribute to advancing knowledge in the natural sciences?

References – In-text citations must follow either Nature, Science or Journal of Neuroscience citation style. List all the references cited in the text by order in which they appear (Nature or science style) or

in alphabetical order by first author's last name following Journal of Neuroscience citation style. Here is one example of Journal of Neuroscience citation style:

Drew MR, Denny CA, Hen R (2010) Arrest of adult hippocampal neurogenesis in mice impairs single- but not multiple-trial contextual fear conditioning. Behav Neurosci 124:446–454.

I highly encourage you download a reference manager to use in this grant (and everything else you write containing references). One freely available reference manager is Mendeley: https://www.mendeley.com/reference-management/reference-manager
You can download and set up your account with this (or any other program of your choice). This will allow the program to add all your papers into its database and for you to easily input citations and set up your bibliography list in the format of your choice.

The grant must be a maximum of 8 pages, excluding references, double spaced, in Calibri font 11, with 1" margins.

This assignment will develop your scientific creativity, critical and writing skills. It will also give you a glimpse into the funding process, which is at the core of scientific research. Importantly, you will receive feedback from your peers and myself on your assignment identifying areas that require improvement. You are expected to *incorporate this feedback* onto your final proposal.

Important: A quasi-final version of this proposal is **due at the start of class on November 15th at 1pm**. You will submit this version of your grant through Quercus (Assignments: Grant Proposal for Peer Review). This copy of the grant will be peer reviewed and the author will receive the comments prior to the submission of the final proposal on November 22nd. This will be a double blind process, such that neither the author or the reviewer will know each other's identity. You will not be graded on this version of your grant, it will be used for feedback purposes only. Failure to submit the grant on November 15th by 1PM will lead to a **5% deduction** in your final grant submission grade, with an **additional 10% deduction for each day late.** The better your grant is at this stage, the better the feedback you will get, so try and have it very close to a final version.

The **Final Grant** Proposal will be submitted through Quercus and Turnitin. Submissions are due **by 11:59PM on November 29th**. Late submissions for any part of this writing assignment will be accepted with a **penalty of 50% for every day late**. To submit your assignment, click on Assignments: Grant Proposal: Final.

4. Review of Grant Proposal (15%) – Due November 22nd at 1PM

By the end of class on November 15th each student will have access to one assigned anonymized research grant written by their peers on Quercus. To access your grant to be reviewed, click on the *Grant Proposal for Peer Review* link on the assignments tab. On the right hand side there should be a link to your assigned grant for peer review (see https://community.canvaslms.com/videos/1133 for a tutorial on how to access these). You will read your assigned grant and provide constructive feedback to the author in the following format (this is a separate document you will write and later submit, do NOT make comments and annotations on the grant within Quercus):

Brief summary– In this 2-4 paragraph section you will briefly summarize the main rationale, objectives and methodology of the grant.

Review – Here, you will evaluate the grant in two sections: (i) strengths and (ii) weaknesses. This exercise is supposed to emulate the reviewing of a grant through a granting agency. You should identify the qualities of the grant and experiments proposed, as well as any gaps or areas that need improvement. So place yourself with the following mindset: there is a limited amount of funds available, so I must prioritize the best grants. Is this grant addressing an important question? Is their methodology sound? Are all the controls present? Did they justify their experiments well? Will this yield important findings? **Importantly**, remember: a human being wrote that grant, so be constructive in your recommendations, we all get our grants reviewed and rejection is *painful*! Be fair but phrase your feedback as *suggestions for improvement*, think of your role as to help that person grow as a scientist and grant writer – be kind! But do point out things that the person can do to make this grant even better!

Each grant review should be **two pages** long written in Calibri font 11, double spaced, with 1" margins. Make sure you write the grant's title on the top of your assignment page.

The grant review is due on **November 22nd at 1PM.** Submission will be done in two steps:

First, you will submit an electronic version of your review on Quercus and Turnitin. To submit your review, click on Assignments: Grant Review and submit your grant review. Late submissions for this assignment will be accepted with a **penalty of 25% for submissions by 11:59pm on November 22nd and penalty of 50% for every day late**.

Second, you will bring a **hard copy of your review** containing the **grant title** but **without your name** (e.g. Review of grant: "Examining the circuit basis of fear generalization"). These will be passed on to the grant writers. You have until the end of class, 3PM on November 22nd to submit your hard copy. **Late submissions will not be allowed**. If you are unable to come to class on that day, please arrange for a colleague to bring in your hard copy. Submission of the review on Quercus but failure to bring a hard copy to class will incur in **loss of 5%** of your mark for this assignment. **Remember**, your colleague is counting on you to get feedback and improve their grant. Your failure to complete this assignment will also impact them.

At the end of class on November 22nd I will distribute the anonymized grant reviews individually. Please do not leave class without picking up your grant review.

Grant reviews of each student's grant do not facture into their Final Grant proposal grade. I am the only one who will grade your final grant proposal. The review should, however, help with improving your grant and overall grade.

5. Participation (10%)

This is a 4th year course intended to generate discussions and incite passion for science. Please ask questions and express your views and opinions – that is one of the most fun parts of doing science! You are expected to read all the assigned papers for each week and actively contribute to the class discussions. Your mark will reflect your in-class participation. As an alternative to speaking up during

class discussions, you can give me one or two written questions at the beginning of each class, which I will read aloud during the question/discussion sessions.

Overview of Course Schedule:

The following table shows the schedule of lectures and presentations as they will occur over the course of the term, and the due dates for the assignment.

Lecture	DATE	CONTENT	Assigned papers	Due
1	Sep 6	Course Introduction		Choice of paper
2	Sep 13	Fear Circuits I: Amygdala	Maren and Quirk, 2004 or Duvarci and Pare 2014	
3	Sep 20	Fear Circuits II: Beyond Amygdala + Tips for Presentations and Grant-Writing		
4	Sep 27	Topic 1: Developmental Regulation of Emotional Learning	Kim et al., 2009; Pattwell et al., 2016; Callaghan and Richardson 2012. Rev: Hartley and Lee, 2015	Grant Rationale and Hypothesis
5	Oct 4	Topic 2: Fear Extinction	Sierra-Mercado et al., 2011; Milad et al., 2007; Senn et al., 2014. Rev: Milad and Quirk, 2012	
	Oct 11	Reading Week – No Class		
6	Oct 18	Topic 3: Erasing Fear	Monfils et al., 2009; Clem and Huganir 2010; Schiller et al., 2013. Rev: Quirk et al., 2010	Grant Objectives
7	Oct 25	Topic 4: Memory Allocation	Yiu et al., 2014; Cai et al., 2016; Rashid et al., 2016. Rev: Josselyn and Frankland, 2018	
8	Nov 1	Topic 5: Encoding of Emotional Valence	Redondo et al., 2014; Namburi et al., 2015; Kim et al., 2016. Rev: Namburi et al., 2016	
9	Nov 8	Topic 6: Circuit Basis of Depression	Ramirez et al., 2015; Chaudhury et al., 2013; Bagot et al 2015; Rev: Chaudhury et al., 2015	
10	Nov 15	Topic 7: Circuit Basis of Anxiety	Felix-Ortiz et al., 2013; Jimenez et al., 2018; Botta et al., 2015. Rev: Calhoon and Tye, 2015	Grant Proposal for Peer Review
11	Nov 22	Topic 8: Long-Term Fear	Wheeler et al., 2013; Do-Monte et al., 2015; Kitamura et al., 2017. Rev: Do-Monte et al., 2016 or Tonegawa et al., 2018	Review of Grant Proposal
12	Nov 29	Course Overview and Wrap-up		Final Grant Proposal

Course Grading Scheme:

Following the University Assessment and Grading Practices Policy: (http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/grading.pdf; http://www.artsci.utoronto.ca/newstudents/transition/academic/grading):

Letter Grade	*Grade point value*	*Numerical Mark*	*Grade Definition*
A+	*4.0*	*90 - 100%*	Excellent: Strong evidence of original thinking; good organization; capacity to analyze and synthesize; superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.
A	*4.0*	*85 - 89%*	Excellent
A-	*3.7*	*80 - 84%*	Excellent
B+	*3.3*	*77 - 79%*	Good: Evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with literature.
B	*3.0*	*73 - 76%*	Good
B-	*2.7*	*70 - 72%*	Good
C+	*2.3*	*67 - 69%*	Adequate: Student who is profiting from his/her university experience; understanding of the subject matter; ability to develop solutions to simple problems in the material.
C	*2*	*63 - 66%*	Adequate
C-	*1.7*	*60 - 62%*	Adequate
D+	*1.3*	*57 - 59%*	Marginal: Some evidence of familiarity with subject matter and some evidence that critical and analytic skills have been developed.
D	*1.0*	*53 - 56%*	Marginal
D-	*0.7*	*50 - 52%*	Marginal
F	*0*	*0 - 49%*	Inadequate: Little evidence of even superficial understanding of subject matter; weakness in critical and analytic skills; with limited or irrelevant use of literature.

Note: Consistently poor spelling/grammar will be penalized. Please make use of the resources available at the UTSC writing centre for additional help with writing: http://ctl.utsc.utoronto.ca/twc/.

Course Policies:

Missed Term Work due to Medical Illness or Other Emergency:

All students citing a documented reason for missed term work must bring their documentation to the Psychology Course Coordinator in SW427C **within three (3) business days** of the assignment due date. You must bring the following:

(1.) A completed Request for Missed Term Work form (http://uoft.me/PSY-MTW), and
(2.) Appropriate documentation to verify your illness or emergency, as described below.

Appropriate Documentation:

For missed **TERM TESTS** due to ILLNESS:

- Submit an **original** copy of the official UTSC Verification of Illness Form (http://uoft.me/UTSC-Verification-Of-Illness-Form) or an **original** copy of the record of visitation to a hospital emergency room. Forms are to be completed in full, clearly indicating the start date, anticipated end date, and severity of illness. The physician's registration number and business stamp are required.

For missed **ASSIGNMENTS** due to ILLNESS:

- Submit **both** (1.) a **hardcopy** of the Self-Declaration of Student Illness Form (http://uoft.me/PSY-self-declare-form), **and** (2.) the **web-based** departmental declaration form (http://uoft.me/PSY-self-declare-web).

For missed term tests or assignments in OTHER CIRCUMSTANCES:

- In the case of a **death of a family member**, a copy of a death certificate should be provided.
- In the case of a **disability-related concern**, an email from your Disability Consultant at AccessAbility Services should be sent directly to both the Course Coordinator (psychology-undergraduate@utsc.utoronto.ca) and your instructor, detailing the accommodations required.
- For U of T Varsity **athletic commitments**, an email from your coach or varsity administrator should be sent directly to the Course Coordinator (psychology-undergraduate@utsc.utoronto.ca), detailing the dates and nature of the commitment. The email should be sent **well in advance** of the missed work.

Documents covering the following situations are **NOT acceptable**: medical prescriptions, personal travel, weddings, or personal/work commitments.

Procedure:

Submit your (1.) request form and (2.) medical/self-declaration/other documents in person **WITHIN 3 BUSINESS DAYS** of the missed term test or assignment.

Submit to: Course Coordinator, Room SW427C, Monday – Friday, 9 AM – 4 PM

If you are unable to meet this deadline for some reason, you must contact the Course Coordinator via email (psychology-undergraduate@utsc.utoronto.ca) within the three business day window. Exceptions to the documentation deadline will only be made under exceptional circumstances.

Within approximately one week, you will receive an email response from the Course Instructor / Course Coordinator 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.

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.**

Note that this policy applies only to missed assignments and term tests. Missed final exams are handled by the Registrar's Office (http://www.utsc.utoronto.ca/registrar/missing-examination).

If accommodation is granted:

- If you miss the dates for the peer review steps of the grant proposal you will only receive feedback from me, but will not be penalized.
- If you miss your presentation day you will give your individual presentation to me at the earliest available date. Your group presentation grade will be determined by the circumstances of the accommodation, such that you may be asked to prepare and present an equivalent presentation on that same occasion if you were unable to contribute to that of your original group. The discussion grade will be reflective of your answering my questions following your individual/group presentations.

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.).

Video and Auditory Recording

For reasons of privacy and copyright, unauthorized video or audio recording in classrooms is prohibited. This is in accordance with the Provost's guidelines on Appropriate Use of Information and Communication Technology. Please note that these guidelines include the provision that students may obtain consent to record lectures and, "in the case of private use by students with disabilities, the instructor's consent must not be unreasonably withheld".

Copyright of lecture material

As protection of copyright, unauthorized copying, use, or uploading on www of any of the lecture slides, lecture handouts or course materials produced by Professor Arruda-Carvalho is **strictly prohibited**.

AccessAbility statement:

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 as soon as possible.

AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations 416-287-7560 or email 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

Normally, students will be required to submit their course essays to Turnitin.com 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

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