

PSY400H Research Specialization: Thesis

2021/22 Syllabus

Instructor Professor Katherine Duncan
Online Office Hours:
Tuesdays 9:30-10:30am & by appointment
katherine.duncan@utoronto.ca
Pronouns: she/her/hers

Lecture Thursdays 2-5pm in UC OR <https://utoronto.zoom.us/j/9264442872>

**Note that this course will be delivered online for the first class (Sept 9th). After this point we will meet in-person whenever public health measures allow. For online meetings, synchronous discussion sessions will be held via Zoom. If possible, students are encouraged to share their video and audio during these online meetings, but I will also monitor the chat for written questions and comments.

Recommended Readings On being a scientist: responsible conduct in research. National Academy Press, Washington, DC
<http://www.nap.edu/readingroom/books/obas/>

The Ethics of Science. An Introduction
David B Resnik, 1998
<https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/reader.action?docID=242153>
*especially first 4 chapters

Writing Science: How to Write Papers That Get Cited and Proposals That Get Funded
Joshua Schimel, 2011
*available at the library or I can lend you a copy

Prerequisites Enrolment in the PSY Research Specialist program, completion of PSY309H1, and one of PSY319H1/ PSY329H1/PSY339H1/ PSY359H1/ PSY369H1/ PSY379H1/ PSY389H1
Exclusion:
PSY400Y5/ PSYC98Y3
*Note that students enrolled in PSY400 are expected also to take PSY 409 and that this course is not eligible for the CR/NCR option.

Objectives The goal of this course is to provide each student with an intensive apprenticeship in psychological research to prepare you for graduate study in Psychology. In the process of collaborating with faculty, students are expected to acquire (or sharpen) the skills required for conducting and presenting research. These skills include literature reviews, writing, public speaking, designing experiments, and collecting, analyzing, and interpreting data. These skills can be useful tools for life, regardless of

your career path. Class activities and assignments are focused on equipping you for success as a psychologist, with a special emphasis on critical thinking, writing, and presentation skills. Upon completion of this course, you should be ideally poised to continue your studies in a Psychology graduate program.

PSY400 will not meet every week during either term. In the fall term, we will meet frequently until we feel that it is time to take a break and return next term. In the winter term, we will meet at the beginning and the end of the term to present and discuss your thesis research. The schedule may change as we go along so you are advised to keep course time open in your calendar.

There are several components to the course. The major requirement is completion and writing of a thesis project under the supervision of a faculty member. In addition, students will prepare a written proposal for the thesis, present this proposal in class, present preliminary data in class, present their thesis results in class, generally participate in class discussions, and present a poster about their work.

Quercus & Communication

Log in to Quercus (<https://q.utoronto.ca>) to view the course webpage. I will post relevant material there. **In particular, you are responsible for announcements posted to Quercus, so check this page regularly for updates and/or set up email alerts.**

If you have a general question, please post it to the discussion board. If you have a personal question or would like to set up a meeting time, please contact me through email (katherine.duncan@utoronto.ca), not the Quercus mail tool. Be sure to include PSY400 in the subject line, because I receive a lot of emails.

Evaluation

Just like PSY 309, we follow a unique marking scheme in PSY 400. The students in the research specialist program have already demonstrated excellence; we assume they will all do well. This assumption of excellence is our fundamental approach to engage with students in this program. By the same token, we also expect students in this program to be fully committed to participate to the best of their abilities and to embrace the opportunities that this program affords. This means that if students work conscientiously, we anticipate assigning a grade within the A range to each student. We are looking for excellent research performance (which does not mean that your experiment “worked out” but it means you worked conscientiously), excellent attendance, and meaningful participation. If any student does not perform adequately or satisfactorily, this will be reflected in their grade. Having said that, students should not be preoccupied with their grades in this course. The goal is to learn what it takes to become an excellent experimental psychologist.

Assignment	Proportion of Grade	Date
Project Proposal Presentation	10%	Oct 28 th /Nov 4 th
Written Project Proposal	10%	Nov 11 th
Data Blitz	5%	Jan 13 th
Research Advisors Grade	20%	Submitted April 7 th
Thesis Presentation	15%	March 24 th /31 st
Thesis	20%	April 7 th
Thesis Poster Presentation	5%	April 7 th
Class Participation	15%	

Evaluations

Thesis Theses should report results from a psychological study conducted by the student under the supervision of a faculty member. Students are encouraged to browse through theses submitted in previous years to get a better understanding of what is expected in a thesis; old theses can be obtained from the undergraduate psychology advisor's office.

Every thesis must be submitted as if for publication, in format and style requirements set out in the APA Publication Manual, 7th edition. (2020). Theses must also include appendices summarizing data and statistical analyses upon which results and conclusions have been based. Theses must not exceed 20 type-written pages (double spaced, 12-point font), excluding the title page, abstract, references, tables, figures and figure captions, and appendices.

Your thesis should be submitted on Quercus by 5 pm on Thursday, April 7, 2022. Hint: Try to get a first draft ready by early March so your supervisor has enough time to give you meaningful feedback.

The thesis grade indicates the quality of the final version of the thesis. Each thesis will be read by at least one anonymous reviewer that will be chosen from among the faculty who have a familiarity with the general research area (or I will take over the grading, depending on the availability of reviewers). It is important to note that in assigning a grade, no penalty should be imposed if a reasonable research plan failed to work as intended. In other words, whatever the results, good research design, clear justification for the study, and thorough and thoughtful presentation of the research are what counts. The referees can weigh several criteria as they deem most

appropriate. These criteria are similar to those used in judging the acceptability of an article in a scientific journal, for example:

- Is the thesis well written?
- Are the research questions and experimental design stated clearly?
- Is the research design appropriate to answer the research question (and does the author state clearly how the design is appropriate)?
- Could a reader replicate the critical elements of the study based on the information given in the methods section?
- Are the results described clearly and completely?
- Are the statistical analyses appropriate, correct, and described clearly and completely?
- Does the author make appropriate use of figures and tables?
- Are the conclusions linked clearly to the data?
- Is there evidence of original thinking and creative contribution in the thesis?
- Is the thesis "scholarly" (how well informed is the author about the thesis topic)?
- Does the thesis conform to APA guidelines for manuscripts submitted to journals?

Supervisor's Grade

The advisor's grade indicates the quality of the student's work up to, but not including, the final version of the thesis. The supervisor can weigh the following criteria as he or she deems appropriate:

- To what extent was the research question chosen as a result of the student's own initiative, persuasion, and reasoning?
- To what extent were important design issues resolved by the work and reasoning of the student?
- To what extent were data produced through resourceful efforts of the student?
- To what extent did the student analyze the data effectively, with a clear appreciation of the most useful questions to be put to the data?
- To what extent did the student understand his or her findings and their implications?
- To what extent did the student successfully communicate his or her thesis work in the early drafts of the thesis and in conversations with the supervisor?
- To what extent did the student meet individual deadlines set by the supervisor?
- To what extent was learning and progress seen over the course of the year, with signs of new skills acquired and a deepened understanding of the research enterprise?

You are encouraged to discuss these criteria with your supervisor early in the year.

Proposal Presentation During the first term, students will make oral presentations describing their proposed thesis projects. The purpose is to hone your presentation skills and to receive feedback on your thesis project while the project still is in a relatively early stage. Each presentation should last no more than 10 minutes, so that time is available for class members to provide comments and helpful critique. Note that all students are expected to attend all presentations.

Written Proposal Written proposals, up to a maximum of 10 type-written pages long (not including reference list), double spaced, 12-point font, must be submitted by November 11th. A well-prepared proposal will contain most of the Introduction of the final thesis, a skeleton of the Methods, and an outline of the important points to be addressed in the Results. Especially in the event that you are still busy collecting data as the final deadline nears, this will give you a great head start on the final write-up. If you need to apply for human ethics approval, there may be some overlap between this and the ethics application. Your supervisor will be asked to provide a grade and feedback on your proposal. This grade will be averaged with mine (with equal weight) to calculate your grade.

Data Blitz You will be required to present preliminary data early in January, even if all you have is a single subject at that time. You are allowed to present five slides: theory, hypotheses, methods, results, conclusions. Presentations should be no more than 5 minutes. All members of the class are expected to attend all data blitz presentations.

Poster Presentation In-person event contingent on COVID safety. An alternative event may be held if there is no in-person event.

Every year, the graduating thesis class will present their research to the Department as a research poster. Typically, this event is held in the Psychology lounge on the 4th floor. Ask your research advisor or a grad student for a copy of a poster they presented at a recent conference and use it as a model for your own poster. Involve your research advisor early. Making a poster takes longer than you think and you need to budget some extra time to get the poster printed and to give some practice presentations in your lab.

Thesis Presentation Toward the end of the second term, you will present your theses as if you were giving a talk at a scientific conference (i.e., tell us what you did, why you did it, what you found, and what it means). Presentations should not exceed 15 minutes. All members of the class are expected to attend all presentations.

Class Participation Attendance at all classes is mandatory. If you will miss a class (or have missed a class), you should be prepared to provide a very good reason for your absence. Students are expected to participate in all class activities and will conduct individual and/or group presentations on various topics. Participation includes but is not limited to warm-up activities and the following assignment:

Old research in a new light – classic studies debunked or reconsidered

Recently, the field has been struggling with a replication crisis (aka “credibility revolution”). Many factors come into play and we cannot discuss them all here. It is important, however, to be aware of how classic studies in the field have held up through the test of time, how we interpret them now, and what we can learn from them moving forward. The general public may have formed an opinion on certain studies and this may have coloured their judgement of the entire field. It is helpful to understand what was actually done in the original study, what has happened since, and what does the field now have to say about some of this research. **You will choose one classic study, present the basic details in class, present information that has started a controversy around your chosen topic, and conclude with a statement that reflects your opinion on the issue.** Note that the final two example topics detail issues that have raised questions about so many papers that I didn’t list specific classic studies. You could choose to combine these critiques with a classic study of your choice or focus on the critiques themselves.

You can work on this assignment alone or with one other student. You will present your work in class with a presentation that can be no longer than 20 minutes. You will choose your own topic, below are some initial recommendations but you are not limited to those. You can choose the date from the class calendar. Some students prefer to present early to feel that they have completed a task, other choose to do it later because they feel they need more time to prepare. Students who decide to present earlier will be given priority with respect to choosing topics from the list below:

The classic of all classics: The Stanford Prison Experiment

<https://www.newyorker.com/science/maria-konnikova/the-real-lesson-of-the-stanfordprison- experiment>

Talking about shocking: Milgram experiment

<https://www.nature.com/news/modern-milgram-experiment-sheds-light-on-power-ofauthority- 1.19408>

Wouldn't it be nice - Smiling makes you happy:

Original article: <http://datacolada.org/wp-content/uploads/2014/03/Strack-et-al-1988- cartoons.pdf>

So many references... this one here has a lot of links to relevant papers:

http://www.slate.com/articles/health_and_science/cover_story/2016/08/can_smiling_g_make_you_happier_maybe_maybe_not_we_have_no_idea.html

Related to the above: Social priming:

<https://psych.unl.edu/mdodd/Psy498/BarghPrime.pdf>

or not:

<https://pdfs.semanticscholar.org/3412/538295a468dcc7775290d173a0acf85a4b97.pdf>

Ego depletion, really tricky topic, it's so intuitive...

Original article:

<https://faculty.washington.edu/jdb/345/345%20Articles/Baumeister%20et%20al.%20%281998%29.pdf>

but see:

http://www.slate.com/articles/health_and_science/cover_story/2016/03/ego_depletion_an_influentia_theory_in_psychology_may_have_just_been_debunked.html

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5394171/>

<http://www.brown.uk.com/brownlibrary/job.pdf>

Does power posing actually work?

Original article:

http://faculty.haas.berkeley.edu/dana_carney/power_poses.PS.2010.pdf

Revisited: https://urisohn.com/sohn_files/wp/wordpress/wp-content/uploads/2019/01/Power-Posing-p-curve-published.pdf

https://journals.sagepub.com/doi/pdf/10.1177/0956797617746749?casa_token=DLw8srlbimQA

AAAA:0hAvq8OL00mx1fdn9US0YTZB9j_kmLooszdPGvBEh7skwZc5e4rVfi33jYKYb0VU2D9H C6lqGes

<https://www.tandfonline.com/doi/pdf/10.1080/23743603.2017.1342447>

Can't fail the Marshmallow test:

Original article:

<http://psycnet.apa.org/record/1971-02138-001>

or

http://depts.washington.edu/shodalab/wordpress/wpcontent/uploads/2015/05/1990.PredictingAdolescent_Shoda.pdf

Predicts outcomes: <http://psycnet.apa.org/doiLanding?doi=10.1037%2F0012-1649.26.6.978> Revisited:

<http://journals.sagepub.com/doi/abs/10.1177/0956797618761661>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3730121/>

Infants can count!!

Original article: <https://www.nature.com/articles/358749a0>

Revisited: <https://www.sciencedirect.com/science/article/pii/S0022096517303223>

Infants imitate others' actions, right?

Neonatal imitation of facial expressions

Original article: <https://www.ncbi.nlm.nih.gov/pubmed/897687>

<http://science.sciencemag.org/content/198/4312/74.long>

Revisited:

<https://www.sciencedirect.com/science/article/pii/S0960982216302573?via%3Dihub>

So, in how many courses have you heard about patient HM?

Loss of recent memory after bilateral hippocampal lesions

William Beecher Scoville and Brenda Milner

J. Neurol. Neurosurg. Psychiat., 1957, 20, 11.

Did you know: HM was just one of many patients and the experimental surgery was primarily being performed for schizophrenia. Also good on the reconceptualization front with the later advances (and exceptions to) multiple memory systems theory.

Atypical versus typical antipsychotics

Atypicals were thought to have fewer side effects and alleviate some of the cognitive deficits, but this appears likely untrue - here is a rundown by the authors of the main results and the pushback against them

<https://ajp.psychiatryonline.org/doi/full/10.1176/appi.ajp.2011.11010039>

Antidepressants versus placebo

People still argue about this - several studies indicate antidepressant meds only help those with very severe depression and others are no different than placebo:

<https://jamanetwork.com/journals/jama/fullarticle/185157> better than placebo:

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32802-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32802-7/fulltext)

Genetic vulnerability to depression (5-HTTLPR serotonin transporter gene)

Original article (cited 9499 times as of Sept 2020 [google scholar]):

<https://www.d.umn.edu/~rllloyd/MySite/Mind-Body/Caspi%205HTT.pdf>

Revisited:

https://genepi.qimr.edu.au/contents/p/staff/Culverhouse_MolPsych2018_133-142.pdf

José Delgado and his bull

This researcher said he was controlling the “rage” centre in a bull’s brain by electrically stimulating its caudate...he was just making the bull turn around in circles, but this demonstration - never peer-reviewed - is still talked about online a bunch as a real demonstration of “mind control”

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5480854/>

Dead Salmon, Voodoo, and Severed Axons, multiple comparisons and circular analyses in fMRI

The treatment of fMRI research in the media has gone from scientific breakthrough to punching bag. Here are some relevant demonstrations of analysis issues and how they may be overcome

Perspective taking in dead salmon: [https://www.sciencedirect-com.myaccess.library.utoronto.ca/science/article/pii/S1053811909712029?via%3Dihub](https://www.sciencedirect.com.myaccess.library.utoronto.ca/science/article/pii/S1053811909712029?via%3Dihub)

Originally called, "Voodoo correlations is social neuroscience":
<https://escholarship.org/content/qt92v2k0hm/qt92v2k0hm.pdf>

Functional connectivity after surgical disconnection:
<https://www.biorxiv.org/content/10.1101/127571v1.full> *not peer reviewed

The dangers of double-dipping then: <https://www.nature.com/articles/nn.2303> and now: <https://www.nature.com/articles/s41593-019-0398-z>

A vision of the (near) future: <https://pubmed.ncbi.nlm.nih.gov/28053326/>

Garden of Forking Trees: Analysis Decisions and Statistics

Andrew Gelman's original problem statement:

http://www.stat.columbia.edu/~gelman/research/unpublished/p_hacking.pdf

Solutions? <https://philarchive.org/archive/RUBAEO-3> &

<https://idl.cs.washington.edu/files/2020-AnalysisDecisionPoints-CHI.pdf>

Provisional Course Overview

Date	Topic	Assignment
Sep 9	Welcome & Overview	<i>Warm up exercises: Time management tips & 3 things you learned from 309</i>
Sep 16	No Class	Choose "Classic studies debunked/reinterpreted" topics/dates Post Questions about Grad School Apps
Sep 23	Grad School Applications Classic Studies Debunked or Reinterpreted	<i>Warm up exercise: Research interest elevator pitch</i> 3 Presentations in class
Sep 30	No Class	Post Questions about Research Ethics
Oct 7	Research Ethics Classic Studies Debunked or Reinterpreted	<i>Warm up exercise: Self-care tips</i> 3 Presentations in class
Oct 21	Classic Studies Debunked or Reinterpreted	6 Presentations in class
Oct 28	Thesis Proposal Presentations	8 Presentations in class
Nov 4	Thesis Proposal Presentations	8 Presentations in class
Jan 13	Data Blitz	16 Presentations in class
Jan 27	Classic Studies Debunked or Reinterpreted	4 Presentations in class
Mar 24	Thesis Presentation	8 Presentations in class
Mar 31	Thesis Presentation	8 Presentations in class
Apr 7	Poster Day	Presentation in "class" & Thesis Due

***Note that additional career development topics will likely be added with guest speakers**

Course Policies

- Late Assignment Policy & Attendance** Late penalty for any course component or assignment is 10% per day
- Any term work that will be handed in after the final exam period is subject to a petition for extension of term work. This petition should be filed with the student's College Registrar's Office.
- Unexcused absences from a class result in 10% grade deduction. If you are required to isolate while the course is offered in-person, please contact me ASAP to work out online arrangements. With proper arrangements this will not be counted as an absence. If you are unable to make it to a class due to illness, injury, extraordinary personal circumstance, record your absence on ACORN and contact me right away. If an absence extends beyond 14 consecutive days, or if you have a non-medical personal situation preventing you from completing your academic work, you should connect with your College Registrar. They can provide advice and assistance reaching out to instructors on your behalf. If you get a concussion, break your hand, or suffer some other acute injury, you should register with Accessibility Services as soon as possible.
- Academic Misconduct** Normally, students will be required to submit their course essays to the University's plagiarism detection tool 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 tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation website (<https://uoft.me/pdt-faq>).
- All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments, collaborating with fellow students, and writing tests and exams. Ensure that the work you submit for grading represents your own honest efforts. Plagiarism—representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program—is a serious offence that can result in sanctions. Speak to me or your TA for advice on anything that you find unclear. To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at <http://www.writing.utoronto.ca>. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see <https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity> and <http://academicintegrity.utoronto.ca>

Religious Accommodation

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of backgrounds, cultural traditions, and spiritual beliefs. For my part, I will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity (like a test, or in-class assignment) due to a religious observance, please let me know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

Appeals

Students who have a complaint about the way a piece of term work was marked must first approach the TA to discuss their concern. If the student isn't satisfied by the way the meeting went, they can write an appeal letter to Dr. Duncan. All requests for a re-grade must be submitted with specific justification, in writing, within 7 days of the exam or assignment being made available for student viewing. A legitimate request will result in the **entire exam** being re-graded. Think carefully about appeals; marking errors go in both directions, and I will be looking for all errors in marking, not just those that will increase your grade. Your overall grade may be raised, lowered, or it may stay the same. Please do not ask for special treatment – e.g., “I need to get into grad school, so could you please change my grade?” – as it is unfair to your classmates.

Disabilities or Accommodations

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting <http://www.studentlife.utoronto.ca/as/new-registration>. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me or to an advisor in your College Registrar's office; they can help you to decide if you want to request an extension or accommodation. They may be able to provide you with a College Registrar's letter of support to give to your instructors, and importantly, connect you with other resources on campus for help with your situation.

Equity, Diversity and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Mental Health and Well-being

As a student, you may experience challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation, financial concerns, family worries and so forth. These factors may affect your academic performance and/or reduce your ability to participate fully in daily activities. Everyone feels stressed now and then – it is a normal part of university life. Some days are better than others, and there is no wrong time to reach out. There are resources for every situation and every level of stress.

There are many helpful resources available through your College Registrar or through Student Life

(<http://studentlife.utoronto.ca> and <http://www.studentlife.utoronto.ca/feeling-distressed>) and beyond:

Feeling overwhelmed?

Get help now, with school or general life!

Connect with UoT's "MySSP"

☎ 844-451-9700 in North America

☎ 001-416-380-6578 outside North America

🌐 studentlife.utoronto.ca/service/myssp/

Are you overloaded by coursework?

Get help planning & negotiating across classes

Contact your College Registrar

🌐 www.artsci.utoronto.ca/current/academic-advising-and-support/college-registrars-offices

COMMUNITY SUPPORTS

Spectra Multilingual Helpline
905-459-7777

Canada Suicide Prevention Service
833-456-4566

Black Youth Helpline
833-294-8650

Anishnawbe Health Toronto
416-360-0486

Lesbian Gay Bi Trans Youth Line
647-694-4275

Toronto Rape Crisis Centre
416-597-8808

Looking for self-education on stress management?

Register for **BounceBack**
🌐 online.bouncebackonline.ca/