PSYC70: Advanced Research Methods

University of Toronto Scarborough
Winter Term, 2024

Lecture Time and Location:
LEC01: Tuesday 11-1 in MW 160
LEC02: Tuesday 3-5 in MW 170
(Note that you only need to attend one of these lecture times. Content will be identical in both.)

Delivery Format: In-Person Lectures and Tutorials (this course will not be recorded)

INSTRUCTOR INFORMATION

Instructor: Prof. George S. Cree
Email: george.cree@utoronto.ca
Office: SW408A
Office Hours: Thursday 1-3

Prof. Cree is a faculty member in the Department of Psychology at UTSC. He joined the department in 2003. Current research interests include using agent-based models to explore the factors influencing sustainable behaviour, and the relationship between nature and well-being. Past research interests include neural network models of word meaning computation and stereotype acquisition.

TA & TUTORIAL INFORMATION:

- TUT0001 :: TH **09:00 - 10:00** :: BV363   :: Colin Boothby colin.boothby@mail.utoronto.ca
- TUT0002 :: TH **11:00 - 12:00** :: IC300   :: Haoyu Zhang haoyuallen.zhang@utoronto.ca
- TUT0003 :: TH **02:00 - 03:00** :: SW316   :: Aidan Campbell aidanv.campbell@mail.utoronto.ca
- TUT0005 :: TH **04:00 - 05:00** :: IC320   :: Hyuna Cho hyuna.cho@mail.utoronto.ca
- TUT0006 :: TH **05:00 - 06:00** :: BV260   :: Rhonda Boateng rhonda.boateng@mail.utoronto.ca
- TUT0007 :: TH **06:00 - 07:00** :: HLB110   :: Moaz Shoura moaz.shoura@mail.utoronto.ca
- TUT0004 :: TH **08:00 - 09:00** :: IC328   :: Moaz Shoura moaz.shoura@mail.utoronto.ca

COURSE DESCRIPTION

From course calendar: "The course focuses on methodological skills integral to becoming a producer of psychological research. Students will learn how to identify knowledge gaps in the literature, to use conceptual models to visualize hypothetical relationships, to select a research design most appropriate for their questions, and to interpret more complex patterns of data."

PREREQUISITES

1. [(PSYB01H3) or (PSYB04H3) or PSYB70H3] (Intro Research Methods)
2. [PSYB07H3 or STAB22H3 or STAB23H3] (Intro Stats)

COURSE LEARNING OBJECTIVES AND OUTCOMES

After successful completion of this course, you will be able to:

Discuss and write fluently about:
- The causes of, and lessons learned from, Psychology's replication crisis.
- How psychological scientists *do* science, and *why* they do it the way they do.
- Ethical principles related to being a researcher (as opposed to dealing with participants) in the psychological sciences.
- How to develop a research idea and cultivate it into a coherent line of research.
- The important role theory can play in developing research programs worth doing.
- The difference between verbal theories, formal models, and computational models.
- The history of neural networks in the study of psychology, and the contributions psychologists have made to the development of contemporary artificial intelligence (AI).
- How contemporary AI works (conceptually), and what it is, and isn't, good for in science.
- Meta-Analysis, and how and why it is useful.

Critically read, evaluate, and review published research, including:
- identify flaws in the conceptualization of a study
- identify flaws in the design of a study
- identify flaws in the implementation of a study
- identify flaws in the interpretation of results of a study
- make informed recommendations for improving a study based on the flaws

Describe several advanced research methods used in the psychological sciences, to the point that you would be comfortable reading and critiquing an introductory-level published paper that made use of the technique, including:
- neural network modeling (focus on multi-layer perceptrons and backpropagation)
- generative AI
- meta-analysis

LECTURE SCHEDULE AND READINGS

LECTURE SCHEDULE & READINGS

The course is divided into four 3-week sections. The readings for each section are listed in the recommended order of reading. I suggest that you complete the readings as early as possible for each section so that you are able to ask questions about material you don't understand as we cover it in the lectures.

Part 1 (Weeks 01-03): Scientific Literacy: The Replication Crisis and Psychology's Renaissance
This section of the course (Weeks 01-03) will focus on why contemporary psychological scientists promote and use the scientific methods and practices that they do. We'll examine the causes of the replication crisis and the lessons that have been learned, to date, about how to improve the scientific practices of the field. Topics discussed will include sample size, power, NHST, p-hacking, HARKing, WEIRD participants and generalizability, measurement, fraud, heuristics and biases, false-positive psychology, how to minimize and handle mistakes, and computational reproducibility. After successful completion of this part of the course students should feel confident in their ability to explain and defend

why and how scientific practices within psychology have changed in light of the replication crisis, and why open science practices, with a focus on reproducibility, are important for the future of the field.

Readings:

Nelson, L. D., Simmons, J., & Simonsohn, U. (2018). Psychology's Renaissance. *Annual Review of Psychology*, *69*(1), 511–534. https://doi.org/10.1146/annurev-psych-122216-011836

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, *349*(6251), 943.

Nuzzo, R. (2015). Fooling ourselves. *Nature*, *526*, 182–185.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, *466*, 29.

Vazire, S., Schiavone, S. R., & Bottesini, J. G. (2022). Credibility Beyond Replicability: Improving the Four Validities in Psychological Science. *Current Directions in Psychological Science*, *31*(2), 162–168.

Clarke, B., Alley, L., Ghai, S., Flake, J. K., Rohrer, J. M., Simmons, J. P., Schiavone, S. R., & Vazire, S. (2023). *Looking Our Limitations in the Eye: A Tutorial for Writing About Research Limitations in Psychology* [Preprint]. PsyArXiv. https://doi.org/10.31234/osf.io/386bh

Smaldino, P. E. (2019). Better methods can't make up for mediocre theory. *Nature*, *575*, 9.

Part 2 (Weeks 04-06): Scientific Literacy: Reading, Critiquing & Reviewing Published Research
This section of the course (Weeks 04-06 + all 12 tutorials) will focus on developing students' scientific literacy related to reading and critiquing scientific research reports. The main goal is to learn how to *use* the knowledge and skills acquired in Intro to Research Methods and Intro to Statistics in relation to deciding how much credence to give a published (or pre-publication) report. By learning how to identify mistakes in the work of others we'll reinforce understanding of how things should be done, and why, and fine-tune the level of healthy skepticism one should have when approaching any new research report. We'll review the parts of an APA format paper with the goal of developing a template for what one should expect to find in a research report. We'll then work through a series of case studies that have been carefully chosen to illustrate the kinds of mistakes, and weak research design choices, students are likely to encounter in the literature. We'll review why these are flaws, and how to make informed recommendations about how to improve the research reports. We'll end the section by learning about the scientific publication process, with a focus on peer review. After successful completion of this part of the course, and the 12 weekly tutorials, students will be competent in writing a short, professional academic review of a simple research report, including critiques of the methods used, and informed recommendations for improvement. Students should feel confident in their emerging ability to read and critique published articles, preparing them for work in a research lab (or similar work environment).

Readings:

Dovidio, J. F. (2023). Writing the Paper. In A. L. Nichols & J. Edlund (Eds.), *The Cambridge Handbook of Research Methods and Statistics for the Social and Behavioral Sciences* (1st ed., pp. 156–176). Cambridge University Press. https://doi.org/10.1017/9781009010054.009

Sense About Science. (2017). *Peer review: The nuts and bolts*. Sense About Science.

Fiedler, K., & Unkelbach, C. (2023). Performing a Good Peer Review. In A. L. Nichols & J. Edlund (Eds.), *The Cambridge Handbook of Research Methods and Statistics for the Social and Behavioral Sciences* (1st ed., pp. 714–733). Cambridge University Press. https://doi.org/10.1017/9781009010054.034

Liu, S., & Albarracin, D. (2023). Successfully Publishing Research in the Social and Behavioral Sciences. In A. L. Nichols & J. Edlund (Eds.), *The Cambridge Handbook of Research Methods and Statistics for the Social and Behavioral Sciences* (1st ed., pp. 651–670). Cambridge University Press. https://doi.org/10.1017/9781009010054.031

Harlow, L. L. (2023). Handling Submitted Manuscripts: As Editor and Author. In A. L. Nichols & J. Edlund (Eds.), *The Cambridge Handbook of Research Methods and Statistics for the Social and Behavioral Sciences* (1st ed., pp. 734–754). Cambridge University Press. https://doi.org/10.1017/9781009010054.035

Makin, T. R., & Orban De Xivry, J.-J. (2019). Ten common statistical mistakes to watch out for when writing or reviewing a manuscript. *eLife*, *8*, e48175. https://doi.org/10.7554/eLife.48175

Davis, W. E., Giner-Sorolla, R., Lindsay, D. S., Lougheed, J. P., Makel, M. C., Meier, M. E., Sun, J., Vaughn, L. A., & Zelenski, J. M. (2018). Peer-Review Guidelines Promoting Replicability and Transparency in Psychological Science. *Advances in Methods and Practices in Psychological Science*, *1*(4), 556–573. https://doi.org/10.1177/2515245918806489

Part 3 (Weeks 07-09): Computational Literacy: Neural Networks and AI in Psychology
This section of the course (Weeks 07-09) will focus on computational literacy. Neural network models will be used to illustrate how psychologists can use computational models to escape the weaknesses of verbal theories. We'll discuss semantic cognition as an example of a coherent field of study that has used neural network models to advance theoretical understanding, making sense of a host of confusing empirical findings, bringing understanding through a single computational framework. We'll also consider the history of neural network modeling in psychology, and the role psychologists have played in the development of contemporary AI. We'll look specifically at backpropagation, giving students an understanding of how contemporary AI models work, with examples in Python. We'll end with a discussion of the role of modern AI in the psychological sciences, and the potential of AI for future scientists.

Readings:

Thomas, M. S. C., & McClelland, J. L. (2023). Connectionist Models of Cognition. In R. Sun (Ed.), *The Cambridge Handbook of Computational Cognitive Sciences* (2nd ed., pp. 29–79). Cambridge University Press. https://doi.org/10.1017/9781108755610.005

McClelland, J. L., & Rogers, T. T. (2003). The parallel distributed processing approach to semantic cognition. *Nature Reviews Neuroscience*, *4*(4), 310–322. https://doi.org/10.1038/nrn1076

Doerig, A., Sommers, R. P., Seeliger, K., Richards, B., Ismael, J., Lindsay, G. W., Kording, K. P., Konkle, T., van Gerven, M. A. J., Kriegeskorte, N., & Kietzmann, T. C. (2023). The neuroconnectionist research programme. *Nature Reviews. Neuroscience*, *24*(7), 431–450. https://doi.org/10.1038/s41583-023-00705-w

Abrams, Z. (2023, July/August). Artificial Intelligence is here. *APA Monitor on Psychology*, 48-53.

Demszky, D., Yang, D., Yeager, D. S., Bryan, C. J., Clapper, M., Chandhok, S., Eichstaedt, J. C., Hecht, C., Jamieson, J., Johnson, M., Jones, M., Krettek-Cobb, D., Lai, L., JonesMitchell, N., Ong, D. C., Dweck, C. S., Gross, J. J., & Pennebaker, J. W. (2023). Using large language models in psychology. *Nature Reviews Psychology*, *2*(11), 688–701. https://doi.org/10.1038/s44159-023-00241-5

Binz, M., Alaniz, S., Roskies, A., Aczel, B., Bergstrom, C. T., Allen, C., Schad, D., Wulff, D., West, J. D., Zhang, Q., Shiffrin, R. M., Gershman, S. J., Popov, V., Bender, E. M., Marelli, M., Botvinick, M. M., Akata, Z., & Schulz, E. (2023). How should the advent of large language models affect the practice of science? arXiv preprint arXiv:2312.03759

Lindsay, G. W. (2023). LLMs are not ready for editorial work. *Nature Human Behaviour*, 7, 1814-1815. https://doi.org/10.1038/s41562-023-01730-6

Part 4 (Weeks 10-12): Methodological Literacy: R for Reproducible Research and Meta-Analysis
This section of the course (Weeks 10-12) will focus on developing methodological literacy skills, with a focus on meta-analysis. Students will be introduced to R as a reproducible computational environment. Basic data wrangling and data visualization skills will be demonstrated, with a focus on highlighting the benefits of R (or similar) over non-reproducible methods. R will then be used as an environment in which to learn about meta-analysis. After successful completion of this part of the course students should feel confident in their understanding of the value of R (or similar) in doing reproducible research, and have an understanding of meta-analysis that would allow them to read and understand a manuscript that made use of an introductory level meta-analysis technique, and defend whether or not the authors violated any contemporary standard and expected practices, and if so, how to improve the work.

Readings:

Nordmann, E., McAleer, P., Toivo, W., Paterson, H., & DeBruine, L. M. (2022). Data Visualization Using R for Researchers Who Do Not Use R. *Advances in Methods and Practices in Psychological Science*, *5*(2), 251524592210746. https://doi.org/10.1177/25152459221074654

Jadotte, Y., Moyer, A., & Gurevitch, J. (2023). Meta-Analysis. In A. L. Nichols & J. Edlund (Eds.), *The Cambridge Handbook of Research Methods and Statistics for the Social and Behavioral Sciences* (1st ed., pp. 583–605). Cambridge University Press. https://doi.org/10.1017/9781009010054.028

Quintana, D. S. (2015). From pre-registration to publication: A non-technical primer for conducting a meta-analysis to synthesize correlational data. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.01549

TUTORIALS

One-hour Tutorials will take place every week of the course on Thursdays. You must enroll in one of the tutorial sections – failure to do so may result in delays in receiving feedback and grades on assignments and exams in the course, which could impact your ability to successfully complete the course. The TA that leads your tutorial will be the person that grades your assignments and exams – it is to your benefit to attend tutorials so that you develop a clear understanding of what the TA is looking for when grading.

Readings for the tutorials will be made available in Quercus each week.

EVALUATIONS

Assignment 1	10%	Due 5 pm Friday W05 (optional redo – 5 pm Mon W07)
Assignment 2	10%	Due 5 pm Friday W07 (optional redo – 5 pm Fri W09)
Assignment 3	10%	Due 5 pm Friday W10 (optional redo – 5 pm Fri W12)
Midterm Exam	35%	Scheduled by Registrar between Weeks 7 and 9
Final Exam	35%	Scheduled by Registrar during Final Exam Period

IMPORTANT DATES

First Day of Classes: Jan 8th 2024
Reading Week: Feb 17th - Feb 23rd 2024
Family Day: Feb 19th 2024
Midterm Exam: scheduled by Registrar's office between Feb 24th and Mar 16th 2024
Deadline to Drop Course Without Academic Penalty: Mar 25th 2024
Good Friday: Mar 29th 2024
Last Day to Submit Term Assignments: Apr 8th 2024
Request a LWD from a UTSC Course on eService: Apr 8th 2024
Study Break: Apr 9th - Apr 11th 2024
Final Exam Period: Apr 12th - Apr 26th 2024

COURSE POLICIES

LATE ASSIGNMENTS

A penalty of 5% per day (24 hour period) will be deducted from your assigned grade for late submissions. The last day that we can accept term work is 5 days after the official last day of classes for the term. Late submissions should be uploaded to Quercus in the normal manner.

SUBMISSION OF ASSIGNMENTS

All assignments should be submitted through Quercus on the appropriate assignment page. It is your responsibility to check that your submission has been uploaded correctly before the deadline, and that all files are readable and correct (e.g., that you have submitted the correct file). Failure to check could result in a late submission penalty for the assignment (up until the time of submission of the correct file), and/or a grade of 0. Localized internet outages and computer failures do not qualify for extensions – it is your responsibility to plan ahead, and ensure that your work is submitted before the deadline – the closer you wait until the submission deadline, the more risk you take in something going wrong! Plan appropriately.

EMAIL

We will do our best to respond to emails within 48 hours of receiving the email. You should not expect responses to emails outside of normal business hours (M-F 9-5). The course has been designed so that you do not need to work on weekends (unless you choose to), and we ask that you respect the personal time of the instructor and TAs in a similar manner. Email contact information can be found on the Quercus homepage for the course. Please include "PSYC70" at the beginning of the subject line of any email related to the course, and please always use your UofT email address in correspondence about the course. Use of Quercus mail is discouraged, and may result in longer response times.

CHANGES TO THE COURSE

The schedule, due dates, and nature of assignments are subject to change due to extenuating circumstances beyond our control. Some changes may be mandated by the University. Any other changes will be subject to a class vote, where a simple majority of those enrolled in the course must vote in favour of the change.

ACCOMMODATION FOR PERSONAL REASONS

There may be times when you are unable to complete coursework, including completing readings, viewing lectures, or attending tutorials, due to non-medical reasons. If this occurs during the term you should contact the course instructor immediately to discuss a strategy for completing or dropping the course. Failure to do so may leave you in a situation where it is impossible for you to successfully complete the course. It is also a very good idea to speak to an academic advisor.

UTSC POLICIES

ACADEMIC INTEGRITY

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/policies/behaveac.htm) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences in papers and assignments include 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, cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University.

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. The University of Toronto is a richly diverse community and as such is committed to providing an environment free of any form of harassment, misconduct, or discrimination. In this course, I seek to foster a civil, respectful, and open-minded climate in which we can all work together to develop a better understanding of key questions and debates through meaningful dialogue. As such, I expect all involved with this course to refrain from actions or behaviours that intimidate, humiliate, or demean persons or groups or that undermine their security or self-esteem based on traits related to race, religion, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, gender identity, gender expression, age, marital status, family status, disability, receipt of public assistance or record of offences.

UNIVERSITY LAND ACKNOWLEDGEMENT

I wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

ACCOMMODATIONS

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 (located in Rm AA142, Arts and Administration Building) 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.

USE OF GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS

Students may use artificial intelligence tools, including generative AI, in this course as learning aids. However, students are ultimately accountable for the work they submit. Students may not use artificial intelligence tools for taking tests, writing research papers, creating computer code, or completing course assignments. However, these tools may be useful when gathering information from across sources and assimilating it for understanding. The knowing use of generative artificial intelligence tools, including ChatGPT and other AI writing and coding assistants, for the completion of, or to support the completion of, an examination, term test, assignment, or any other form of academic assessment, may be considered an academic offense in this course.

RECORDING OF CLASSROOM MATERIAL BY STUDENTS

Recording or photographing any aspect of a university course - lecture, tutorial, seminar, lab, studio, practice session, field trip etc. – without prior approval of all involved and with written approval from the instructor is not permitted.

DEPARTMENT OF PSYCHOLOGY POLICIES

MASKS IN THE CLASSROOM

While the mask mandate has been paused as of 1 July 2022, the use of medical masks continues to be strongly encouraged at U of T Scarborough in indoor settings where physical distancing is not possible. We ask everyone to respect each other's decisions, comfort levels, and health needs. Masks are available at all building entrances at U of T Scarborough and in all classrooms.

MISSED TERM WORK POLICY

Department of Psychology Missed Term Work Policy

For missed term work (assignments and term tests) due to illness, emergency, or other mitigating circumstances, please follow the procedure outlined below.

Procedure:

1. Complete the [Request for Missed Term Work Accommodations Form](#) ("MTW Form").

2. Email **BOTH** your MTW Form and Supporting Documentation to **YOUR TA** (cc: george.cree@utoronto.ca) according to the instructions specified below.

Supporting Documentation Requirements and Deadlines:

Reason for Missed Work	Documentation required for a *first absence* in the term	Documentation required for *subsequent absences* in the term	Deadline for submitting MTW form and supporting documentation
Illness or Injury	[ACORN](#) Absence Declaration	[UofT Verification of Illness Form](#)	**WITHIN 2 BUSINESS DAYS** of the missed work
Bereavement	[ACORN](#) Absence Declaration	A death certificate or funeral announcement	**WITHIN 2 BUSINESS DAYS** of the missed work
University-sponsored athletic or artistic obligation at the varsity/provincial/national level	[ACORN](#) Absence Declaration	A note from a university staff member (advisor, coach, residence staff, etc.) who can substantiate the obligation, sent directly to the course email	**10 BUSINESS DAYS IN ADVANCE** of the missed deadline
Disability-related reasons for students registered with AccessAbility Services	For missed **TERM TESTS,** - **Contact your AccessAbility consultant** and have them write to the course email detailing the accommodations needed. For missed **ASSIGNMENTS,** - If your desired accommodation is **within the scope** of your		**PREFERABLY IN ADVANCE OF THE MISSED WORK, OR AS SOON AS POSSIBLE**

	Accommodation Letter (e.g. your letter includes "extensions of up to 7 days" and you need 3 days), send your **Accommodation Letter** to the course email and specify how many days extension you are requesting. - If your desired accommodation is **outside the scope** of your Accommodation Letter (e.g. your letter includes "extensions of up to 7 days" but you need more time than that), **contact your AccessAbility consultant** and have them write to the course email detailing the accommodations needed.	
Academic Conflict (e.g. two midterms at the same time)	Screenshot from Quercus demonstrating the conflict.	**10 BUSINESS DAYS IN ADVANCE** of the missed work
Religious Conflict	None required	

Notes:

- The following reasons are not considered sufficient for missed term work: social activities, recreational travel, technological issues, avoidance of assessments or deadlines, work commitments
- Missed Final Exams are handled by the Registrar's Office and should be declared on eService.
- For ACORN absence declarations, the date you declare the absence is required to fall within the seven-day declaration period (i.e., the absence cannot be submitted proactively or retroactively).
- Instructors cannot accept term work any later than five business days after the last day of class**.** Beyond this date, accommodations are only possible via the Registrar's Office petition process.
- If you are unable to submit your request within the specified number of business days, you must still email your instructor within that window to explain the nature of the delay. Exceptions to the deadlines are made only under exceptional circumstances.
- Multiple assignments due on the same day are not considered academic conflicts. Students are expected to manage their time effectively to meet assignment deadlines.
- Back-to-back tests/quizzes are not considered academic conflicts. Only overlapping activities are conflicts.
- Students are responsible for keeping their course timetables conflict-free. Students who register in two courses with overlapping lecture/tutorial/lab schedules will not be accommodated.

Next Steps:

After submitting your documentation, you will receive a response from your instructor or TA. The course instructor reserves the right to decide what accommodations will be made. Failure to adhere to any aspect of this policy may result in a denial of your request. **You are responsible for checking your official U of T email and Quercus course announcements daily**, as accommodations may be time-critical.

For missed assignments, **do not wait for the instructor's response to resume work on your assignment.** Extensions may be as short as one business day, depending on the nature of the illness/emergency. Complete your assignment as soon as you're able, and email it to your instructor.

If an accommodation is granted but a continued illness/emergency prevents you from meeting its requirements, you must <u>repeat</u> the missed term work procedure to request additional accommodations. **Please make it clear in your subject line that you are requesting a second accommodation.** Examples: If you were granted an extension for a paper but are still unable to meet the new deadline, or if you miss a <u>make-up</u> term test, you must submit *another* MTW form and supply documentation according to the "subsequent absences" column in the chart above. *Note: In the case of a missed make-up test, an opportunity to write a second make-up test may not necessarily be provided.

If you wish to continue your training in lab methods, consider the following courses offered in our department:

PSYB03: Introduction to Computers in Psychological Research
PSYC03: Computers in Psychological Research: Advanced Topics
PSYC71: Social Psychology Laboratory
PSYC72: Developmental Psychology Laboratory
PSYC73: Wellness and Resilience Laboratory
PSYC74: Human Movement Laboratory
PSYC75: Cognitive Psychology Laboratory
PSYC76: Brain Imaging Laboratory
PSYD55: Functional Magnetic Resonance Imaging Laboratory
PSY/NROC90: Supervised Study in Psychology
PSY/NROD98: Thesis in Psychology