Course: PSYCH 4J03  INQUIRY IN PSYCHOLOGY

Prerequisites: Registration in Level IV of an Honours Psychology program

Antirequisites: PSYCH 4D06, PSYCH 4D09

Instructor: Dr. Paul Faure  Department of Psychology, Neuroscience & Behaviour, PC 111
Phone: 905.525.9140, ext 26393; email: paul4@mcmaster.ca

Course TA: Matthew Crump  Department of Psychology, Neuroscience & Behaviour, PC 319
Phone: 905.525.9140, ext 27156; email: crumpmj@mcmaster.ca

Location: PC 335

Course Hours: Monday: 09:30–11:20 hrs;
Thursday: 10:30–11:20 hrs

Office Hours: By appointment only. The best way to contact us is via email.

Overview. PSYCH 4J03 is an upper level Faculty of Science course dealing with the systematic investigation of broad topics within the field of Psychology. Inquiry is a process of critical thinking. This semester’s inquiry will focus on the process of conducting science. The goal is to improve student skills necessary for scientific inquiry. The course begins by reviewing the basic tenets and principles pertinent to conducting science: the scientific method, hypothesis testing, experimental design, data analysis and interpretation, and the reporting of scientific results. Students will read and discuss articles from the primary research literature, and make comparisons with other types of research literature. Students will strengthen their science writing skills by writing an abstract for a research article, and by developing and writing a research grant proposal. Students will gain experience with peer evaluation through critical evaluation of the logic and writing of their classmates.

Course Schedule (subject to revision)

SEPT
M11: The scientific method (*Patriot Day*)
R14: Hypothesis testing, statistics, and $P$-values; Reading assignment for Sept 18th
M18: Group discussion of reading assignment from Sept 14th; Case study in behavioural neuroscience
R21: Reporting science and types of scientific literature
M25: Anatomy of a scientific paper; Reading assignment for Oct 2nd
R28: Writing Assignment I (overview)

OCT
M02: Group discussion of reading assignment from Sept 25th
R05: Writing Assignment I (due); Writing Assignment II (overview)
M09: Thanksgiving Day (*no class*)
R12: Peer evaluation workshop
M16: Research grant (workshop); Student interviews with instructor
R19: Writing Assignment II (due); Reading assignment for Oct 26th; Student interviews with instructor
M23: Oral presentation (workshop) (*Labour Day, NZ*)
R26: Group discussion of reading assignment from Oct 19th
M30: Office hours; Time to prepare oral and written presentations

NOV
R02: Office hours; Time to prepare oral and written presentations
M06: Student interviews with instructor; Time to prepare oral and written presentations
R09: Student interviews with instructor; Time to prepare oral and written presentations
M13: Office hours; Time to prepare oral and written presentations
R16: Office hours; Time to prepare oral and written presentations
M20: Oral presentations & research grant evaluation I (*New Moon*)
R23: Oral presentations & research grant evaluation II (*Thanksgiving Day, USA*)
M27: Oral presentations & research grant evaluation III
R30: Oral presentations & research grant evaluation IV

DEC
M04: Writing Assignment IV (due); Grant funding decisions; Course wrap-up.

Important Dates

October 5th: Writing Assignment I due
October 19th: Writing Assignment II due
Writing Assignment III is due 3 days IN ADVANCE of your oral presentation
December 4th: Writing Assignment IV due
Assignments. There will be four writing assignments and an oral presentation. In the first writing assignment, students will prepare a title and abstract for a scientific article. In the second writing assignment, students will critique an abstract written by a peer. In the third assignment, students working in groups will write a research grant proposal. Each group will also give an oral presentation on their proposal. In the fourth writing assignment, students will critique the research proposal and oral presentation of another group. Written assignments are to be handed in at the beginning of the day that they are due. Unless arrangements are made with me in advance of the due date, late work will not be accepted. Always keep a dated photocopy of your work for your records.

Writing Assignment I. This is an individual assignment. The goal is to give students practice reading the primary research literature. Each student will be given a research article and asked to write a title and abstract for the article. A title is the ultimate summary of an article. It should be very specific yet interesting (i.e. eye-catching) so as to entice someone to read the article, plus the title should distinguish the study from other articles in the same research area. An abstract is a concise summary of an article and is often the most important part of a paper. Many scientists will first read the abstract of a paper in order to decide if the article is worth reading in greater detail. (Just like students, scientists are busy people and usually don’t have time to read everything from cover to cover.) Indeed, very often the abstract is the only part of an article that is ever read, hence the importance of writing an abstract that clearly reflects the article’s contents. An abstract should summarize the background and rationale for the study; any important, unusual or new methods used to conduct the study; the major experimental findings; important or novel conclusions drawn from the study, and their relevance to what is already known. Each student will turn in 2 copies of their abstract: an anonymous copy and one with their name. Writing an abstract is a difficult task, particularly when strict word limits are imposed. Written abstracts must be no more than 300 words (typed & double spaced). Note: in this paragraph I’ve used 270 words to describe the assignment!

Writing Assignment II. This is an individual assignment. The goal is to give students practice with evaluating the scientific writing of their peers. Each student will be given an anonymous abstract from Writing Assignment I and asked to critically evaluate it. What are the strengths of the abstract? What are the weaknesses of the abstract? Does the abstract you are reading clearly summarize the background and rationale of the study; important, unusual or new methods; the major experimental findings; the important and/or novel conclusions; and the relevance of the results to what is already known? In preparing your evaluation it may be helpful to think about how the abstract you are reading compares to the abstract that you wrote about the very same article. Each student will turn in 2 copies of their critique: an anonymous copy and one with their name. Written evaluations of other student’s abstracts must be no longer than 300 words (typed & double spaced).

Writing Assignment III. This is a group assignment. The goal is to give students practice with innovative thinking, literature searches, and scientific grant writing. Working in collaboration with 2-4 peers, your group will prepare a research grant proposal. The topic of the proposal will be decided upon mutually, and can be in any area of experimental psychology; however, each group must have their topic approved by the instructor before proceeding with their project. Start by having the group define a problem in a particular area of psychology that is of interest to group members (e.g. behavioral neuroscience, perception, animal behaviour, learning and memory, cognition, etc). Group members should then brainstorm to define a problem or question that is both interesting and important, conduct a background literature search to see what, if anything, is known about this problem, synthesize the literature pertinent to the question(s) developed, construct null and alternative hypotheses, design specific experiments to test each hypothesis, and prepare a proposal outlining the rationale for the study, the specific experiment(s) that address each question(s) posed, and the anticipated significance of the research. The group must also present their proposal to the class (see Oral Presentation below). Each group is responsible for having their written grant proposal prepared for the class to read at least 3 days in advance of their oral presentation. Proposals must be no longer than 8 pages (typed & double spaced), excluding figures & references.

Writing Assignment IV. This is an individual assignment. The goal is to give students practice with evaluating the scientific thinking and writing of their peers—a task that all scientists must perform. Each student will be asked to critique a research grant proposal from Writing Assignment III. What are the strengths and weaknesses of the grant proposal? Does the proposal provide an adequate background review and rationale for conducting the study? Is the proposal novel? Are the proposed experiments logical and feasible? Are there obvious experiments that have not been proposed? Are there flaws in the design of the experiments? Is the proposed research interesting and important? Did the authors adequately describe their methods and experiments for you to evaluate? Should the proposal receive funding? Written evaluations of other student group’s research grant proposals must be no longer than 1200 words (typed & double spaced).

Oral Presentation. This is a group assignment. The goal is to give students practice with verbal communication skills: thinking on your feet, convincing peers/critics that your research is well designed, meritorious, and thus worthy of being funded. Student groups from Writing Assignment III will give an oral presentation to the class on their research grant proposal. Oral presentations must be no longer than 20 minutes, and all group members
must participate. Each group member should be prepared to answer questions from other students (and the instructor) about the validity and feasibility of their grant proposal. Thus, when not presenting, you are responsible for critically evaluating the written reports and oral presentations of the other student groups. At the end of all presentations, the class will decide which proposals, if any, should be funded.

**Group Work.** Each group is free to organize itself as it thinks best—problem solving, organizing the workload, dividing responsibility, working together or in sub-groups—but must keep the instructor informed on how the group is functioning, and on the knowledge it has gained. Remember, Writing Assignment III is due 3 days in advance of your oral presentation (no exceptions). This is so the other students in the class (and myself) will have a chance to read your research grant proposal before listening to the group presentation. I am available to be consulted as often as each group (or group member) likes on any topic (e.g. how to understand a difficult article, where to find information about a topic, how to search the web, etc.). However, I am not an expert in all areas of experimental psychology (or science for that matter), thus you are free to consult with other experts on campus or through the Internet for help. I have scheduled three weeks of in-class time for preparation of your grant proposal and oral presentation. Groups should meet during normal class times to maintain progress on their work.

**Academic Dishonesty.** Academic dishonesty consists of misrepresentation by deception or by other fraudulent means, and can result in serious consequences for a student such as the grade of zero on an exam or assignment, loss of course credit with a notation on the student’s transcript that reads “Grade of F assigned for academic dishonesty”, and/or suspension or expulsion of the student from McMaster University. It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty, please refer to McMaster’s Academic Integrity Policy, specifically Appendix 3, located at <http://www.mcmaster.ca/policy/ac_ethics.htm>.

**Gridding.** The following weights will be used to compute a total score for each student:

- (30%) Class participation and intellectual contribution to class and group discussions
- (5%) Writing Assignment I
- (5%) Writing Assignment II
- (20%) Writing Assignment III
- (20%) Oral Presentation
- (20%) Writing Assignment IV

Your total score will be translated into a letter grade using the following general competency guidelines:

A... has attained a high level of competency in all areas of the subject matter. This level of competency would allow the student to complete excellent projects in other areas of inquiry. This would be recognized by any instructor or member of the student’s peer group.

B... has attained a high level of competency in most (but not all) areas of the subject matter, or has attained a moderate level of competency in all areas. This level of competency would allow the student to complete above average projects in other areas of inquiry. The student is aware of some areas of weakness, has shown improvement in those areas, and has developed strategies for minimizing or eliminating them.

C... has attained a moderate level of competency in most (but not all) areas of the subject matter, or has attained a low level of competency in some areas. This level of competency would allow the student to complete average (satisfactory) projects in other areas of inquiry. The student recognizes multiple areas of weakness, and has discussed a plan of action to deal with the concerns.

D... has attained a low level of competency in all areas of the subject matter. This level of competency would allow the student to complete below average projects in other areas of inquiry. This would be recognized by any instructor.

F... has attained no competency in all areas of the subject matter.