

COURSE SYLLABUS

- Course:** PNB 4J03 INQUIRY IN PSYCHOLOGY, NEUROSCIENCE & BEHAVIOUR
- Prerequisites:** Registration in Level IV of an Honours or Combined Honours in Psychology, Neuroscience & Behaviour and Another Subject (B.A.) program.
- Antirequisites:** PSYCH 4J03
- Instructor:** Dr. Paul Faure Department of Psychology, Neuroscience & Behaviour (PNB), PC-111
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- Course TA:** Lucas Greville Department of Psychology, Neuroscience & Behaviour (PNB), PC-151
Phone: 905.525.9140, ext 26042; email: grevillj@mcmaster.ca
- Location:** Kenneth Taylor Hall (KTH), Room B107
- Course Hours:** Wednesday: 1900-2200 hrs
- Office Hours:** By appointment. The best way to contact us is via email.

Overview. PNB 4J03 is an upper level Faculty of Science on the systematic investigation of broad topics within Psychology, Neuroscience & Behaviour. This course will focus on the process of conducting science. The goal is to improve student skills needed for scientific inquiry and critical thinking. The course reviews basic tenets and principles pertinent to conducting science: the scientific method, hypothesis testing, experimental design, data analysis and interpretation, and reporting scientific results. Students will read and discuss articles from the primary research literature, and make comparisons with other types of literature. Scientific writing skills will be by writing an abstract for a research article, and by developing and writing a research proposal. Peer evaluation skills will be strengthened by critically evaluating the scientific writing and oral presentations of classmates.

Course Calendar (subject to revision in light of special and/or unexpected circumstances)

- SEPT W05: What is inquiry? What is science? Scientific method. Experimental design; Hypothesis testing & statistics; Reading assignments for Sept 12
W12: Group discussion of Sept 05 reading; Scientific reporting & literature; Practice Writing Assignment I Anatomy of a scientific paper; Library homework; Reading assignment for Sept 19
W19: Group discussion of Sept12 reading; Abstract writing (workshop); Writing Assignment I (overview) Group assignments; Reading assignment for Sept 26
W26: **Writing Assignment I (due)**; Group discussion of Sept 19 reading
Writing Assignment II (overview); Peer evaluation (workshop); Reading assignment for Oct 03
- OCT W03: **Writing Assignment II (due)**; Group discussion of Sept 26 reading; Research grant (workshop)
W10: *No Class (Fall Reading Break)*
W17: Writing Assignment III (overview); Oral presentation (overview); Oral presentation (workshop)
W24: *No Class*; Time to prepare oral and written presentations (*Full Moon*)
W31 Office hours; Student interviews with instructor feedback (*Halloween*)
- NOV W07: Office hours; Student interviews with instructor feedback (*New Moon*)
W14: *No Class*; Time to prepare oral and written presentations
W21: Oral presentations & grant evaluation I
W28: Oral presentations & grant evaluation II
- DEC W05: **Writing Assignment IV (due)**; Funding decisions; Course wrap-up.

Important Dates

- September 26th: Writing Assignment I due
October 03rd: Writing Assignment II due
Writing Assignment III due 3 days **IN ADVANCE** of your oral presentation
December 05th: Writing Assignment IV due

Assignments. There will be four writing assignments and one oral presentation. In the first writing assignment, students will write a title and abstract for a scientific article. In the second writing assignment, students will critique the abstract written by a peer. In the third writing assignment, students working in groups will write a research grant proposal. They will also give an oral presentation about their proposal. In the fourth writing assignment, students will critique the grant proposal and oral presentation of another group. Unless arrangements are made with me in advance, written assignments are handed in at the beginning of class on 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 with reading and writing primary research literature. Students are given an 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 often 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 a 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; 1 inch margins all around). Note: in this paragraph I've used 271 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. Students are 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 ≤ 300 words (typed & double spaced; 1 inch margins).

Writing Assignment III. This is a group assignment. The goal is to give students practice with innovative thinking, literature searches, designing scientific experiments, and communicating ideas in writing. Working in collaboration with 2-3 peers, each 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 biological psychology; however, each group must have their topic approved by the instructor before proceeding with their project. Start by defining a particular area of biopsychology that is of interest to members of the group (e.g. animal behaviour, systems and behavioral neuroscience, cognition, perception, learning, development, memory, etc). Group members should then brainstorm to define a problem or question within this area that is both interesting and important, conduct a background literature search to see what, if anything, is known about this problem, synthesize literature pertinent to the question(s) developed, construct null and alternative hypotheses, design specific experiments to test each hypothesis, and prepare a grant proposal outlining the rationale for the study, the specific experiments that address each question posed, and the broader anticipated significance of the research. The group must also present their proposal to the class (see *Oral Presentation*). Each group is responsible for having their written grant proposal completed and ready 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; 1 inch margins), excluding figures, references and any appendices.

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 all scientists perform. Each student will critique the research grant proposal (Writing Assignment III) and oral presentation of another group. What are the strengths and weaknesses of the 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 were not proposed? Are there flaws in the experimental design? Is the proposed research both interesting and important? Did the authors adequately describe the methods and experiments for you to evaluate the significance of the work? Should the proposal receive funding? Your evaluation of another student group's research proposal must be ≤ 1200 words (typed & double spaced; 1 inch margins) and should cover both the written proposal (~75%) and the oral presentation (~25%).

Oral Presentation. This is a group assignment. The goal is to give students practice with verbal communication: oration, thinking on your feet, and convincing peers/critics that your research is well designed, meritorious, and worthy of funding. 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 the audience 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 oral 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, dividing responsibility and organizing the workload, 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) so that members of the class (and myself) will have time to read your proposal before the oral 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 biopsychology (or science for that matter). Hence, you are free to consult with other experts on campus or on 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.

Recordings. The recording of lectures (audio, photos, or video) is prohibited.

Attendance. You are expected to attend all lectures. If you are late, please do not disrupt and/or disturb your fellow students who arrived in a timelier manner and are already working in class. Do not schedule holiday or other non-essential travel during the semester.

Seeking Help. Please ask the course Instructor or TA for help at any time if you need it. As a learner, it is your responsibility to recognize when you need help and then ask for it.

Academic Dishonesty. You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in the principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results (or could result) in an unearned academic credit or advantage. 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 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>](#).

Academic Accommodation of Students with Disabilities. Students requiring an academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone (905-525-9140, ext. 28652) or by e-mail sas@mcmaster.ca. For more information, consult [<McMaster Policy for Academic Accommodation of Students with Disabilities>](#).

Logistics & Grading. The following weights will be used to compute a total score for each student. McMaster University reserves the right to change course dates, course assignments and their grading weights, and course deadlines in case of an emergency, labor disruption, civil unrest/disobedience, etc.

- (30%) Class participation; intellectual contribution to class & group; self, peer & instructor evaluations
- (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.