Please read this information sheet carefully. The information is intended to be a near-complete description of what you need to know for the course, including general expectations, specific requirements, deadlines, etc. During the academic year, I may or may not email out reminders when deadlines are coming up. Because I have sent out this information sheet, I consider you informed. Feel free to contact me (eprenner@ucalgary.ca) if you have questions, or there are ambiguities, etc.

**TIME COMMITMENTS:**
Students are expected to commit a minimum of 10 hours per week to their research project. Students should ensure that their timetable is flexible enough to allow sufficient blocks of time for experiments. Each student is responsible for making arrangements with the supervisor to schedule their time in the lab. Supervisors should remember that students are enrolled in other courses and must budget their time accordingly. Due to requirements in other courses, the time spent in the lab may not be equal each week. Lost time should be made up at other time periods, for example, after December exams or before classes start in January.

**POLICY ON PREVIOUS LAB EXPERIENCE (all students):**
In order that performance is evaluated fairly, each student is asked to inform the course coordinator of previous research experience, either paid or volunteer. This information will be forwarded along with your written report to the faculty member(s) grading your report. Please inform the course coordinator by email (eprenner@ucalgary.ca) which of the following applies to you:
1. No previous experience working in a research laboratory.
2. Previous research lab experience, but not in the lab of the current BCEM 507/528/530 supervisor. If this applies to you, please provide a short description (approx. 5 lines) of the previous research projects, the name of the supervisor and dates.
3. Previous experience in the lab of the current BCEM 507/528/530 supervisor. If this applies to you, please provide a brief description (approx. 1/4 to 1/2 page) of the previous research project(s), and the dates of work.

This information is due by email to the course coordinator (eprenner@ucalgary.ca) by 5 PM October 7 for BCEM 507 in Fall 2022, and BCEM 528/530; by 5 pm February 10 for BCEM 507 in Winter 2023.

**IMPORTANT:** The research to be carried out for the project should be distinct from any previous work carried out. If a previous research project is to be continued, you must clearly indicate in the final oral and written presentations what work was carried out prior to the start of BCEM 507/528/530 and what was carried out during the academic year. If you present any work done by another researcher, that should be clearly stated. Presenting others work as your own is plagiarism. Credit is only given for work carried out by you during the project period.

**PROGRESS REPORT (BCEM 528/530 only):**
After January 1 and by 5 PM January 13, one copy of a research progress report should be submitted to the supervisor, and one copy should be emailed to the course coordinator (eprenner@ucalgary.ca). The progress report must be your own work and should be no more than 5 pages in length (typed, double spaced, 12-point font).

This preliminary report should include:
1. an introduction to the research topic,
2. a statement of the objectives of the research project,
3. a brief description of any results obtained to date,
4. a statement of the objectives for the remainder of the project.

This progress report will be graded by the supervisor and returned to the student. The preliminary report will be worth 5% of the final mark.

Please note: Research is often slow and laborious, and results are harder to obtain than you might expect. Sometimes, results may be negative or ambiguous. This is just the nature of research. It is not
unusual for a student to have made little real progress by the beginning of the winter term. The report is an opportunity for you to demonstrate your understanding of the research area, and to focus your ideas for the remainder of the course. It is also an opportunity for you to practice your writing skills in preparation for the final report, and to receive constructive feedback from your supervisor on his/her expectations for the time remaining.

**FINAL WRITTEN REPORT (all students):**
The final report is a detailed description of your project and experiments, written in the form of a standard scientific manuscript. The report must be typed, double-spaced (12-point font), and 15-20 (for BCEM 528/530) or 10-12 (for BCEM 507) pages in length (excluding title page, figures, tables and references). Figures and tables may either be incorporated into the text or added at the end.

Be sure to allow enough time to complete your write-up, starting several weeks before the deadline. It usually takes more time to complete than one might think. Often students wait too long to begin—and it shows.

The report must contain a title page (containing your name, your supervisor’s name, supervisor’s e-mail and the title of the project), an abstract, a list of abbreviations, an introduction, a materials and methods section, results, discussion, references, figures and/or tables, and figure legends. The introduction should give a general description of the research area and not be narrowly focused on only your project. Remember that the audience (professors or other students) will not have a detailed background of your subject area, so you need to give an appropriate context to set up your aims and experiments. You also need to demonstrate that you understand the background yourself and the larger context. Experiments should be described in detail, and should clearly explain the experiments that were carried out, and how and why they were done. The results should be discussed in the context of the research question(s) proposed, and the research area as a whole. You should not describe each thing you did in equal detail, but pick out key experiments, gels, etc. that are representative, and explain the logical flow of the experiments. Pay attention to clarity, rather than stuffing in lots of facts or data that are not especially meaningful and hard for the reader to wade through.

References should be in a standard format. For example, citations in the text can be either numerical (e.g., [1]) or as authors with dates (e.g., Smith and Jones, 1997). The reference list should contain names of authors, title of paper, journal page numbers and date. You should consult a major biochemistry journal such as the *Journal of Biological Chemistry* to see examples of standard formats for scientific papers. Unlike a real publication, your report can include negative results and descriptions of why an experiment or experimental approach did not yield the expected results. You can also spend time discussing the negative results, e.g. why it didn’t work and what could be done to make it work in the future. Your supervisor or lab coworkers can help give guidance and suggestions about the report when you get to that stage, since most of you have not written a manuscript before.

**IMPORTANT: A note about originality in the final write-up:**
While it is recommended that you get advice from your supervisor and others in preparing your report, the final write-up is to be your own thinking and writing. A general guideline is that your advisor should not read a draft and give specific comments more than once. As a rule, scientific manuscripts go through many rounds of revisions before final submission to a journal. Often multiple coauthors jointly write a manuscript. It can be quite educational for a student to get feedback from someone else, recognize problems in a draft, and improve the report. However, this process should not be repeated to the degree that the report is no longer the student's work. Hence, it is asked that there be no more than one cycle of comments from the supervisor. This is important because reports will be evaluated by multiple faculty members, not just the supervisor, and there needs to be uniformity in expectations.
For BCEM507, the final written report is due by 5:00 PM the last day of classes (December 7, 2022 for Fall term 507s; April 12, 2023 for Winter term 507s). For BCEM528/530, the final report is due by 5:00 PM on April 12, 2023.

Submit one hard copy of your report directly to your supervisor (unless your supervisor prefers an electronic copy), and also email me a PDF file of the report. The report will be evaluated by one (507) or two (528/530) faculty members in addition to your supervisor. The supervisor will make comments directly on the original printout. Other readers will likely make comments electronically in the emailed files and they should be returned to you with comments.

**ORAL PRESENTATIONS (BCEM 528/530 only):**
Each student is required to give an oral presentation of her/his work. Oral presentations are usually scheduled for the mornings and afternoons of Tuesday, Wednesday and Thursday during the second last week of classes, so plan to be available during this period. The presentations will be April 4 to April 6 in 2023 (tentative). The exact schedule will be communicated later. Each presentation will be 15 minutes in length plus 5 minutes for questions. *PowerPoint* slides are the usual format. A computer, data projector and laser pointer will be provided assuming the presentations are face-to-face. If any other equipment is required, it is the responsibility of the student to notify the course coordinator (eprenner@ucalgary.ca) at least a week before the presentation.

**ACKNOWLEDGEMENTS (all students):**
Students are expected to interact and receive help from other members of research labs in which they work. On occasion, other lab members may contribute to an experiment, or contribute in specific ways other than giving general guidance and instruction. It is important that any work not carried out by the student be acknowledged in the final oral and written reports. Also, any work carried out prior to the 528/530 project should clearly be part of the introductory section of the report rather than in the results section.

**GRADE DISTRIBUTION:**
BCEM 528/530
5%  Progress report
45%  Supervisors overall evaluation
25%  Final report (average score of two non-supervisor faculty evaluations)
25%  Oral presentation (average scores of faculty attending the talk)

BCEM 507
75%  Supervisors evaluation
25%  Final report (one non-supervisor faculty evaluation)

**CORRESPONDENCE:**
Most correspondence will be through email.

**WHAT’S DUE AND WHEN (5 PM for each date except the presentations):**
Oct 7, 2022  Statement on previous lab experience (507 Fall/528/530)
Dec 7, 2022  Final report (507 Fall)
Jan 13, 2023  Progress report (528/530)
Feb 11, 2023  Statement on previous lab experience (507 Winter)
Apr 4, 5, 6, 2023 (tentative)  Oral presentations (528/530)
April 12, 2023  Final report (507 Winter, 528/530)