Thursday; noon-2pm; mm-dd to mm-dd

**BIOC 405:**

**Engaging as a Biochemist**

Rm \_\_\_\_ ; Life Sciences Institute

2350 Health Sciences Mall

Course Description

Biochemistry, the study of chemical processes within living organisms, underpins nearly all aspects of our daily lives. The purpose of this course is to prepare you with critical thinking, communication, and analytical skills to successfully arrive at a solution to a posed biochemical problem in various aspects of our lives in a collaborative manner. We will examine the theory and application of classical and emerging technologies in biochemical research. We will also review primary literature, critically evaluate their evidence, and articulate our opinions regarding various scientific controversies with experimental suggestions to bridge the knowledge gaps. You will be invited to work in a group to design and defend a grant proposal aimed to address a specific societal, health, or environmental issue of interest. You will also be asked to provide rationale for your design and to evaluate others’ work. Moreover, you will reflect on your own learning and to appraise your progress in the course. Beyond this course, you will be able to make evidence-based decisions that affect your personal well being, environment and community and to continue to cultivate effective working relationships with your peers, as well as to become a self-directed learner.

Meet Your Instructor

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**INSTRUCTOR** Deb Chen

**Office Location** LSI 4.465

**Office Hours** Tues 11-12; Wed 3-4;

 or by appointments.

**Email** d.chen@alumni.ubc.ca

Please put “BIOC 405” in the Subject line of all email and use your UBC email account – or your message could get lost. Please check to see if your question can be answered in this syllabus before emailing me.

**About Deb:** Red cell biology guru; running addict; avid cyclists; passionate foodie; coffee connoisseur; empathic listener.

Course Goals

This course was designed to prepare you to begin to think like a biochemist. Overall, the purpose of this course is to arm you with the necessary critical thinking, effective communication, and analytical skills to successfully arrive at a solution to a posed biochemical problem in various aspects of our lives in a collaborative manner.

**To this end, by the end of this course, you should be able to:**

1. Critically evaluate relevant scientific evidence and clearly articulate your position within the scientific landscape around a specific topic of interest
2. Devise creative approaches to address biochemical problems in various aspects of our lives
3. Confidently present and rationally defend your experimental design anchored in evidence
4. Establish effective, communicative, and professional working relationships with fellow students

Learning Appraisals

**REVIEW ARTICLE (10%)**

During the first six weeks of the term, you will be required to independently evaluate scientific merit of key primary literature articles on a biochemical topic of your interest and comment on how these evidences further our collective biochemical knowledge in this research area. In your review article, you will be expected to identify knowledge gaps and to propose feasible experiments to bridge the gap. Specific criteria and detailed rubrics will be explained. See the course schedule for deadlines.

**GROUP GRANT PROPOSAL PROJECT (30%)**

During the latter half of the term, you will be required to work in an assigned group of five to develop a grant proposal that creatively address a societal problem of your own interest. As a group, you will document and update your progress on UBC blogs bi-weekly (<http://blogs.ubc.ca>; 20%). Moreover, you will be asked to reflect and evaluate on your own learning and your contribution to the team, as well as to provide constructive peer-feedback using TEAMMATES (<https://teammatesv4.appspot.com/>; 5%). At the end of term, you will orally present your proposal to your fellow classmates (5%). Evaluation will take a mastery orientation. Specific criteria and detailed rubrics will be explained. See the course schedule for deadlines.

**MIDTERM (25%)**

A 50-minute midterm will take place in class on **Thursday (yyyy-mm-dd)**. Your comprehension on theories and application of classical and emerging technologies in nucleic acid, amino acid, and lipid biochemistry biochemistry will be evaluated. *If you must miss the midterm exam for any reason, your final exam will be worth the points of both exams (i.e., 60%).*

**CUMULATIVE TWO-STAGE FINAL EXAM (35%)**

You will have two hours complete an exam independently. This portion of the exam will evaluate your comprehension on theories and application of classical and emerging technologies in nucleic acid, amino acid, and lipid biochemistry, as well as your ability to critically evaluate experimental designs and to propose possible solutions to troubleshoot methodological issues. For the last hour of the final exam, you will be asked to form an assigned group of five and work together on a pre-selected section of the exam.

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| --- | --- |
| **Course Goals** | **Learning Appraisals** |
| 1. Critically evaluate relevant scientific evidence and clearly articulate your position within the scientific landscape around a specific topic of interest
 | - Review Article- Group Grant Proposal Project - Midterm- Cumulative Two-Stage Final Exam |
| 1. Devise creative approaches to address biochemical problems in various aspects of our lives
 | - Group Grant Proposal Project- Midterm - Cumulative Two-Stage Final Exam |
| 1. Confidently present and rationally defend your experimental design anchored in evidence
 | - Group Grant Proposal Project- Midterm - Cumulative Two-Stage Final Exam |
| 1. Establish effective, communicative, and professional working relationships with your peers
 | - Review Article- Group Grant Proposal Project- Cumulative Two-Stage Final Exam |

What I Expect from You

**PARTICIPATION** This course is designed to prepare you to begin to think and to act like a scientist. Please come to class with questions and be prepared to discuss the relevance and application of course material with your fellow classmates. Success in this course depends upon your active participation.

**TIMELY ASSIGNMENTS** You are responsible for ensuring your group blog posts, self-appraisals, peer-feedbacks, and online quizzes are submitted on time. The late typical late deduction will be 10% of the maximum points of the assignment per day it is late. See the course schedule for deadlines. If you are unable to meet a deadline, please contact me as soon as possible.

**FEEDBACK** Not only will you be providing peer-feedback to your classmates’ projects, I encourage you to share your thoughts and suggestions regarding our teaching effectiveness or other aspects of this course. I will invite you to provide informal feedback regarding this course after the midterm.

**PRESENCE AT EXAMS** If you must miss the midterm exam for any reason, your final exam will be worth the points of both exams (i.e., 60%). No make-up midterms will be given. If you absolutely must miss the final exam due to an extenuating circumstance like severe illness, you or your caregiver must apply for Academic Concession by contacting the Science Advising Office (<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1462>).

**RESPECTFUL CONDUCT** Because all students and faculty at UBC are entitled to a positive and constructive learning and teaching environment, you are expected to treat all your classmates, your instructor, and yourself with respect at all times, both in and out of the classroom, face-to-face, and in writing (e.g., email). This includes being prepared and punctual, staying on task, and minimizing distractions for other students.

What You Can Expect from Me

**PARTICIPATION**I will make every effort to keep you engaged and interested in class by getting you involved in various learning activities designed to help you learn.

**AVAILABLE** I am here to help you and your classmates in your choice to succeed in this course. Visiting me during my office hours is typically more effective than email for content clarification and general guidance.

**TIMELY FEEDBACK** I will do my best to provide you with feedback on learning appraisals (e.g., review article, group blog post, self-appraisal, exams) as promptly as possible to facilitate your integration of the course material and your overall learning.

**RESPECTFUL CONDUCT** At all times, I aim to treat each of you with respect, and to make all course decisions with the highest standard of ethics in mind. If you feel you are being treated unfairly or disrespected by any member of our class, I invite you to talk to me as soon as possible so we can address the issue together. *Such a discussion WILL NOT impact your grade.*

Academic Integrity & Plagiarism\*

**WHAT IS ACADEMIC INTEGRITY?**

Academic integrity is honest and responsible scholarship. As a student, you are expected to submit original work and give credit to other peoples' ideas. Maintaining your academic integrity involves:

 **Fairness**

* Creating and expressing your own ideas in course work
* Acknowledging all sources of information

**Honesty**

* Completing assignments independently or acknowledging collaboration

 **Responsibility**

**Respect**

* Accurately reporting results when conducting your own research

**Trust**

* Honesty during examinations

**WHAT IS PLAGIARISM?**

Plagiarism is using another person's ideas without giving credit and is considered intellectual theft. If you submit or present the oral or written work of someone else you are guilty of plagiarism. Plagiarism may be:

*Accidental or Unintentional* You may not even know that you're plagiarizing. Make sure you understand the difference between quoting and paraphrasing, as well as the way to cite material.

*Blatant* This time you're well aware of what you're doing. Purposefully using someone else's ideas or work without proper acknowledgment is plagiarism. This includes turning in borrowed or bought research papers as your own.

*Self* It's your own work so you should be able to do what you want with it, right? Wrong. Handing in the same term paper (or substantially the same term paper) for two courses without getting permission from your instructor is plagiarism.

**HOW DOES IT IMPACT YOU?**

Academic integrity is the foundation of university success. Learning how to express original ideas, cite sources, work independently, and report results accurately and honestly are skills that carry you beyond university to serve you in the workforce. Academic dishonesty not only cheats you of valuable learning experiences, but can result in a failing grade on assignments, a mark on your transcripts, or even expulsion from the university.

Reach for Success; Not the Answers.

Don’t Cheat. Don’t Plagiarize. It’s Not Worth It.

**For More Detailed Information**

**Participating in the Academic Community with Integrity:**

**The Learning Commons** offers you tips and tricks to avoid plagiarism, to organize your writing, to cite sources appropriately, and more! Visit their website at http://learningcommons.ubc.ca/resource-guides/ for more information and workshop appointments.

**UBC Library** has many resources, including any of the indexes and databases listed under Indexes and Databases, Subject Resources, OneSearch, or Metasearch on the Library’s website at http://www.library.ubc.ca.

**Plagiarism.org** provides a wealth of online resource on plagiarism. Visit their website at http://www.plagiarism.org/index.html.

The University’s policy on discipline on academic misconduct – what it is, how it is recognized, how the administrative structure of the University deals with it, and the recourses available to students within the system – is clearly laid out, both in print (2015/16 UBC Vancouver Winter Session Calendar) and officially online in the UBC Calendar (http://www.calendar.ubc.ca/
vancouver/index.cfm?tree=3,54,111,0).

**\*** As extracted from The Learning Commons
 “Avoid Plagiarism” FAQ Website.

Course Schedule

This plan is subject to change. Changes will be announced in class and posted on the CONNECT course website.

|  |  |  |
| --- | --- | --- |
| **Week** | **Topics** | **What's Due** |
| 1 | R | Syllabus Jig-saw + Learning Appraisals Explained |   |
| 2 | R | Classical Biochemical Methods | **Review Article: Topics for Approval** |
| 3 | R | Emerging Biochemical Methods | **Review Article: Outline** |
| 4 | R | Experimental Designs - Merits and Pitfalls |   |
| 5 | R | Circuits: Critical Evaluation of Scientific Evidence |   |
| 6 | R | **MIDTERM** | **Review Article Submission** |
| 7 | R | **GGPP I: What's the problem?** | Self-Appraisal (11pm on TEAMMATES) |
| 8 | R | Communicating Your Scientific Ideas | **GGPP Blog: Problem of Interest Explained** |
| 9 | R | **GGPP II: How are we going to address it?** | Self-Appraisal (11pm on TEAMMATES) |
| 10 | R |  | **GGPP Blog: Experimental Plans** |
| 11 | R | **GGPP III: Why are we approaching it this way?** | Self-Appraisal (11pm on TEAMMATES) |
| 12 | R |  | **GGPP Blog: Rationale and Justification** |
| 13 | R | Pitch Your Science - Effective Presentation | Peer Evaluation (11pm on TEAMMATES) |
| 14 | R | **GGPP IV: Presentations** |   |

APPENDIX: Group Grant Proposal Assignment

You will be working closely with your team members (see table below) in proposing a scientific grant aimed to address a problem of interest (e.g., societal, environmental, health-related, etc).

Find your team members, take a few moments to introduce yourself. Together, decide on a cool/geeky/nerdy/trendy team name that represents your team. You will have 10 minutes to create a team badge or label – we will go around the classroom and briefly share our designs.

**Before you leave class today, remember to agree on effective ways of contacting one another!**

 Name Phone E-mail

1.

2.

3.

4.

5.

|  |  |
| --- | --- |
| Group # | Names |
| 1 |  |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |

**Acknowledgement: This syllabus design was inspired by Dr. Catherine Rawn (UBC Department of Psychology).**