
BI/BB 317

SCIENTIFIC THEORY AND PRACTICE

2019SPRING (MAR-JUN)

INSTRUCTOR AND COURSE DETAILS

LECTURES/DISCUSSION: MWF 12:12:50 PM Rogers Hall 440

CREDIT HOURS: 3

INSTRUCTOR: Dr. Lauren Dalton (Dept. of Biochemistry and Biophysics)

E-MAIL: lauren.dalton@oregonstate.edu.

OFFICE HOURS: T/F 1-2pm

COMMUNICATION: I will reply to course-related questions and email within 24 hours except weekends and holidays.

COURSE DESCRIPTION

This course teaches students the practice of biological science. Topics cover scientific theory, communications, ethics and critical evaluation and satisfies the Baccalaureate Core WIC requirement for majors in BB and BI.

In this course, you will have opportunities for professional development including career and financial planning and will learn the nuts and bolts of generating scientific work, science ethics, how to read/analyze scientific work and communicate science to a wide variety of audiences. As a writing intensive course (WIC), this course will provide numerous writing opportunities and assignments during the term.

COURSE FORMAT

BI/BB 317 is primarily a discussion-based course. The class will focus on practicing skills and exploring topics, not on lecture. It will require you to develop and articulate your own ideas and interpretations on topics explored in the class. I will regularly assign readings which must be read before coming to class and may require a short, written assignment for the reading. Using the readings and your own analysis of the topic, we will have class discussion on the topic. Longer writing assignments will be used to culminate a unit.

COURSE LEARNING GOALS

1. Appropriately assess and select sources based on their trustworthiness and use the information to provide a nuanced view of a scientific topic.
2. Analyze a scientific paper and articulate, to a general scientific audience, the major scientific questions and how they are addressed experimentally.
3. Using multiple methods, articulate the process of science and experimental findings of a paper to a lay audience.
4. Explore the unspoken rules that govern science and how this maintains the integrity of scientific findings.
5. Reflect on your personal strengths and use this reflection to develop a 10-year career plan.
6. Actively participate in a learning community.

The outcomes listed below fall under the requirements of the Baccalaureate Core Curriculum

7. Develop and articulate content knowledge and critical thinking in the discipline through frequent practice of informal and formal writing

8. Demonstrate knowledge/understanding of audience expectations, genres, and conventions appropriate to communicating in the discipline
9. Demonstrate the ability to compose a document of at least 2000 words through multiple aspects of writing, including brainstorming, drafting, using sources appropriately, and revising comprehensively after receiving feedback on a draft.

COURSE SCHEDULE OF TOPICS

The schedule we will use will follow the progression listed below

- The investigative approach/the nature of science
- How to find and assess trustworthy sources
- Reading and analyzing a scientific paper
- Science communication: Communicating with other scientists
- Science communication: Communicating with a lay audience
- Ethics/Intellectual Property/Standards and Practices

COURSE MATERIALS

COURSE WEBSITE

Extra learning outside of class will occur on Canvas, where you will interact with your classmates and with your instructor. Within the course Canvas site, you will access to additional learning materials, such as the syllabus, class discussions, assignments, projects, and extra readings.

UNDERGRADUATE RESEARCH AND WRITING STUDIO

Are you looking for a low-key collaborative place to research, read, and write? Drop in at the Undergrad Research & Writing Studio to grab a table and work at your own pace—no appointments necessary! Studio consultants are on-hand to check in and give support on everything from research papers and lab write-ups to resumes and digital media projects. You'll receive feedback and step-by-step strategies to help you overcome writer's block and develop your skills as a writer and a scholar. Come visit the Undergrad Research & Writing Studio in-person on the main floor of Valley Library or online at writingcenter.oregonstate.edu/undergrad-writing-studio.

EVALUATION OF STUDENT PERFORMANCE

The course grade is based upon the following for BB317. Each component is described below.

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|--|-----|
| • Class Professionalism | 5% |
| • Informal Writing Assignments (Discussion + hand-written) | 20% |
| • Formal Writing Assignments (4) | 50% |
| • Research Ethics Training | 5% |
| • Final Paper (Career Plan) | 20% |

Total **100%**

LETTER GRADE

| Grade | Percent Range |
|-------|---------------|
| A | 93-100 |
| A- | 90-92 |
| B+ | 87-89 |
| B | 83-86 |

| Grade | Percent Range |
|-------|---------------|
| B- | 80-82 |
| C+ | 77-79 |
| C | 73-76 |
| C- | 70-72 |
| D+ | 67-69 |
| D | 63-66 |
| D- | 60-62 |
| F | <60 |

PROFESSIONALISM (ATTENDANCE, PREPAREDNESS, APPROPRIATE USE OF LANGUAGE)

Since one of the aims of this class is to prepare you for your chosen career, you will be expected and assessed on your ability to act in a professional and mature manner during class activities. This includes, but is not limited to, being punctual and prepared for class. Attendance will be taken at each class period. Preparedness will be evaluated primarily by the nature of your contributions to the class discussion. In addition, I may require you to bring materials to class (e.g. summaries of readings) which will also be assessed for completeness and contribute to this overall score.

Professionalism is also expected in the written assignments. This means that in general you will use academic language as opposed to conversational language.

ONLINE DISCUSSION PARTICIPATION

We will use an online discussion board to supplement class discussions and to share ideas relating to topics in the course. Students are expected to participate in these discussions regularly. Posts on the online forum are less formal in structure than written homework assignments, but provide you with an opportunity to practice analyzing and expressing yourself clearly. *Please note that contributions to the online forum must meet the same standards for thinking and writing as your written assignments, even if the tone is more informal. So while humorous responses may be appropriate, sloppy thinking or poor writing are not acceptable.*

You are required to make 2 significant postings each week. This may include responding to a post by someone else or creating your new post. In every case though, you should make sure to further the conversation rather than just state that you agree. You must participate each week as extra postings from the previous week do not carry over. There are usually interesting discussions on the online forum, so it should be very easy for students to contribute to the conversation. This is worth 10 points per week.

HAND-WRITTEN INFORMAL WRITING PROMPTS:

In addition to becoming scientists, you are also informed citizens and denizens of our planet. One of the values of a college education is to learn how to learn and a great way to do this is via reflection. An added benefit is that this technique can help you overcome writer's block and "white-page phobia" (vacansopapurosophobia) making you a more productive writer! This is a free-response assignment to answer 1 prompt each week, in any order (10 total). There are 15 total prompts, which means 5 will require no response. There are no "right"

answers, the prompts are only to stimulate thought. These will be due in class every Friday for 5 points. These assignments assess learning outcome 7, part of the WIC specific requirements.

FORMAL WRITING ASSIGNMENTS

Assignments will be posted on a regular basis, 4 in total throughout the term. You will be provided with detailed and explicit instructions for each assignment. Each of these will be turned in electronically on Canvas.

One of the expectations of a Writing Intensive Course (WIC) is that students learn to improve their writing skills by revisiting their work based on feedback from instructors and/or peers. Thus, you are required to write a draft of a personal statement as your first formal writing assignment. This will then be peer reviewed and submitted to me for comments. Finally, you will revise again before you submit it with your final paper. You also may choose to resubmit one other formal writing assignments, which will then be regraded. These will be due one week after the initial work has been returned and will be graded based on the quality of the work (e.g. scientific thinking, clarity, accuracy, readability, completeness) and how the instructor's feedback is incorporated into the revised work. These assignments assess learning outcome 8, part of the WIC specific requirements.

FINAL TERM PAPER

Instead of a final exam, you will have a take-home paper to write. I will post the instructions for the final paper at the beginning of the term. You may consult with me anytime thereafter about the paper until 1 week prior to the due date. I will gladly look over section drafts and give you feedback, subject to the following conditions

1. You allow me at least one week to provide feedback.
2. Only sections of the paper are included (i.e. not the whole paper).

This assignment assesses learning outcome 9, part of the WIC specific requirements.

ADDITIONAL COURSE POLICIES

LATE WORK

Late work incurs a 10% penalty per day and will not be accepted more than 5 days late.

INCOMPLETES

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), and if the student has turned in at least half of the coursework and has a passing grade at the time of the request. If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away.

STATEMENT REGARDING STUDENTS WITH DISABILITIES

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

EXPECTATIONS FOR STUDENT CONDUCT IN THE CLASSROOM

Student conduct is governed by the university's policies, as explained in the **Office of Student Conduct: Information and Regulations** (<http://studentlife.oregonstate.edu/code>).

Students are expected to conduct themselves in the course (e.g., on discussion boards, email, in-class) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

ACADEMIC INTEGRITY

Students are expected to comply with all regulations pertaining to academic honesty. For further information, visit [Avoiding Academic Dishonesty](#), or contact the office of Student Conduct and Mediation at 541-737-3656.

OAR 576-015-0020 (2) Academic or Scholarly Dishonesty:

a) Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.

b) It includes:

(i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.

(ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.

(iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).

(iv) TAMPERING - altering or interfering with evaluation instruments or documents.

(v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including

unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

OSU STUDENT EVALUATION OF TEACHING

Course evaluation results are extremely important and are used to help me improve this course and the learning experience of future students. Results from the 19 multiple choice questions are tabulated anonymously and go directly to instructors and department heads. Student comments on the open-ended questions are compiled and confidentially forwarded to each instructor, per OSU procedures. The online Student Evaluation of Teaching form will be available toward the end of each term, and you will be sent instructions via ONID by the Office of Academic Programs, Assessment, and Accreditation. You will log in to "Student Online Services" to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted.