### Course Information

Meeting times, classroom location, website, use of Canvas, prerequisites

### Instructional Team

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name & Email Address** | **Role** | **Office Location & Hours** |
| [insert picture] |  |  |  |
| [insert picture] |  |  |  |

### Course description

*Your course description should provide a brief introduction to the course, describe broad course goals, and should convey how you want students to approach your course. Below is a sample course description, that Dr. Kristina Cohen created for BIOL0285.*

The goal of this course is to provide you with an experience similar to that of doing research in your discipline. Authentic research experiences are collaborative by nature, therefore, it is essential to work effectively with all individuals involved in the course. Not everything works out perfectly as planned. Rather than giving up, we must figure out why our experiment didn’t work and how to fix it. Your instructors have grappled with such challenges in their own research. You should anticipate that at some point in the semester, you will likely hit a roadblock or one of your protocols will not work well. When we evaluate you in this course, we are not checking to see if your experiments worked perfectly, but rather we care about how you interpret your results and your ability to troubleshoot and try again. This requires more than just following directions on a protocol; it requires that you fully understand the procedure you are doing and **why** you do each step. In order to understand what went wrong, you must understand the process. This is the goal of the course; to gain a deeper understanding of the subject matter through dealing with the challenges associated with research. When you run into trouble, take a deep breath and remind yourself that real learning takes place outside of your comfort zone.

### Course objectives

By the end of this course, I am both confident and hopeful that you will be able to:

* Learning
  + Develop your awareness of and confidence in your research abilities
  + Apply scientific reasoning and problem solving skills to developing and investigating a research question or hypothesis
  + Discuss how bias and inequity can affect both individuals as well as science itself
  + Critically read and evaluate discipline-specific literature
  + Work effectively in a team where all individuals are valued and respected
* Research
  + Develop an understanding of the current state of the field
  + Utilize best practices in your field of research (i.e. record keeping, laboratory safety, accuracy and precision, attention to detail)
  + Develop the practice of experimental design, data collection, and analysis
  + Clearly communicate your scientific research in a style appropriate to a given audience
  + A goal expressing the overarching research question or concept
    - i.e. relationship, pattern, or correlation between the variables you are interested in

### Course materials

|  |  |
| --- | --- |
|  | **Estimated Cost** |
| Required text……… | $ |
| Supplies……… | $ |
| Materials……… | $ |
| **\*Total estimated cost of required materials for this course** | **$** |

**Canvas**

Link to the course Canvas page and description of resources available there.

**Electronic Laboratory Notebook**

[Lab archives](https://www.labarchives.com/logo/brown-university/) is the recommended method for maintaining data and protocols in laboratory-based courses. Access is free through your Brown login and your data will be permanently archived and protected. Tutorials are available on the website and trainings are available through the Brown University librarians.

**\*E-Gap Funds**

Brown University undergraduates with concerns about the non-tuition cost(s) of a course at Brown, including this course, may apply to the Dean of the College Academic Emergency Fund to determine options for financing these costs, while ensuring their privacy. The fund can be found in the Emergency Funds, Curricular & Co-curricular Gap (E-Gap) Funds in [UFunds](https://ufunds.brown.edu/). Information and procedures are available at this link:<http://brown.edu/go/egap>.

### Allocating your time in this course

|  |  |
| --- | --- |
|  | **Time (hours)** |
| In class work | ... |
| Individual Assignments | ... |
| Group Assignments | ... |
| **Total work expectation** | **180 [or more]** |

### Assessment of learning

|  |  |  |
| --- | --- | --- |
| **Assignment** | **Percent of grade** | **Due date** |
| Lab notebook |  |  |
| Participation |  |  |
| Quizzes |  |  |
| Individual Reflections |  |  |
| Phase 1 assignment |  |  |
| Phase 2 assignment |  |  |
| Phase 3 assignment |  |  |
| Capstone Assignment |  |  |

### Assignment Descriptions

**Laboratory notebooks**

**Participation**

**Quizzes**

**Reflections**

**Phase 1-3 assignments**

**Capstone Assignment (Phase 4 assignment)**

### Policies & expectations

**Attendance and lateness**

If you have to miss a lab for a valid reason, you are responsible to help your teammates make up the work you missed. Occasionally, you may need to repeat an experiment or do additional experimental work outside of class. You can do this by coming to another section of lab or by arranging a time to meet with an instructor or TA outside of class.

**Missed exams or assignments**

Assignments due a certain week are due at the beginning of your section. Late assignments without a valid excuse will receive a 10% deduction per day late. Please contact me if you need additional time to complete on assignments.

**Lab safety/health**

Safe science is good science! Our goal is to protect both you and your samples at all times in the laboratory. Goggles and lab coats will be available in the lab (and disinfectant wipes), but feel free to bring your own if you feel more comfortable. Closed-toed shoes, long pants, and hair secured away from your face are always required in lab for your safety, as well as for the safety of your samples.

**Academic integrity**

Please familiarize yourself with Brown’s Academic Code. Avoid unintentional plagiarism by properly citing your sources. Intentional plagiarism is a deliberate violation of the academic code. <https://www.brown.edu/academics/college/degree/policies/academic-code>

**Accessibility and Accommodations**

Brown University is committed to full inclusion of all students. Please inform me early in the term if you have a disability or other conditions that might require accommodations or modification of any of these course procedures. You may speak with me after class or during office hours. For more information, please contact [Student and Employee Accessibility Services](https://www.brown.edu/campus-life/support/accessibility-services/) at 401-863-9588 or SEAS@brown.edu. Students in need of short-term academic advice or support can contact one of the deans in the Dean of the College office.

**Diversity & Inclusion Statement**

*Below is a sample Diversity & Inclusion statement that Dr. Kristina Cohen created for BIOL0285.*

Scientists often pride themselves on being objective, but in the real world this is not always the case. Science in many ways is subjective and implicit biases and privileged viewpoints have permeated much of the scientific cannon on which we build our modern-day investigations (See Tang-Martinez, 2016). I strive to create a learning environment that supports and honors the diversity of perspectives, experiences, thoughts represented among us and beyond the classroom. Please help me do this by:

* Informing me if your name and/or pronouns differ from those that appear on your official record
* Informing the instructional team if you feel that your personal experiences outside of class are impacting your performance in class
* Informing an instructor or TA about anything that was said or done in class that made you feel uncomfortable
* Feel free to give us suggestions on how we can improve the laboratory experience to make all participants feel included and valued

### Course schedule

This course is divided into four (4) phases:

Phase 1: Introduction to instrumentation and the scientific literature

Students become familiar with reading discipline-specific literature, as well as the nature of scientific research

Phase 2: Developing a research question & learning techniques

Students formulate research questions and refine their experimental design while they gain confidence and skills working with analytical instrumentation in the context of a research scenario

Phase 3: Multi week research project

Students conduct a six-week research project where they grapple with challenges, troubleshoot, and continue to develop their scientific communication skills

Phase 4: Communicating your findings

Students analyze and synthesize their findings and communicate their results in a style appropriate to their target audience

**Example Schedule for 14-week semester**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week | Date | Topic | In-Class | Assignments Due |
|  |  | Phase I: Introduction to Scientific Literature | | |
| 1 |  |  | Introductions, Safety, discussion of issues of equity and bias in STEM | Reading reflection on bias |
| 2 |  |  | Discussion of first paper  Literature search and construction of annotated bibliography | First paper reading |
| Phase 2: Learning Lab Techniques and Developing a Research Question | | | | |
| 3 |  |  | Lab Techniques,  Refine Research Question |  |
| 4 |  |  | Lab Techniques, Discussion of bias in experimental design | Bias in Experimental Design reflection |
| 5 |  |  | Lab Techniques | Literature Review Due (or Introduction of paper) |
| Phase 3: Research Project | | | | |
| 6 |  |  | Data Collection | Lab Notebook Check |
| 7 |  |  | Data Collection | Partial Methods draft due |
| 8 |  |  | Data Collection |  |
| 9 |  |  | Data Collection | Partial Results draft due |
| 10 |  |  | Data Collection |  |
| 11 |  |  | Data Collection | Reading/reflection on bias in data analysis |
| Phase 4: Communicating Your Results | | | | |
| 12 |  |  | Data Analysis |  |
| 13 |  |  | Work on Capstone Product | Discussion section due for peer editing |
| 14 |  |  | Presentation of results | Poster |

**Citation:**

Tang-Martínez, Z. (2016). "Rethinking Bateman’s Principles: Challenging Persistent Myths of Sexually Reluctant Females and Promiscuous Males." The Journal of Sex Research 53(4-5): 532-559.