**PHYS 320W/620: Research and Writing in the Sciences (3 credit hours)**

**Department of Physics**

**Fall 2022: August 25 – December 21**

**Instructor Information**

**Prof. So Takei**

**Office:** SB B220

**Email:** stakei@qc.cuny.edu

**Phone**: (718) 997-3379

There are three ways you can reach me:

1. **Synchronous office hours on Zoom:** Every Friday 2pm-3pm (see *Contact Information* tab on Blackboard).
2. **Email:** Typical response time is within 5 hours.
3. **Private Zoom meeting:** Private Zoom meeting can be setup via email. A Zoom link for the agreed date and time will be sent to you. Typical response time for your appointment requests is within 2 hours.

**Prerequisites**

Completion of more than 60 credits and one year of calculus (MATH 132, 142, 152, or 158).

For PHYS 620 students: graduate standing and permission of department.

**Course Description**

In this course, “students will explore the current literature in their fields while developing skills in the preparation of abstracts, technical publications, conference presentations, and curriculum vitae. Ethical issues in scientific research will be addressed through case studies and examination of relevant technical and popular literature.”

This course is a Writing Intensive (W) course and fulfills one Writing Intensive requirement. W courses involve 10-15 pages of evaluated writing in three or more assignments.

**Learning Goals**

1. Students will be able to describe scientific results in the style of a professional scientific journal, as demonstrated by concise abstracts and well-organized and effectively illustrated text.
2. Students will be familiar with and avoid common grammatical and stylistic errors in science writing.
3. Students will be able to describe key ethical issues in scientific research. These issues will be explored through case studies and a close examination of the play *Copenhagen*.
4. Students will demonstrate familiarity with internet (and library) resources required to explore the scientific literature and to conduct effective research.
5. Students will demonstrate familiarity with proper techniques for oral and visual presentation of scientific information.
6. Students will be familiar with the elements of an effective c.v. and cover letter.
7. Students will gain an advanced understanding of a research topic in their field, demonstrated through written and oral presentations.

This course will be held **asynchronously**. All course content will be posted on Blackboard (BB), so you should be well-versed at accessing and navigating through the course BB page.

Please have the latest version of Zoom downloaded and installed on your personal computer. For instructions on how to download and install Zoom, see the Technical Support section below.

Finally, we will be using a video communication tool called **Flipgrid** to facilitate class discussions. Here is a quick tutorial on how to use Flipgrid, <https://youtu.be/eMoBGLwvFm0>. Specific instructions on how to access the course Flipgrid page will be given in the exercises and assignments.

**Required Work & Course Schedule**

**Lectures:** New lecture content will be posted on BB every Monday and Wednesday at 10am (except on no-class days). You should try to complete the reading material on the day of posting to keep up with the course. **Note: Thursday 9/29 will run on a Monday schedule, so new material will be posted then.**

**Exercises:** Exercises are given out on the days indicated on the Syllabus, and their deadlines are given on the Syllabus and on the Exercise document. To complete an exercise, go over to the *Exercises & Assignments* tab and download the relevant file. Submission instructions are included in the Exercise document. **BEWARE:** Exercises will disappear at the deadline.

**Assignments:** Assignments are given out on the days indicated on the Syllabus, and their deadlines are given on the Syllabus and on the Assignment document. To complete an Assignment, go over to the *Exercises & Assignments* tab and download the relevant file. Submission instructions are included in the Assignment document. **BEWARE:** Assignments will disappear at the deadline.

**Final Research Summary:** You will prepare a 6- to 8-page review of a recently reported research result in your field of interest. Your review will be in the format and style of a research summary, written at the level of undergraduate majors (320W) or graduate majors (620) in your field. Your primary source will be a technical paper of your choice published in a major professional journal such as *Science*, *Nature (and their subsidiaries)*, or *Physical Review Letters*. I recommend that you begin your search for a topic by consulting popular magazines and websites (e.g., *Scientific American*, *Science Magazine*, *IEEE Spectrum, Physics Today,* [*physics.aps.org*](http://physics.aps.org/)*, The Economist*, *NY Times Tuesday Science Section*).

Here are some important deadlines related to the Final Research Summary:

1. **Assignment #1:** For this assignment, you should attend a technical seminar or colloquium this semester and prepare a review of less than one page. Your review will briefly describe the content of the talk, the importance of the work, the clarity of the presentation, the quality of the slides, the speaking style, and the way questions were addressed.
2. **Assignment #2:** Please select two or three possible primary sources by **Sep. 21**. I will try to give you your first choice but may not be able to if it is: a) too difficult; b) from an inappropriate journal; or c) too similar to the topic of a fellow student.
3. **Assignment #3:** An outline for your Summary is due on **Oct. 12**. It should convey where key pieces of information will appear within the Summary.
4. **First Draft:** The first draft of your Research Summary is due on **Nov. 14**.
5. **Assignment #6:** In this Assignment, you will edit the first draft of a classmate’s paper. Additional instructions will be provided. The due date for the feedback is **Nov. 23**. At the end of the semester, you are expected to revise your summary based on my and your classmate’s feedback and submit it as the final written project.
6. **Oral Presentation:** You will upload a 10-minute oral presentation on your Research Summary through flipgrid. For instructions, see the Exercises & Assignments tab on Blackboard. The due date for the video is **Dec. 12**. You will receive time off from lectures on Dec. 7 and Dec. 12 to complete and upload the video.
7. **Assignment #7:** You will be asked to provide feedback for one of your classmates’ oral presentations. The feedback is due on **Dec. 16**.
8. **Final Exam:** For the Final Exam, you will re-upload on flipgrid your talk with improvements made based on your classmate’s and my feedback. The due date for your final presentation is **Dec. 23**.

**Synchronous Meetings:** You will be required to participate in 3 synchronous meetings over Zoom, one during the week of **Sep. 12**, one during the week of **Oct. 3**, and one during the week of **Nov. 7**. During each of these weeks, a few two-hour sessions will be made available; **you may choose one that best suits your schedule**. A survey poll will be sent out prior to each week to figure out your preferred sessions.

The main purpose of these meetings is to give you guidance on Assignments #2, #3, and your Final Research Summary drafts. But I can address any other concerns and questions you may have for the course. They are also a nice way to meet and discuss with your classmates in real-time!

**Tentative Schedule & Important Dates**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MON** | **CONTENT/ASSIGNED Work** |  | **WED** | **CONTENT/ASSIGNed work** |
| 8/29 | Scientific Writing: Overview**Assignment #1 – Seminar Review (due 12/12)** |  | 8/31 | Google Scholar, Impact Factor, h-Index**Exercise #1 (due 9/7)** |
| 9/5 | **No class**  |  | 9/7 | Research Summary: Overview; Citations**Exercise #2 (due 9/14)****Assignment #2 – Primary Sources (due 9/21)** |
| 9/12 | The Nuts & Bolts: Grammar Parts 1-4**Exercise #3 (due 9/19)****Week of Synchronous Meeting #1** |  | 9/14 | The Nuts & Bolts: Grammar Parts 5-7**Exercise #4 (due 9/19)** |
| 9/19 | The Nuts & Bolts: Punctuation**Exercise #5 (due 9/21)** **Assignment #3 – Outline (due 10/12)** |  | 9/21 | Principles of Effective Writing; Cutting the Clutter**Exercise #6 (due 9/28)** |
| 9/26 | **No class**  |  | 9/28 | Principles of Effective Writing; Active Voice |
| 10/3 | Sentences and Paragraphs Part 1**Week of Synchronous Meeting #2** |  | 10/5 | **No class** |
| 10/10 | **No class**  |  | 10/12 | Sentences and Paragraphs Part 2**Exercise #8 (due 10/19)**  |
| 10/17 | The Writing Process Part 1**Start First Draft (due 11/14)** |  | 10/19 | The Writing Process Part 2**Exercise #9 (due 10/26)**  |
| 10/24 |  Sections of the Scientific Manuscript Part 1 |  | 10/26 | Sections of the Scientific Manuscript Part 2**Assignment #4 – Galileo Abstract and Figure & Caption (due 11/7)** |
| 10/31 | Curriculum Vitaes (C.v.’s) |  | 11/2 | Cover Letters**Assignment #5 – Cover Letter (due 11/9)** |
| 11/7 | Oral Presentations Part 1**Comprehension Quiz (due 11/9)****Week of Synchronous Meeting #3** |  | 11/9 | Oral Presentations Part 2**Exercise #10 (due 11/16)** |
| 11/14 | Oral Presentations Part 3**First Draft Due****Assignment #6 – Draft Edits (due 11/23)** |  | 11/16 | Introduction: Ethics in Science |
| 11/21 | Ethics: Case Study #1**Exercise #11 (due 11/24)**  |  | 11/23 | Ethics: Case Study #1 Continued**Exercise #12 (due 11/28)**  |
| 11/28 | Ethics: Case Study #2**Exercise #13 (due 12/1)** |  | 11/30 | Ethics: Case Study #2 Continued**Exercise #14 (due 12/5)** |
| 12/5 | Peer-Review Process and Ethical Issues in Scientific Publishing |  | 12/7 | No lecture: time provided to work on the oral presentation. |
| 12/12 | No lecture: time provided to work on the oral presentation.**Assignment #7 – Presentation Critique (due 12/14)** |  |  |  |

**Thursday 9/29 runs on a Monday schedule.** The following items are included for that day:

Principles of Effective Writing; Writing with Verbs

**Exercise #7 (due 10/6)**

This schedule is subject to change. Students will be notified in writing of such changes.

For the most up to date information and activities, always refer to this document and the course site.

**Assessment**

|  |  |
| --- | --- |
| **Assessment** | **Percentage of Final Grade** |
| Exercises | 25% |
| Assignments | 30% |
| Research Summary | 25% |
| Oral Presentation | 10% |
| Final Exam | 10% |

Students will be assigned the final letter grades based on Queens College Academic and Grading Policies. [Please consult the Academic and Grading Policies](https://www.qc.cuny.edu/Academics/SupportPrograms/advising/Academic-and-Grading-Policies/Pages/Default.aspx) for percentage grade equivalents.

**Technical Support**

If you require technical help with your Queens College email or CUNYfirst account please contact the Queens College helpdesk by emailing helpdesk@qc.cuny.edu or visiting their website: <https://www.qc.cuny.edu/Computing/helpdesk/Pages/Welcome.aspx>.

To download and install the Zoom Application:

1. Go to <https://zoom.us/download> and from the Download Center, click on the **Download**button under “Zoom Client For Meetings”.
2. Once the download is complete, proceed with installing the Zoom application onto your computer.

\**There is no need for you to create an account on Zoom since you will simply be joining Zoom meetings and not hosting them.*

For instruction on how to use Zoom: <https://biz30.timedoctor.com/how-to-use-zoom/>

For a quick guide on how to use Blackboard (e.g., how to submit assignments), please click on the appropriate link under the *Syllabus* tab.

**Reasonable Accommodations for Students with Disabilities**

Students with disabilities needing academic accommodation should register with the Special Services Office by emailing QC.SPSV@qc.cuny.edu.

For more information about services available to Queens College students, visit the Office of Special Services website: <https://www.qc.cuny.edu/studentlife/services/specialserv/Pages/default.aspx>

**CUNY Policy on Academic Integrity**

Academic Dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension, and expulsion as provided at <https://www.cuny.edu/about/administration/offices/legal-affairs/policies-procedures/academic-integrity-policy/>. Please read this document, paying careful attention to the sections on plagiarism and Internet plagiarism. If you are not sure how to cite work you have found on the internet, please review the APA Guidelines provided by the [Purdue OWL](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/reference_list_electronic_sources.html).

**Netiquette**

Please maintain a professional demeanor when posting online. You can be respectful even when you have a difference of opinion. Treat others as you'd want to be treated yourself. Don't type in all caps, as that is the online equivalent of shouting. If you need to emphasize a word or phrase, use italics.

**Statement on student wellness**

“As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. QC services are available free of charge. You can learn more about confidential mental health services available on campus at:” <https://www.qc.cuny.edu/StudentLife/services/counseling/counseling/>

**Use of Student Work**

All programs in New York State undergo periodic reviews by accreditation agencies. For these purposes, samples of student work are occasionally made available to those professionals conducting the review. Anonymity is assured under these circumstances. If you do not wish to have your work made available for these purposes, please let the professor know before the start of the second class. Your cooperation is greatly appreciated.

**Course Evaluations**

During the final four weeks of the semester, you will be asked to complete an evaluation for this course by filling out an online questionnaire. Please remember to participate in these course evaluations. Your comments are highly valued, and these evaluations are an important service to fellow students and to the institution, since your responses will be pooled with those of other students and made available online, at the [Teaching Evaluations Data: Spring 2010 – Present](http://courses.qc.cuny.edu/) (<http://ctl.qc.cuny.edu/evaluations/data/>). All responses are completely anonymous; no identifying information is retained once the evaluation has been submitted.