

SCIE113: First-Year Seminar in Science

January - April 2017

Course Director: Dr. Gunilla Öberg, [goberg@ires.ubc.ca](mailto:goberg@ires.ubc.ca)

**Teaching Team:**

Section, Time, Room	Instructor	Email	TA	Email
V01 – 1pm ORCH 4002	Celina Berg	<a href="mailto:cgberg@cs.ubc.ca">cgberg@cs.ubc.ca</a>	Johan Gilchrist	<a href="mailto:johangilchrist@gmail.com">johangilchrist@gmail.com</a>
V02 – 1pm ORCH 4016	Brett Gilley	<a href="mailto:bgilley@eoas.ubc.ca">bgilley@eoas.ubc.ca</a>	Céline Michiels	<a href="mailto:michiels@mail.ubc.ca">michiels@mail.ubc.ca</a>
V03 – 12pm CHEM D213	Kayli Johnson	<a href="mailto:kjohnson@chem.ubc.ca">kjohnson@chem.ubc.ca</a>	Idalia Machuca	<a href="mailto:imachuca@eoas.ubc.ca">imachuca@eoas.ubc.ca</a>
V04 – 12pm ORCH 4016	Ashley Welsh	<a href="mailto:ashley.welsh@ubc.ca">ashley.welsh@ubc.ca</a>	Céline Michiels	<a href="mailto:michiels@mail.ubc.ca">michiels@mail.ubc.ca</a>

Every second Thursday beginning January 5th, all sections gather for the Science and Society Speaker Series. HEBB 100, 12:30-2pm.  
There is no class on the Fridays after the Speaker Series presentations.

**Course Description**

In SCIE 113, students explore what science is and how it is done. Students learn to construct and critically assess scientific arguments. Students also discuss how science is influenced by the society and the cultural settings it is embedded in. Enrolment is limited to students with first-year standing in the BSc program.

- 1) Articulate and discuss what science is and how it is done
- 2) Practice critical thinking
- 3) Communicate effectively through writing
- 4) Put science in context
- 5) Act professionally as a member of the scientific community

The course has five core learning goals:

**Course Structure**

*Seminar*

Your SCIE 113 seminar-style class is small (max 27 students) and highly interactive. We stress active learning through discussion, and value everyone’s contributions and views. Your active participation is central to passing this class. We will do what we can to create a positive, safe and supportive environment for you to participate. We appreciate all feedback from you (feel free to speak to us after class or email us).

We expect you to be respectful of other students: turn off your electronic devices during class and listen actively while others are speaking.

*Pre-class Activities*

To make the most of our in-class time, you will be assigned pre-class activities to complete before class. These include readings, watching videos, worksheets, discussion forum posts, and other writings.

They are detailed on the course website on Connect ([www.connect.ubc.ca](http://www.connect.ubc.ca)).

Pre-class activities are typically due on Connect by 10pm the night before class. This gives your instructor and TA time to review them before the next day's class.

Your thoughtful and timely completion of the pre-class activities form part of your participation grade.

*Science and Society Speaker Series*

Once every two weeks, all sections gather in for the Science and Society Speaker Series. In the speaker series you will meet and listen to people who have used their BSc degrees to launch diverse careers. The goal is to inspire you to think about your future and how you might use the knowledge you acquire during your BSc.

Because late arrivals are disruptive for both the speaker and the other students, late-arriving students will not be allowed entry.

*Course Materials*

SCIE 113 has no required textbooks; all course materials are posted on Connect ([www.connect.ubc.ca](http://www.connect.ubc.ca)).

On your SCIE 113 Connect website, you will find a calendar with all due dates, all of the course materials, information on your assignments, and assignment dropboxes where you will submit your written work. For technical assistance, contact the IT Services Helpdesk <http://www.it.ubc.ca/contact/helpdesk.html>

*Assessment*

Your instructor and TA will assess you on several different learning tasks. These tasks are designed to help you achieve the course's learning goals. We have broken down several of the major assignments into steps; deadlines for each of the steps are detailed in the table below.

Tasks	Steps (if applicable)	Due Date and Time	% of course grade
Science and Society Speaker Series Worksheet		Due at the end of each presentation	7% (7 x 1% each)
Essay 1 (~500 words)	Version 1	Jan 29, 10pm	15%
	Final Version	Feb 3, 10pm	
Research Scientist Interview	Contact Scientist	Jan 27, 5pm	10%
	Presentation to Class	Feb 15, in class	
Term Paper (1000-1250 words)	Select Topic	Feb 6, in class	12%
	Outline	Feb 17, 10pm	
	Revised Outline	Mar 1, 10pm	
	Version 1	Mar 10, 10 pm	
	Final Version	Mar 27, 10 pm	23%
Essay 2 (~500 words)	Final Version	April 10, 10pm	20%
Participation			13%

Description of Learning Tasks

*Science and Society Speaker Series Worksheet*

These worksheets are note-taking assignments for the 'Science and Society' presentations. They include a variety of critical thinking questions to guide your analysis of arguments that speakers present.

You must print and bring a worksheet to each presentation.

*Essay 1 & 2*

You will write two short argumentative essays (approximately 500 words each).

Your first essay will undergo an in-class peer review process. You will review peers' essays (Version 1), examining the strength of the argument and relevant evidence, and receive feedback from your peers. You will revise your draft based on the feedback you receive and submit your final version to Connect.

*Term Paper*

You will write an argumentative, evidence-based essay (1000-1250 words) that responds to this prompt: "Choose a current unresolved scientific research question that interests you. State your claim (thesis) and present the reasons and evidence that justify your position." You will receive peer and instructor feedback on early versions of your paper, which you will incorporate into your final version.

*Research Scientist Interview*

You and a peer will interview a research scientist at UBC, and present your findings to the class. We will provide you with a list of scientists who have agreed to meet with you. The interview will form the basis of several classroom discussions and learning activities.

*Participation*

All students are expected to participate by speaking in class, working in groups in a constructive and respectful manner, listening actively to your peers, and by preparing for class.

Your classroom participation will be assessed on: your contributions to class discussion, teamwork skills when working with others, timely completion of all pre-class activities, and punctual attendance.

You need to attain a participation grade of at least 50% in order to pass SCIE 113.

## **Course Policies**

### *Assignments*

You will complete all in-class writing assignments using a pen and paper. No electronic devices are allowed during in-class writing time.

You must use correct spelling and grammar in all assignments. You may bring a dictionary (hard copy) as a resource to ensure correct spelling.

You must submit your Version 1 and Final Term Paper to TurnItIn to verify originality.

You will submit a copy of your Turnitin originality report with these assignments.

Your attendance for the in-class writing of Essay 2 is mandatory. There will be a 10% deduction on the Essay 2 grade for students who do not attend this class.

### *Formatting Guidelines*

Term Papers and Essays that do not confirm to these formatting guidelines will be returned to students to be corrected and re-submitted, with late penalty.

File Names: When submitting your assignments to Connect, name your files using the following format: LastName\_StudentID\_AssignmentName.

All typed assignments must be double spaced, in 12 point font, with 1" margins all around the text.

Citations: All assignments must correctly follow a recognized academic citation style. In class, you will learn how to correctly cite sources using academic citation styles.

### *Late Penalties*

All assignments are due on the specified date and time. The late penalty is 10%/day. Late Science and Society Speaker Series Worksheets will not be accepted.

### *Plagiarism and Academic Honesty*

All submitted writing must be the student's original work. Students are expected to be aware of the [UBC policies on academic honesty and misconduct](#), published in the UBC Calendar, and to adhere strictly to them for all work in this course.

Academic misconduct (including plagiarism and cheating) of any kind will not be tolerated. The consequences for academic misconduct will, at minimum, include a grade of zero for the assignment. Students may also face possible expulsion from the course and possible suspension from the University.

### *Access and Diversity*

Students with disabilities who are registered with Access and Diversity (Student Services) <http://www.students.ubc.ca/mura/access/>, should notify their instructor within the first two weeks of term.

### *Illness*

Students who have physical illness or experience emotional stresses that cause them to miss classes or assignments should make those known to the instructor right away by email or in person. If you are absent or miss assignments, you should talk with your instructor who will discuss options with you.

## Academic Success and Wellbeing

### Academic Success

#### *Plan for Success*

UBC's Plan for Success website can direct you to resources that will help you develop a strong plan for meeting your academic goals.

<http://students.ubc.ca/success>

### Writing

Writing is a skill that can be improved with practice. The UBC Writing Centre offers outstanding in-person and online services ([www.writeaway.ca](http://www.writeaway.ca)) to support students in developing their writing skills.

Other UBC resources that can help you develop your skills in writing in English include:

Academic English Support for UBC students: <https://cstudies.ubc.ca/student-information/services/academic-english-support>

Writing 098 and 099 courses:

<https://courses.students.ubc.ca/cs/main?pname=subjarea&tname=subjareas&req=1&dept=W RIT>

ENGL wiki: [wiki.ubc.ca/EnglishHelp](http://wiki.ubc.ca/EnglishHelp)

### English Corner @ UBC

Meet other UBC students from around the world and help build your language skills together with weekly meetings and social outings.

For more information, check out their Facebook page: <https://www.facebook.com/English-Corner-at-UBC-197473193619924/info/?tab=overview>

### Wellbeing

Your ability to reach your academic goals at UBC is related to your physical and mental health.

UBC and the Alma Mater Society both provide services designed to support your health and overall wellbeing. We advise and encourage to explore and make use of these services.

UBC Student Services: <http://students.ubc.ca/>

AMS Services: <http://www.ams.ubc.ca/services/>

## Course Schedule

We have listed major assignment deadlines – those that will be graded.

Each class will also have Pre-class Activities that you are expected to complete before class. However, these are flexible (e.g. your instructor may assign different activities or readings to different groups within your class). Because of this, your pre-class activities are listed and updated on Connect. Your instructor will also always announce them in class.

### Unit 1: Discuss and Define What Science Is

Science is much more than a series of facts about the natural world. Research in science education demonstrates that students' ability to learn science increases if they also learn about science: what it is, how it is done, and how it varies among different scientific disciplines.

In this unit, we will begin to ask how scientists know, and what they do. You will begin to uncover and question your perceptions about what science is and how it is done. You will analyse some historical case studies to develop your understanding of how scientists approach their work.

Date	Class	Graded Assignment Deadlines
Wed Jan 4	1.1 Introduction and Expectations	
Thurs Jan 5	Science and Society Speaker Series	<a href="#">Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation</a>
Mon Jan 9	1.2 What is Science? (Part 1)	
Wed Jan 11	1.3 What is Science? (Part 2)	
Fri Jan 13	1.4 Case Studies in the History of Science (Part 1)	
Mon Jan 16	1.5 Case Studies in the History of Science (Part 2)	

Unit 2: Elements of an Argument

This unit focuses on two complementary areas: the building of sound arguments, and the construction of clear, well-structured essays. Using chapters from the book *The Craft of Research* (Booth et al, 2008), you will learn the core elements of an argument – claim, reason, evidence – as well as warrants, counterarguments and rebuttals. You will also learn to identify and avoid some of the most common logical fallacies that students commit in their writing. We will then work on structuring an essay effectively, and practice developing outlines for writing strong arguments and good essays.

Throughout the unit, you will practice these various skills (argument building, outlining, writing) in the step-by-step construction of your first essay draft. Because peer review is central to how scientists produce knowledge, we end the unit with an in-class peer review of your draft.

Date	Class	Graded Assignment Deadlines
Wed Jan 18	2.1 Making Claims	
Thurs Jan 19	Science and Society Speaker Series	Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation
Mon Jan 23	2.2 Claims and Warranted Reasons	
Wed Jan 25	2.3 Counterarguments and Rebuttals	
Fri Jan 27	2.4 Essay Structure and Paragraphs	Research Scientist Interview- Contact Scientist
Mon Jan 30	2.5 Plagiarism and Peer Review	
Wed Feb 1	2.6 In class Peer Review of Essay 1	
Thurs Feb 2	Science and Society Speaker Series	Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation
Fri Feb 3		Essay 1, 10 pm, Connect



Unit 3: The Role of Evidence

Unit 3 focuses on the role of evidence in scientific arguments. You will learn how to search effectively for evidence, and to carefully evaluate the evidence that scientists use in their argument. You will learn about the different kinds of evidence that scientists from use, depending on what they are researching. To prepare you for the term paper assignment, you will gather and evaluate evidence with respect to an unresolved scientific research question, and debate a claim related to this question. By the end of the unit, you will be prepared to peer review each other’s term paper outlines – including a careful evaluation of the evidence that you have gathered to create your arguments.

Date	Class	Graded Assignment Deadlines
Mon Feb 6	3.1 How to search for information to identify an unresolved research question	
Wed Feb 8	3.2 Evaluating the evidence: Validity and reliability	
Fri Feb 10	3.3 Evaluating the evidence: A case study in building an argument	
Tues Feb 14		Research Scientist Interview Slide, noon, Connect
Wed Feb 15	3.4 How is scientific knowledge produced? Identifying commonalities among different research traditions	Research Scientist Interview Presentations – In Class
Thurs Feb 16	Science and Society Speaker Series	Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation
Fri Feb 17		Term Paper Outline, 10pm, Connect
Mon Feb 27	3.5 In class Peer Review of Term Paper outline	

Unit 4: Different Ways of Knowing

In Unit 1, you examined some common characteristics of what science is and how it is done; in Unit 3, you investigated the role of scientific evidence in producing scientific arguments, and looked for some commonalities amongst the research scientists you each interviewed. In Unit 4, we will complicate our understanding of what science is, and how it is done. What are some of the differences amongst the scientists you interviewed – and how do these illustrate different traditions of knowing within science?

We will deepen our understanding of how scientists produce knowledge by examining the relationship between data, interpretation and results. How can the same set of data be interpreted to produce different results? What are some of the more common errors scientists make in working with data?

You will also become familiar with multiple ways of knowing outside of science, which many scientists regularly interact with. Ultimately, you will begin to identify the kinds of questions science can answer extremely well – and the kinds that it cannot answer at all.

Date	Class	Graded Assignment Deadlines
Wed Mar 1	4.1 How do Scientific Traditions Differ	Revised Term Paper Outline, 10pm Connect
Fri Mar 3	4.2 Same Data... Different Results?	
Mon Mar 6	4.3 Identifying Weaknesses in Scientific Arguments	
Wed Mar 8	4.4 Paradigms and Paradigm Shifts	
Thurs Mar 9	Science and Society Speaker Series	Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation
Fri Mar 10		Term Paper Version 1, 10 pm, Connect
Mon Mar 13	4.5 Different Ways of Knowing	
Wed Mar 15	4.6 In class Peer Review of Term Paper Version 1	

Unit 5: Science and Society

Scientific research does not take place in a vacuum. On one hand, it is shaped by the social contexts in which it is carried out. On another, science has many important contributions to make to society. In this unit, we investigate the entanglement of Science and Society, in the past and in the present. We consider diversity in Science, Science’s potential contributions to society and social policy, and the representation of scientific research in the media and in popular science writing.

Date	Class	Graded Assignment Deadlines
Fri Mar 17	5.1 The Limits of Science	
Mon Mar 20	5.2 Science and Diversity	
Wed Mar 22	5.3 Science and Society	
Thurs Mar 23	Science and Society Speaker Series	Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation
Mon Mar 27	5.4 Science and Policy	Term Paper Final Version, Connect, 10pm
Wed Mar 29	5.5 Science, Media and Popular Science	

Wrapping Up

Date	Class	Graded Assignment Deadlines
Fri Mar 31	In-class Writing (Essay 2)	
Mon Apr 3	Course Summary and Reflection	
Wed Apr 5	Peer Review (Essay 2)	
Thurs Apr 6	Science and Society Speaker Series	Science and Society Speaker Series Worksheet – due to your TA at the end of the presentation
Mon Apr 10		Essay 2, 10pm, Connect