

**BACHELOR OF ARTS & SCIENCE
TRENT UNIVERSITY**

**ASCI 4000Y: COMMUNICATING KNOWLEDGE
2015-16 FW
Peterborough**

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Course Description:

This course explores the notion of scientific controversy and scrutinizes ideological struggles to mobilize political and public support for contested scientific research and technological innovation. Contemporary issues such as stem cell research, vaccines, evolution, information technology, climate change, space exploration, precision medicine, food safety, and nanotechnology are studied to reveal the rhetorical tools, underlying assumptions, and the interplay of ethical, social, political, economic, and cultural factors contributing to the origin, evolution, and closure of controversies in science and technology. The course engages students in independent research to develop an original project on a topic that fits within the course themes. Students will select a controversial issue involving science and technology and will analyze it from a particular perspective such as ethics, society, politics, law, economy, the environment, and international/global impact. In developing their projects, students will learn to use primary and secondary sources and follow the standard stages in research and writing of scholarly papers. Students will also learn strategies for effective writing and how to use audience analysis and adaptation to communicate their research projects across disciplines and to diverse audiences.

Course Pre-requisites:

70% or higher in ASCI 3000H. Only open to students enrolled in the BAS program.

Required Texts:

The textbooks will be available for purchase at the Trent University Bookstore.

Kleinman, Daniel Lee, Abby J. Kinchy, and Jo Handelsman, eds. *Controversies in science and technology: from climate to chromosomes*. Volume 2. Mary Ann Liebert Inc. Publishers, 2008.

Kleinman, Daniel Lee, Abby J. Kinchy, and Jo Handelsman, eds. *Controversies in science and technology: from evolution to energy*. Volume 3. Mary Ann Liebert Inc. Publishers, 2010.

Additional readings will be posted on the course Blackboard page.

Recommended texts:

Engelhardt, Hugo Tristram, and Arthur L. Caplan. *Scientific controversies: Case studies in the resolution and closure of disputes in science and technology*. Cambridge University Press, 1987.

Penrose, A. M., and S. B. Katz. *Writing in the sciences: Exploring conventions of scientific discourse*. New York, NY: Longman/Pearson, 2010.

Blackboard:

This course is supported by a Blackboard page. This resource will provide students with access to course materials such as the syllabus, lecture notes, course readings in electronic format, assignment descriptions, changes in class schedule, and other relevant information. Please check the Blackboard page and your Trent email once a week.

Course Format:

Please check <http://www.trentu.ca/timetable/> to confirm times and locations.

Type	Day	Time	Location
Seminar	Monday	11:00 am - 01:50 pm	SC Room W3

Learning Outcomes/Objectives/Goals/Expectations:

This course aims to enable students:

- To learn key concepts, theories, and perspectives relevant to the study of controversies in science and technology;
- To understand the complex relationship between science and society and key challenges involved in the public communication of scientific research and innovation;
- To learn about contemporary controversies in science and technology that have received significant attention from the media, policymakers, and the general public;
- To use and adapt the standard stages of the research process to develop a particular project;
- To identify, select and properly utilize primary and secondary information sources;
- To use audience analysis and adaptation for effective communication of scientific research to diverse audiences;
- To develop review articles, research papers, and oral presentations.

Course Evaluation:

Normally **at least 25%** of the grade in an undergraduate half-credit course offered in the Fall/Winter academic session must be determined and made available by the final date for withdrawal. **Fall 2015, final date for withdrawal is November 10, 2015. Winter 2016, final date for withdrawal is March 3, 2016.** For full-year courses **at least 25%** of the grade must normally be determined and made available before the **mid-year review in January**. No final examination

is worth more than 50% of the final grade. With the exception of laboratory examinations in the sciences, no in-class tests or final examinations which are worth more than 10% of the final grade may be held during the last two weeks of classes in the Fall or Winter term.

Type of Assignment	Weighting	Due Date
Oral Presentation and Summary	10%	By the end of Fall Term
Research Proposal	15%	7 December 2015
Review Article	15%	1 February 2016
Research Presentations	20%	From 29 February to March 28
Research Paper	25%	4 April 2016
Participation	15%	Throughout the academic year

Oral Presentation and Summary (due by the end of Fall Term)

Each student will give a 15-20 minute presentation on one of the weekly readings assigned from week 2 to week 11. The student is expected to highlight facts, points and arguments that s/he considers important for the understanding of the scientific controversy discussed in the reading, and to raise questions for class discussion. On the day of her/his presentation, the student will also submit a short 3-4 page outline of the presentation. The student may choose whether to give a PowerPoint presentation, or simply talk informally with the class. Decisions about distribution of readings and presentation dates will be made on the first day of class.

Research Proposal (Due at the beginning of class on December 7)

Students will develop a five-page, double-spaced research proposal on one of the controversies studied in the course. The topic must be approved by the Instructor prior to the assignment submission. The proposal will present an outline of the intended research, including background or context, thesis statement/argument, methods, and expected conclusions. It should include a bibliography of at least ten academic sources for the paper (e.g., peer reviewed journal articles, scholarly books, credible web-based sources). Your research should examine the scientific or technological controversy from one particular perspective. You may choose from the following perspectives: ethical considerations/objections, societal impacts, political implications, legal implications, economic considerations, environmental impact, and international/global impact. If you decide to choose another perspective, you have to receive approval by the Instructor. APA style should be used for referencing and in-text citations. Students may use the following electronic resource on the APA formatting and style guide:

<http://owl.english.purdue.edu/owl/resource/560/01/>

Review Article (Due at the beginning of class on February 1)

Students will write a review article that summarizes the current state of research on their topics (e.g., recent major advances and discoveries, significant gaps in the research, current debates, and ideas of where research might go next) from the perspective they have chosen. Although this assignment is not a literature review in the strict sense, it requires that students use and cite primarily scholarly, peer-reviewed sources indicating what leading scholars in the field of their perspective consider the major implications/ impacts of the controversy. The review article should demonstrate that an in-depth search and review of the existing literature has been conducted, that the state of knowledge on the topic has been accurately represented, and critical assessment and

reflection is included. The review paper should be limited to a maximum of 8 pages, excluding tables, charts, and bibliography. It should be formatted in accordance with the APA's 6th edition style guide, e.g. double spaced on standard-sized paper (8.5" x 11") with 1" margins on all sides, left aligned, font 12 pt Times New Roman, and consist of four major sections: the Title Page, Abstract, Main Body, and References.

Research Presentations (due between February 29 and March 28)

In this assignment, you will give two 20-minute presentations of your research project adapting it for two different types of audiences. Each presentation will be followed by a 10-minute Q&A. The first presentation is intended for your classmates who have already studied controversies in science and technology. Although they may not be intricately familiar with the specific topic you are presenting, they have broad knowledge of the field, know the internal debates, and understand the jargon/ terminology used. In this sense, they closely resemble an audience at a scientific conference and you should use a presentation format appropriate for such an event and audience. The second presentation is intended for a broader audience, which may include members of the Trent community (e.g., faculty, staff, and students in the BAS Program). This audience does not have specialized knowledge in your field. Therefore, you will need to adapt the material and present it in a way that makes it understandable and interesting to a lay audience. Your goal will be present the material in a clear, accessible, and jargon-free manner, so that your audience could follow explanations easily. Students are encouraged to use PowerPoint slides or other presentation materials (e.g. conference posters, handouts, multimedia presentation).

Research Paper (Due at the beginning of class on April 4)

The research paper is the final component of the independent research pursued by course participants throughout the year. The paper will focus on a more specific area of interest within the perspective on the scientific controversy that has already been researched for other assignments. This means that your paper should explore a very narrow topic or consideration, rather than a broad perspective on the controversy. It should be written using the standard IMRAD format for scientific papers (IMRAD: Introduction, Methods, Results, and Discussion). This standard for presenting original research has been widely adopted by scientific journals in different disciplines. In terms of length, papers should be about 5000 words (approximately 15 pages double-spaced). The word count should exclude the abstract and the bibliographical references, as well as any tables and figures. The papers should be formatted in accordance with the APA's 6th edition style guide, e.g. double spaced with 1" margins on all sides, left aligned, font 12 pt Times New Roman, and consist of four major sections: the Title Page, Abstract, Main Body, and References.

Week-by-week schedule:

Week	Date	Topic and Readings
1	Sept. 14	Course Overview and Syllabus
2	Sept. 21	Scientific Controversies - Patterns of Resolution and Closure <i>Readings:</i> Engelhardt & Caplan, "Introduction"(pp. 1-23) and McMullin, "Scientific Controversy and its Termination" (pp. 49-92), in <i>Scientific</i>

		<i>controversies: Case studies in the resolution and closure of disputes in science and technology</i> (1987)
3	Sept. 28	Stem Cell Research <u>Readings:</u> Part I “Stem Cell Research - Science, Religion, and Public Policy” in <i>Controversies in Science and Technology: Volume 2</i>
4	Oct. 5	Vaccines <u>Readings:</u> Part 1 “Vaccines: Protection in an Uncertain World?,” in <i>Controversies in Science and Technology: Volume 3</i>
	Oct. 12	University Closed: Thanksgiving Day
5	Oct. 19	Climate Change <u>Readings:</u> Part IV “Global Warming - Scientific Data, Social Impacts, and Political Debate,” <i>Controversies in Science and Technology: Volume 2</i>
	Oct. 26-30	Reading week
6	Nov. 2	Predictive Genetic Testing and Precision Medicine <u>Readings:</u> Selected articles will be posted on the course Blackboard page
7	Nov. 9	Creationism and Evolution <u>Readings:</u> Part 2 “Evolution: Citizen Attitudes, Political Controversy, and Cutting Edge Research,” in <i>Controversies in Science and Technology: Volume 3</i>
8	Nov. 16	Information Technology and Society <u>Readings:</u> Part II “Information Technology – Inequality, Identity, and Invasions of Privacy,” in <i>Controversies in Science and Technology: Volume 2</i>
9	Nov. 23	Space Exploration <u>Readings:</u> Part III “Space Exploration - Reasons and Risks,” in <i>Controversies in Science and Technology: Volume 2</i>
10	Nov. 30	Food Safety <u>Readings:</u> Part 3 “Food Safety: Eating and Illness,” in <i>Controversies in Science and Technology: Volume 3</i>
11	Dec. 7	Nanotechnology

		<u>Readings:</u> Part 5 “Nanotechnology: Potential Risks and Rewards,” in <i>Controversies in Science and Technology: Volume 3</i>
	Dec. 10-Jan. 6	Exam period and winter holiday
12	Jan. 11	Mid-Term Review: Feedback and Discussion on Research Proposals <u>Readings:</u> No required readings
13	Jan. 18	Review Article: Genre Analysis and Writing Strategies <u>Readings:</u> Study materials will be posted on the course Blackboard page
14	Jan. 25	Research Paper: Information Gathering, Documenting Research and Analysis <u>Readings:</u> Study materials will be posted on the course Blackboard page
15	Feb. 1	Communicating Research: Audience/Purpose Analysis <u>Readings:</u> Study materials will be posted on the course Blackboard page
16	Feb. 8	Communicating Research: Conference Papers, Posters and Presentations <u>Readings:</u> Study materials will be posted on the course Blackboard page
	Feb. 15-19	Reading week
17	Feb. 22	Issues in Scientific Writing (plagiarism, authorship, ghostwriting, reproducible research) <u>Readings:</u> Study materials will be posted on the course Blackboard page
18	Feb. 29	Presentations of Research Projects
19	Mar. 7	Presentations of Research Projects
20	Mar. 14	Presentations of Research Projects
21	Mar. 21	Presentations of Research Projects
22	Mar. 28	Presentations of Research Projects
23	Apr. 4	Course Conclusion

Course Policies:

Late Assignments

The deadlines for assignment submission in this course are firm. All assignments are to be turned in at the beginning of the class on the day it is listed as due on this syllabus. A penalty of 5% per day will be levied upon any late assignments. The Instructor may grant extensions for valid reasons such as illness, compassionate grounds, etc. but will require supporting documentation (e.g., a valid certificate from a physician). In all cases, requests should be submitted prior to the assignment due date.

Assignment Submission and Safe-Assign

All assignments must be submitted both electronically to the SafeAssign drop box in Blackboard and in hard copy at the beginning of the class on the due date. SafeAssign utilizes plagiarism-checking software. Further information about SafeAssign will be provided on the class Blackboard site.

University Policies

Academic Integrity:

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from failure on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have a responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more: www.trentu.ca/academicintegrity.

Access to Instruction:

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and documentation from a regulated health care practitioner and feels that he/she may need accommodations to succeed in a course, the student should contact the Student Accessibility Services Office (SAS) at the respective campus as soon as possible, (Peterborough, Blackburn Hall, Suite 132, 705-748-1281 or email sas@trentu.ca For Trent University – Durham, Thornton Road, Room 111 contact 905-435-5102 ext. 5024 or email corinnphillips@trentu.ca . Complete text can be found under Access to Instruction in the Academic Calendar.