ARTS&SCI 4CF3
How Science Speaks to Power
COURSE OUTLINE FOR TERM 1, 2014-2015

Professor: Dr J. Roger Jacobs
Office Address: LSB 429
Email: jacobsr@mcmaster.ca
Office hours: LSB 429 Tuesdays 4-5 PM, Fridays 9:30-10:30 AM or contact greaves@mcmaster.ca to schedule
Teaching Assistant: none

Lectures and Inquiry Meetings: Tuesday 8:30-10:20 GS 101
                                             Friday 8:30-9:20 GS 101

Materials:
  • Text: There is no required text. Readings will be linked to the course Avenue site (https://avenue.mcmaster.ca).
    Lecture material related to experimental design can be explored further in this book available in Thode:
      • Experimental Design for Biologists DJ Glass, QH 323.5 .G565 2007
      • This book reflects some of the concepts and models presented on science policy:
        • The Honest Broker RA Pielke, Jr. – Q 180.55 .S62 P54 2007

Course Objectives:
  • This course will develop skills of critical analysis of scientific research- as interpreted or employed by the lay
    media, governments, NGOs and by scientists, in support of different interests. You will develop your ability to
    critique the interpretation or application of scientific knowledge as well as to isolate the social and political
    context of the science. After this course you should have greater skill in science literacy, and be better able to
    critique both science and science-based policy.

Course Description and Format:
  • Your government defines the ethical uses of stem cells, changes the content of the food pyramid and declares
    carbon dioxide to be a pollutant. In all cases these policies are based upon scientific evidence- and in all cases
    there is dissent on these decisions within the public, government and scientific communities. What constitutes
    scientific proof? How do scientists agree- or change their mind on whether a conclusion is scientifically valid?
    How do policy makers decide how to implement scientific insights?
  • In this course you will learn the rules by which scientists propose, validate and challenge scientific insights. You
    will also investigate the context of the research – how research is funded, disseminated, corrected, and how it
    reaches the public and policy makers. The major focus in the course will be a case study that you identify and
    analyse from the perspective of the scientist, lobbyist, layperson and the policy maker.

Schedule:
For weeks 1 to 6, two hours per week will explore the process of science. The third hour each week will consider a case
study, or be dedicated to project work. Weeks 7-12 students will present their own case studies.

Weeks 1 and 2:
  Science vs.The Scientific Method
  Hypothesis formulation, testing and falsifiability
  Case Study: Trofim Lysenko

Weeks 3 and 4:
  Error, variation, confidence
  Vetting science: Peer review, retractions
Case Study: Hwang Woo-suk

Weeks 5 and 6:
- Funding Science: pay the piper
- Case Study: IPCC
- Case Study Presentations

Weeks 7 and 8:
- Converting Science to policy
- Case Study: Presentations
- Case Study Presentations

Weeks 9 and 10:
- Case Study: Presentations
- Case Study Presentations

Weeks 11 and 12:
- Case Study Presentations

Marking Scheme:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
<th>Late Penalties</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>Assignments- number and dates TBA</td>
<td>5% per school day</td>
</tr>
<tr>
<td>10%</td>
<td>Participation/Peer Evaluation</td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td>Case Study- Presentation/Activity—in class Oct/Nov</td>
<td></td>
</tr>
<tr>
<td>30%</td>
<td>Case Study – Written Submission/Portfolio—Nov 25</td>
<td>5% per school day</td>
</tr>
<tr>
<td>20%</td>
<td>Final Exam- take home,--- due noon Dec. 15</td>
<td>late exams not accepted</td>
</tr>
</tbody>
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McMaster Policy on Academic Integrity:
You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences—e.g., the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty, please refer to the Academic Integrity Policy, located at: [http://www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity)

The following illustrates only three forms of academic dishonesty: 1) Plagiarism—e.g., the submission of work that is not one’s own or for which other credit has been obtained. 2) Improper collaboration in group work. 3) Copying or using unauthorized aids in tests and examinations.

McMaster Student Absence Form (MSAF):
This is an on-line, self-reporting tool for students to report absences due to minor medical situations that last up to 5 days and to request accommodation for any missed academic work that is worth less than 30% of the final grade. Please note that this tool cannot be used during any final examination period. It is the prerogative of the instructor to determine the appropriate relief for missed term work. You may submit a maximum of one request per term. The form should be filled out immediately when you are about to return to class after your absence. It is your responsibility to follow up with your instructor immediately (within two working days) about the nature of the accommodation.

If you are absent for more than 5 days, have missed academic work worth 30% or more, or exceed one request per term, you must see Shelley Anderson or Rebecca Bishop in the Arts & Science Program office (C-105). You will be required to provide supporting documentation.
Email Contact and Student Responsibility Statement

*Please Note:*
“The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of students to check their McMaster email and course websites weekly during the term and to note any changes.” I will make announcements in class and by using the course email distribution list.

Online Conduct:
As a student enrolled in this course you have been granted permission to access an online learning management system, Avenue to Learn. Avenue to Learn course pages are considered an extension of the classroom and usage is provided as a privilege subject to the same code of conduct expected in a lecture hall (see relevant section of the student code of conduct below). This privilege allows participation in course discussion forums and access to supplementary course materials. Please be advised that all areas of Avenue to Learn, including discussion forums, are owned and operated by McMaster University. Any content or communications deemed inappropriate by the course instructor (or designated individual) may be removed at his/her discretion. Per the University Technology Services Code of Conduct, all members of the McMaster community are obligated to use computing resources in ways that are responsible, ethical and professional. Avenue to Learn Terms of Use are available at [http://avenue.mcmaster.ca](http://avenue.mcmaster.ca).

Academic Accommodation of Students with Disabilities:
Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or email sas@mcmaster.ca. For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities.

Written Submissions:
The written work submission guidelines have been chosen to support the more sustainable use of paper, energy, and toner and meet the SILVER standard of the Office of Sustainability [www.mcmaster.ca/sustainability](http://www.mcmaster.ca/sustainability). All written work should be submitted in the following format:

- Double-sided pages
- 1.5 line spacing
- Exclusion of title page
- Decreased margins