ARTSSCI 4CF3
How Science Speaks to Power
2020-21 (Term 2)

Professor: Dr J. Roger Jacobs
Office Address: LSB 429
Email: jacobsr@mcmaster.ca
Office hours: -*virtual*- Thursday 2:30 pm-3:30 pm

Lectures and Inquiry Meetings: Mon., Wed., Thu., 1:30-2:20 pm . Before Reading Week– 2 asynchronous lectures, ("online") and synchronous online ("virtual") meeting Thursdays. After Reading Week all meetings are synchronous. Synchronous meetings will occur on Teams.

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, and makes useful reading:
  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. You will learn how to interpret the effect different stakeholders have on the translation of knowledge into policy. 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, imposes closures during epidemics 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- and how is this evolving today?

- 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 online hours per week will explore the process of science. The third virtual hour each week will consider a case study, or be dedicated to project work. Weeks 8-13 students will present their own case studies (virtual).

Weeks 1 and 2: (Jan 11, 13, 14, 18, 20, 21)
Science vs. The Scientific Method
Hypothesis formulation, testing and falsifiability
Case Study: Trofim Lysenko *(synchronous session)*
Weeks 3 and 4: (Jan 25, 27, 28 Feb 1, 3, 4)
Confidence and certainty: Error, variation
Vetting science: Peer review, retractions
Case Study: Hwang Woo-suk *(synchronous session)*
Week 5 (Feb 8, 10, 11)
Funding Science: pay the piper
Case Study: IPCC *(synchronous session)*
Group Case Presentations (Feb 10, 11) ***(****synchronous sessions)*
Week 6– Midterm Recess
Weeks 7 and 8: (Feb 22, 24, 25, Mar 1, 3, 4)
Converting Science to policy
Post Normal Science
Case Study: IPCC *(synchronous session)*
Individual Case Study Presentations ***(****synchronous sessions)*
Weeks 9 and 10: (Mar 8, 10, 11, 15, 17, 18)
Individual Case Study Presentations
Case Study Presentations
Weeks 12 to 14: (Mar 22, 24, 25, 29, 31, April 1, 5, 7, 8, 12, 14)
Case Study Presentations
Course Reflection

Marking Scheme:	**Late Penalties**
15% Assignments- 2 x 7.5% *(Jan 28, Feb 22, March 8)*	5% per weekday
10% Participation/Peer Evaluation	
15% Contrarian Science Presentation & Reflection – in class Feb 10 & 11	
15% Case Study- Presentation/Activity—in class March	
25% Case Study – Written Submission/Portfolio—March 30	5% per weekday
20% Final Exam- take home--- due noon April 22	late exams not accepted

SENATE-APPROVED ADVISORY STATEMENTS

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. **It is your responsibility to understand what constitutes academic dishonesty.**

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. For information on the various types of academic dishonesty please refer to the *Academic Integrity Policy*, located at https://secretariat.mcmaster.ca/university-policies-procedures- guidelines/.

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

AUTHENTICITY / PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., online search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ONLINE ELEMENT

Some courses may use online elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses online elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the *Code of Student Rights & Responsibilities* (the "Code"). All students share the responsibility of

maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.
It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES
Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's *Academic Accommodation of Students with Disabilities* policy.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK
McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)
Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

COPYRIGHT AND RECORDING
Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.
The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

EXTREME CIRCUMSTANCES
The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

NOTES FOR ALL ARTS & SCIENCE COURSES
1. Some of the statements above refer to a "Faculty Office"; please note that the Arts & Science Program Office serves in this capacity.
2. It is the responsibility of students to check their McMaster email regularly. Announcements will be made in class, via A2L, and/or via the course email distribution list <d-as4CF3@mcmaster.ca>.