

PHIL 2640: SCIENCE AND THE MODERN WORLD

Dr David Harker
Department of Philosophy
Email: harkerd@etsu.edu

Course description

Science appears to provide us with important truths about ourselves and the world we inhabit. The results of scientific research are all around us, enhancing our lives and expanding our understanding (in some cases straining credulity in the process). Science also involves controversy. People disagree about what science shows us, what counts as science, which is good science, and whether science is our best guide to what the world is like. Such confusions can have dangerous consequences, for example when special interest groups distort scientific conclusions for corporate, moral or ideological gain. This course aims to provide students with tools to help navigate these controversies, improve their understanding of how science works, and better appreciate the relationship between science and the modern world.

Required texts

- *Creating Scientific Controversies: Uncertain and Bias in Science and Society*
David Harker (2015)
Cambridge University Press
ISBN: 978 1107692367

An electronic copy of the text can be accessed through the ETSU library [here](#).

Optional texts

Additional readings will be made available via d2l, but for those who want to buy additional textbooks, the following would also be excellent complements to assigned class reading.

- | | | |
|---|---|--|
| ■ <i>Theory and Reality: An Introduction to the Philosophy of Science</i>
Peter Godfrey-Smith (2003),
University of Chicago Press | ■ <i>Global Warming: A Very Short Introduction</i>
Mark Maslin
3 rd edition (2014),
Oxford University Press | ■ <i>Evolution and Religion: A Dialogue</i>
Michael Ruse (2008),
Rowman & Littlefield Publishers |
|---|---|--|

Major topics

- | | |
|---|--|
| ■ “the scientific method” | ■ manufactured controversies |
| ■ science as historically & socially situated | ■ climate change and creationist science |
| ■ arguments and fallacies | |

Instructor Response Time and Availability:

Grades will be posted within two weeks of the assignment's due date. Emails sent between Monday and Thursday will receive a response within 48 hours. Emails sent on Friday, Saturday or Sunday will receive a response on Monday or Tuesday. Inevitably an email will (regrettably) get overlooked occasionally. If you do not receive a timely reply, please feel free to email again.

Students are encouraged to email with any questions or concerns

When we talk to other people face-to-face, we gain more information than that which is communicated through speech alone. We can sense curiosity, frustration, understanding, confusion, excitement and impatience, even if none of these qualities is apparent from the spoken words alone. The unspoken information influences how we respond to others and improves communication. One of the shortcomings of online courses is that the unspoken information is lost. What I learn from you is typically limited to what I read in emails and discussion board posts. This makes it really important that you contact me with any questions or concerns, whether these involve course content or assignments or events in your personal life that are preventing you from performing as well as you'd like. I am keen to help, but this requires you to reach out.

Remember that needing help isn't a sign of failure; successful students recognise when they need help and then ask for it.

Course design

- the course is divided into four modules and each module further divided into two or three sections:
 - Each section covers one chapter from the required text
 - Quizzes test understanding of individual sections/chapters. Quiz 1 tests understanding of Chapter 1, for example. Quiz 0 tests understanding of the Introduction.
 - Exams cover all the material from a given module
 - Lectures cover some of the material from the text, and some material not covered in the text, but are not a substitute for reading the chapters carefully

Course purposes and goals:

- to provide students the opportunity to consider the differences between scientific and other forms of inquiry, the status of scientific claims and the role of science within society;
- to encourage critical thinking with regard to scientific conclusions, failures, controversies and attitudes.

On completing the course, students are expected to:

- appreciate the complexity of various philosophical and methodological issues that arise when considering the role and nature of scientific inquiry;
- understand the significance of science as a historically and socially situated enterprise;
- realize the distinction between a genuine and merely apparent scientific controversy, as well as the significance of being a merely apparent controversy;
- know the basics of debates surrounding climate change and creationist science;

Coursework and grade assignment:

- Four electronic exams, each worth 10% of the final grade. Lists of potential exams questions, for all four exams, are available on d2l under Study Guides. Most questions will be multiple choice and will be taken from primary readings and lectures. An opportunity to make up missed exams may be available, but only if students have a legitimate, appropriately documented, excuse for missing the exam during the scheduled times. See below for deadlines for exams.
- Ten quizzes, each worth 3% of the final grade. The assigned chapter (primary reading) should be read before quizzes are attempted. All answers to quiz questions can be found in the primary reading. Students may refer back to the text when completing a quiz, but will only have 20 minutes to complete the quiz (not than the one hour stated on the first lecture). For more information on how prepare for quizzes, see the guide on d2l, in the Study Guides section. See below for deadlines for quizzes.

Students will be able to review their completed quizzes and exams, but only after the date to take the quiz/exam has passed. To view completed quizzes and exams, students should go into *Assessments* on d2l, and then locate the assignment they wish to review. To the right of that assignment is a small, black triangle. By clicking it, then selecting *Submissions*, then *Attempt 1*, students can see which questions they got right and wrong.

- Discussion board participation. Ten discussion boards will be opened and students are expected to contribute to each. The due dates for submissions to each discussion board are listed below. Students are expected to **respond to one** of several different questions on each board, with a post of at least 100 words, and also post a substantive response to a classmate's post. When responding to others' posts, stating simply 'I agree' or 'I disagree' will not be sufficient. Discussion posts will be scored out of fifteen points. Each is worth up to 3% of the final grade. In addition to being **at least 100 words**, all posts should be **(1) clearly written, (2) informed by the relevant chapter of the text and (3) demonstrate that the student has thought carefully about the question**. For more information on how to do well with discussion board posts for his course, see the guide on d2l, in the Study Guides section.

Sometimes I will post on the Discussion Boards and will sometimes ask students questions in response to their posts. Students should answer my questions and any follow-up questions. Failure to do so may result in a lower grade for that particular discussion board.

- There are two extra credit opportunities: an additional quiz (quiz 10) and participation in an additional discussion board (discussion board 10). These are each worth up to 1.5% towards the final grade.
- The gradebook describes assignments in terms of number of points available, rather than as a percentage of the final grade. Dividing point scores by 5 converts those scores into percentage point scores.

	Percentage	Points
Exams (4)	$10+10+10+10 = 40$	$50+50+50+50 = 200$
Quizzes (10)	$3+3+3+3+3+3+3+3+3+3 = 30$	$15+15+15+15+15+15+15+15+15+15 = 150$
Discussion boards (10)	$3+3+3+3+3+3+3+3+3+3 = 30$	$15+15+15+15+15+15+15+15+15+15 = 150$
Total	$40+30+30 = 100$	$200+150+150 = 500$
Extra credit	$1.5+1.5 = 3$	$7.5+7.5 = 15$

Grading scale

		B+	84-87	C+	72-75	D+	60-63
A	92-100	B	80-83	C	68-71	D	56-59
A-	88-91	B-	76-79	C-	64-67	F	0-55

Participation

- Students are expected to participate in all interactive aspects of the course. They are expected to communicate with the instructor as a learning resource, log in regularly to check for announcements, and must actively participate in course discussions.
- Learn how to navigate in Desire2Learn
- Use the assigned university email address as opposed to a personal email address
- Address technical problems immediately
- Observe course etiquette at all times. Instructor guidelines for communication by email, discussion groups, chat, and the use of web resources. Some examples of this include:
 - Email
 - Always include a subject line.
 - Remember that without facial expressions some comments may be taken the wrong way. Be careful in wording your emails. Use standard fonts.
 - Special formatting such as centering, audio messages, tables, html, etc. should be avoided unless necessary to complete an assignment or other communication.
 - Respect the privacy of other class members.
 - Discussion groups
 - Review the discussion board questions thoroughly before submitting a post.
 - Do not make insulting or inflammatory statements to other members of the discussion group. Be respectful of others.
 - Be patient and read the comments of other group members thoroughly before entering your remarks.
 - Respond in a thoughtful and timely manner.

Plagiarism:

- academic dishonesty of any type, including plagiarism, is unacceptable at ETSU. Plagiarism is the representation of another person's work, words or ideas as one's own. The cost of plagiarising starts with failing the course and may result in stiffer penalties.
- if in any doubt about what constitutes plagiarism, students should consult the ETSU Student Handbook for a fuller, more specific discussion of academic integrity standards.

Mental Health:

- Students often have questions about mental health resources, whether for themselves or a friend or family member. There are many resources available on the ETSU Campus, including: ETSU Counseling Center (423) 439-4841; ETSU Behavioral Health & Wellness Clinic (423) 439-7777; ETSU Community Counseling Clinic: (423) 439-4187.
 - **If you or a friend is in immediate crisis, call 911.**
 - Available 24 hours per day is the National Suicide Prevention Lifeline: 1-800-273-TALK (8255).

University syllabus attachment

- Useful, general information about ETSU academic life is available [here](#).

Technical help page

- If you are having difficulties with D2L, email, your ETSU account, etc., help can be accessed [here](#).

Student resources

- ETSU is committed to providing students with the resources, help and guidance they need to succeed. Some of these useful resources can be easily accessed [here](#).

Accommodations Statement

- It is the policy of ETSU to accommodate students with disabilities, pursuant to federal law, state law and the University's commitment to equal educational access. Any student with a disability who needs accommodations, for example arrangement for examinations or seating placement, should inform the instructor at the beginning of the course. Faculty accommodation forms are provided to students through Disability Services in the D.P.Culp center, telephone 439-8346.

Tutoring

- The Center for Academic Achievement (CFAA) at ETSU offers free support in writing, math, science, communication, study skills, and general education courses as well as many upper-level courses. The CFAA offers by-appointment, drop-in, and online services to help students reach their learning goals. In a friendly, comfortable atmosphere, students at all levels participate in interactive sessions to expand their knowledge, develop their academic skills, increase their confidence, and enhance their success.
- Tutors will help you no matter where you are in a course, but students who utilize the center early in the semester and attend tutoring consistently achieve the best outcomes. Appointments are recommended, but not required. Detailed instructions about how to schedule an appointment for tutoring are available on the CFAA's website: www.etsu.edu/tutoring. Students are welcome to call ([423-439-7111](tel:423-439-7111)), email (learning@etsu.edu), or stop by the center (144 Sherrod Library) for assistance.

<i>Module 1</i>	<i>Topics</i>	<i>Required reading</i>	<i>Secondary reading</i>	<i>Quiz/DB</i>	<i>Both due by</i>	<i>Dates open</i>	<i>Exams</i>
<i>Section 1</i>	Introduction	Introduction	Chalmers	0	8/30	8/24-8/30	
<i>Section 2</i>	Problem of demarcation	Chapter 1	Laudan	1	9/6	8/31-9/6	
<i>Section 3</i>	Observation and induction	Chapter 2		2	9/13	9/7-9/13	Exam 1 (by 9/18)
<i>Module 2</i>	<i>Lectures</i>	<i>Required reading</i>	<i>Secondary reading</i>	<i>Quiz/DB</i>	<i>Due by</i>	<i>Dates open</i>	<i>Exams</i>
<i>Section 1</i>	Kuhn	Chapter 3	Godfrey-Smith	3	9/27	9/14-9/27	
<i>Section 2</i>	History & sociology of science	Chapter 4	Solomon	4	10/4	9/28-10/4	Exam 2 (10/9)
<i>Module 3</i>	<i>Lectures</i>	<i>Required reading</i>	<i>Secondary reading</i>	<i>Quiz/DB</i>	<i>Due by</i>	<i>Dates open</i>	<i>Exams</i>
<i>Section 1</i>	Cognitive psychology	Chapter 5	Kahneman	5	10/11	10/5-10/11	
<i>Section 2</i>	Critical thinking	Chapter 6	d2l notes	6	10/25	10/12-10/25	
<i>Section 3</i>	Created Controversies	Chapter 7		7	11/1	10/26-11/1	Exam 3 (by 11/6)
<i>Module 4</i>	<i>Lectures</i>	<i>Required reading</i>	<i>Secondary reading</i>	<i>Quiz/DB</i>	<i>Due by</i>	<i>Dates open</i>	<i>Exams</i>
<i>Section 1</i>	Climate change	Chapter 8	Guide to scepticism	8	11/8	11/2-11/8	
<i>Section 2</i>	Science and religion	Chapter 9	Hoffman	9	11/22	11/9-11/22	Exam 4 (by 12/4)
<i>Section 3 (optional)</i>	Health	Chapter 10		10	12/6	11/23-12/6	