ARGUMENTS AND EVIDENCE:
Debunking Controversies in Science and the Media

Overview
This course is designed to engage you in critically examining both historical and emerging controversial science issues in society. The class will include discussions, debates, oral reports, group projects and reviews of current research literature. The purposes of this class are to enhance your understanding of science and scientific research and to explore how the public receives information and reaches an understanding of science. You will learn to critique cause/effect claims in science and the science-related popular media and explore how the representations of scientific ideas and findings vary.

You will work to: (i) trace and debunk a controversial science and societal story backwards from its representation in the popular media to its original scientific findings in the field, and/or (ii) pursue a “30 Days” experimental approach, as developed by filmmaker Morgan Spurlock, where you commit to experience a life or lifestyle very different than your own and use that process to test a hypothesis. You will select a story/topic, study the facts, interview experts/public and ultimately disseminate your findings through popular media, film, internet, and produce DVDs. You will produce a short film, public service announcement or series of commercial(s) to inform your audience. Possible stories could relate to: the gay gene, racism, vaccinations causing autism, atheism, human cloning, the origin of life, intelligent design, GMOs, mercury pollution, cold fusion, or brain tumors from cellular phones etc.

General Course info:
Instructor: Douglas B. Luckie, Ph.D.
Office Hours: Tuesday & Thursday 2:40-3:30pm, Room W26D Holmes Hall
Meeting time: Tuesday & Thursday 12:40-2:30pm, Room W25E Holmes Hall
Website: http://www.msu.edu/course/lb/492/luckie (shortcut-> http://surf.to/492)

Textbook:
Great Feuds in Science-
Ten of the Liveliest Disputes Ever
by Hal Hellman
Amazon.com Price: $11.39 (~$2 used)
Paperback - 256 pages 1 edition (August 20, 1999)
Learning goals: You should strive to develop skills to be a scholarly scientific thinker.

SKILLS TO BE MASTERED
--make this your mantra "what is the argument and where is the evidence?"

Critical Thinking:
Fostering your critical thinking skills (critical thinking means analyzing and evaluating the arguments & evidence presented by others). Be able to interpret the scientific content in a diverse range of literature/news/media and evaluate the supporting evidence.

Effective Communication:
Improve your communication skills, i.e. develop skills for communicating ideas accurately, appropriately, clearly and persuasively. Get practice writing, speaking and disseminating ideas via film to communicate your thoughts in ways that are understood well by others.

• Reading: If you are reading a paper/book or watching TV, you can identify the author’s argument, thesis or hypothesis, and how well their evidence (observations, data) support it.

• Writing: When you are writing a paper or giving a talk, you can carefully explain your argument, thesis or hypothesis, and how well the evidence you have collected (observations, data, other people’s research findings) support it.

KNOWLEDGE TO BE GAINED
--know and be able to recount historical stories and how they relate to these topics.

We will debate/discuss historical cases of famous science feuds about Darwin, Huxley, Wilberforce, Pope Urban, Galileo, Voltaire, Kelvin et al to explore societal issues (below) in context and gain opportunities to practice critical thinking and effective communication.

Scientific Process: We will explore the scientific process, and particularly "the Scientific Method" and whether there is one "scientific method," multiple "scientific methods," or whether "method" is perceived only in hindsight.

Scientific Authority: We will examine how authority and reputation work in the scientific profession and in the popular media.

The Language of Science: We will analyze the language used to write and talk about science, and how the choice of language reflects worldviews, and goals.

Causality: We will trace cause/effect claims in science and the science-related popular media as well as examining our own cause/effect claims about how science works and how science works in our society.

Representation: We will explore how the representations of scientific ideas and findings and of scientists vary, and how such variations wind up affecting the public understanding of science and scientists
What will students do?

1. **GROUP WORK**: You will join a semester-long documentary team that focuses on one topic/story and does tracing research on a controversy and/or a 30-Days experiment. The team might find one media report (like a story in Newsweek) that you’d like to debunk or do a 30 Days project about. Then your team will identify additional readings, storyboard your film plan and do presentations as your research project progresses. Your documentary team will produce a website with narratives and mini-movie(s) that present the issue, the original findings, how the public dissemination differed, what was controversial, what the public/expert(s) said and what the documentary group concludes.

A subgroup within your team will lead the creation of a metamovie about the process your group went through during the project, this “Making of Our Film” (MoOF) project will serve as a video journal that helps further document your group’s efforts. Groups will present their finished documentary film and website to the class at the end of the semester. Each group will also submit their final documentary film (via DVDs) to the East Lansing Film Festival (submission deadline will be May 1, 2013, ELFF occurs every November, [http://elff.com/](http://elff.com/)).

**Groups:**
The core groups will each produce a film/DVD and a website which incorporates that film. While each group member will be expected to learn and participate in all roles, you will have one as your primary job:
1. **Director:** 1º responsibility is leading the planning/storyboard for film and MoOF editor.
2. **Digital Editor:** 1º responsibility is treatment, mastering of the digital editing of the film.
3. **Cinematographer:** 1º responsibility is mastering the camera (photography/audio) of film.
4. **MoOF Director & Digital Guru:** 1º responsibility is MoOF and website/DVD efforts.

2. **INDIVIDUAL WORK**: You will read, write, be quizzed on readings, and present your findings to the class. Readings from various sources will serve to frame controversy in the sciences and media. You will participate in discussions, formal debates and constructive controversies and generate a public service announcement film about yourself.

**Course assignments:**
In this class your learning/performance will be assessed by:
- One (1) public service announcement (PSA) - Individual 60-second video.
- One (1) oral presentation - Concerning stage and status of group project.
- Quizzes on readings - There will be quizzes on assigned readings in class.
- **Group documentary film/MoOF/DVD and website** - Group thesis "videography."
- **Thesis Interview** - Concerning knowledge of media and topics discussed in project.

**Components of final grade:**
PSA=10%, Quizzes=10%, Thesis Interview=10%, Attendance and Class/Group Participation=10%, Presentations=15%, Documentary Project=30%, Thesis Paper=15% (5/10).
SCHEDULE

• Week 1: Introduction and Application
  Thursday (Aug. 30): Review syllabus, CATME for groups, show RU486, discuss "Voter ID."
  Reading assignment: Ch. 1 Great Feuds and go buy DV tapes.

• Week 2: Media, Pope and Galileo
  Tuesday (Sept. 4): Quiz, Shotgun Discussion of Galileo, form groups, show 30 Days Disabled.
  Reading assignment: Ch. 4 Great Feuds.

  Thursday (Sept. 6): STUDIO TIME (Camera work) - start filming PSAs

• Week 3: Creating Project Plans & Public Service Announcements
  Tuesday (Sept. 11): STUDIO TIME (iMovie tutorial) - edit PSAs
  Thursday (Sept. 13): Quiz and Constructive Controversy with Feuds reading, PSAs Due

• Week 4: Framing & Presenting Your Argument
  Tuesday (Sept. 18): 'Controversy' (cont.) "This is ME, this my IDEA." PSAs Viewed
  Thursday (Sept. 20): Group Idea(s) Presentations (Plan A & B) Today - film article due
  (Digital Editor is the presenter and is graded for this Oral Presentation).

• Week 5: Storyboards
  Tuesday (Sept. 25): STUDIO TIME (build rubrics for grading projects/presentations)
  Thursday (Sept. 27): Group Storyboard/Treatment Presentations Today
  (Director is presenter and graded for this Oral Presentation).
  Reading assignment: Ch. 5 Great Feuds: Darwin's Bulldog

• Week 6: War of the Worlds
  Tuesday (Oct. 2): Quiz & Debate on Feuds reading. (CATME #1 due)
  Thursday (Oct. 4): Movie Day: Documentary "Roger and Me."

• Week 7: Thesis Paper Arguments and Outlines
  Tuesday (Oct. 9): Individual Thesis Paper Outlines Due
  (3 page typed outline due and you will present your plan to the class)

• Week 8: Website Designs and MoOF Progress
  Tuesday (Oct. 16): STUDIO TIME
  Thursday (Oct. 18): Website & MoOF Progress Report Today
  (MoOF Director & Digital Guru is presenter and graded for this Oral Presentation)
  Reading assignment: Ch. 6 Great Feuds: Lord Kelvin
• Week 9: What's Your Point?
   Tuesday (Oct. 23): Quiz & Shotgun Discussion on the Feuds reading.
   Thursday (Oct. 25): Movie Day: Documentary "War Room"
   Reading assignment: Ch. 8 Great Feuds: Wegener

• Week 10: Critiques on The House.
   Tuesday (Oct. 30): Studio Time
   Thursday (Nov. 1): Quiz & Constructive Controversy of Wegener.
   Reading assignment: Ch. 10 Great Feuds: Freeman vs Mead

• Week 11: Thesis Papers
   Tuesday (Nov. 6): Studio Time
   Rough Drafts of Thesis Papers Due at start of class (6 page double-spaced).
   Thursday (Nov. 8): Progress Reports on Documentary Today (show crude video).
   (Cinematographer is presenter and graded for this Oral Presentation)
   -------------------------Attend 15th Annual East Lansing Film Festival November 7-11th-------------------------

• Week 12: Thesis Projects
   Tuesday (Nov. 13): Studio Time (CATME #2 due).
   Thursday (Nov. 15): Quiz & Constructive Controversy on Feuds reading.

• Week 13: Push and Panic
   Tuesday (Nov. 20): Studio Time
   Thursday (Nov. 22): Thanksgiving Recess

• Week 14: Documentary Films and Websites
   Tuesday (Nov. 27): Studio Time
   Thursday (Nov. 29): Final Presentation #1 Today (Thesis Interviews with Prof this week)
   (Individual with lowest prior Presentation score is presenter, gets ReDo, group shares grade).

• Week 15: Documentary Films and Websites
   Tuesday (Dec. 4): Final Presentation #2 Today (Thesis Interviews with Prof this week)
   (Individual with lowest prior Presentation score is presenter, gets ReDo, group shares grade).
   Thursday (Dec. 6): Final Presentation #3 Today (Thesis Interviews with Prof this week)
   (Individual with lowest prior Presentation score is presenter, gets ReDo, group shares grade).

• Finals Week: Thesis Paper & Interviews Due (CATME #3 due) Thursday, Dec 13, 1p.m.
⇒ May 1, 2013: Submit film to East Lansing Film Festival (3DVDs -> http://elff.com/).
SCHEDULE
We reserve the right to modify the schedule if necessary. You will be given advance warning.

ACADEMIC HONESTY
It is your responsibility to know what constitutes cheating. Ignorance is not a defense. Turnitin.com will allow you and your group members to review manuscripts prior to submission for any elements that might be considered plagiarized, and correct them. If you are caught cheating you may be assigned a “0” for the assignment, or for the entire course. The policy for academic honestly at LBC can be found at: http://www.msu.edu/unit/LBC/academics/academic_honesty.html. Additional information can at: http://www.msu.edu/course/LBC/145 smith/s04/academic_honesty.html. If you have questions, please ask.

ATTENDANCE AND PARTICIPATION
It is essential that you not only come to class but also participate in order to construct your own knowledge. While attendance is being on time/present in class and at group meetings, participation includes preparing and sharing ideas. This will be assessed in-class & by CATME.

GRADING
The course will be graded on a flat scale:
- 90-100%=4.0
- 85-89.9%=3.5
- 80-84.9%=3.0
- 75-79.9%=2.5
- 70-74.9%=2.0
- 65-69.9%=1.5
- 60-64.9%=1.0
- 55-59.9%=0.5
- <55%=0.0

Late Policy: If an assignment is 1 day late, 1 point will be deducted from the final score. After this 24 hr grace period the penalty becomes more severe: 10% off for two days late, 20% off for three days late, and so on. After 5 days, you will receive a “0” for the assignment. All discussion concerning score changes must be completed within 10 days from the date the grade was returned or posted online. No grade changes will be considered after this time. If illness or other emergency prevents you from completing assignments on time, you must make arrangements with your instructor before due date.

*Formal written grade appeal process: If you feel that your assignment was not graded properly you must submit your complaint in writing (on paper, not via email). You must concisely explain why you object to the assigned grade and what elements of your work demonstrate you mastered the material. Please be advised that if you submit a formal grade appeal about one element of an assignment, we always re-grade your entire presentation, paper or quiz and the score may increase, decrease or stay the same. For group assignments where multiple students are affected, all authors must sign the written request. How much and how well you provide evidence to support your argument is assessed and students who provide good logical arguments supported well by solid relevant evidence will earn approval (you may cite pages of textbooks, or even better, published research papers). Avoid emotional arguments that blame others or arguments based on hearsay, e.g. “I heard from another student” “I think you told me this was correct.” If you neither make logical arguments nor provide evidence to support them, your appeal will not gain traction or be approved.