

## Comm 510, Voodoo Science

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**Course Description:** This course will allow students to develop an understanding of evidence-based practice in the modern health care arena. This course offers a unique opportunity to learn critical thinking skills, evaluate scientific inquiry and discern information that has evidence from that with no support. The ability to evaluate ideas, and in particular, distinguishing scientific evidence from fiction is critical to success in any scholarly discipline. Different ideas, such as perpetual motion machines, cold fusion, homeopathy, the role of media in spreading voodoo and scientific misconduct will be explored. Many of these have started out as sincere attempts to understand various phenomena but at some point were found to not be supported by evidence. Unfortunately, these ideas continued to be promoted for a variety of reasons including financial gain, professional name, or social prominence and as such became fraudulent. As part of this course, we will study evidence-based practice in health care in relation to voodoo science.

**Required Reading:** Selected Chapters from:

1. Parks, R. (2000). *Voodoo Science: The Road from Foolishness to Fraud*. Oxford University Press, New York, New York.
2. Dollaghan, C (2007) *The Handbook for Evidence-Based Practice in Communication Disorders*. Brookes Publishing, Baltimore, Maryland
3. Scholarly papers from the current literature

**Required Website Exploration:**

1. [skeptic.com](http://skeptic.com)
2. [quackwatch.org](http://quackwatch.org)
3. [quacks.com](http://quacks.com)

**Learner Outcomes:**

1. Learners will understand how to obtain evidence to support or refute scientific and health care claims
2. Learners will understand ethics and how/why fraudulent behavior emerges in science and health care
3. Learners will understand the role of media and other sources in promoting Voodoo Science
4. Learners will understand the basics of evidence based practice in health care
5. Learners will understand the principles underlying informed consent and other pertinent human subject and patient regulations

## Class Requirements

Your grade will be based on a total of 100 points:

1. **Attendance/Participation**—It is important that students actively participate in class discussions. Prior to each class, a discussion issue will be posted. Students will be required to post their written response to the issue in a short paragraph. Responses will serve as a basis for class discussion. The written responses from each student will be assigned a score of **1 or 0**. **At the end of the semester the students will have an overall score of 0-30.**
2. **Presentations**—Students will be divided into groups and each group will present on a topic of their choice related to the class material. The presentation will receive a score of up to **20 points**.
3. **Paper/Project**—Each student will submit a final paper on a topic of choice related to the class material. Topics must be approved in advance. This requirement can be completed by submitting a formal paper or developing a project. The final paper/project will receive a score of up to **30 points**.
4. **Final Examination**—Each student will undergo a final oral examination covering the material from the entire course. Students will receive a score of up to **20 points**.

Grading will be based on the total number of point accrued over the course of the semester as follows:

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-68
D-	60-62
F	<60

*Note that students may revise their papers based on feedback from the instructor. Therefore, students are encouraged to submit a draft of their paper/project at least three weeks before the final due date.*

**Respect for Others:** It is absolutely essential that student engage in discussion and sharing of ideas. In order for this to work, each participant must understand that the purpose of the seminar is to provide an environment of learning in which we can share ideas and discuss beliefs *without judgment or personal criticism*. Thus, an outcome of

this type of educational experience is to develop critical thinking skills that are thoughtful of others views and provide a model for unbiased, respectful sharing of knowledge.

### **Policy on Academic Integrity**

Each student is expected to follow the guidelines for academic integrity based on the University of New Hampshire's policies on Student's Rights, Rules and Responsibilities.

### **Class Schedule**

#### Sessions

1. Introduction - Class overview, How to approach this course, brief introduction to course using topic examples to include perpetual motion machines, media coverage of "cold fusion", dead sea salt, magnets and muscle health.
2. Skepticism and Quackery
3. What is Voodoo, What role does the media play in voodoo?
4. Politics of Voodoo - Space Program
5. Ethics I - Autonomy, Justice, Beneficence, Nonmaleficence, Fidelity
6. Ethic II - Institution Review Boards
7. Ethics III - Case Studies: Transcranial Magnetic Brain Stimulation cures the speech disorder in Parkinson's Disease, remove body parts to alleviate depression, Dax Cowart's Story
8. Case Studies: The story of Joe Newman and the Perpetual Motion Machine. Ruth Conrad cancer treatment and face transplants
9. Introduction to personal decision making based on evidence. *If its a miracle, any sort of evidence will answer, but if it is a fact, proof is necessary (Mark Twain)*
10. Evidence-Based Practice (EBP) - operational definition, preconditions to EBP, formal process (EBP committees and recommendations)
11. Asking about evidence. *It is not every question that deserves an answer (Publilius Syrus, Latin writer of maxims).*
12. External evidence-searching for truth
13. Validity of evidence I
14. Validity of evidence II
15. Importance of evidence. *The sensitivity of men to small matters, and their indifference to great ones, indicates a strange inversion (Blaise Pascal)*
16. Appraising treatment evidence (application of the scientific method) - Study 1
17. Appraising treatment evidence - Study 2
18. Appraising treatment evidence -Study 3
19. Appraising treatment evidence - Study 4
20. Appraising diagnostic evidence - categorization, sensitivity and specificity, "true" accuracy and response bias
21. Appraising diagnostic evidence - Study 1
22. Appraising diagnostic evidence - Study 2
23. *Meta-analysis makes me very happy (Jacob Cohen)*
24. Meta-analysis - Study 1
25. Meta-analysis - Study 2
26. Patient Preferences

## 27 - 30 Group Presentations