

INQ 251
Science, Pseudo-science, and Nonsense
Spring 2016

Instructor: Dr. Jonathan Cook, Trexler 264B, Phone#: 375-2570, Email: lcook@roanoke.edu

Meeting Time/Location: Tuesdays and Thursdays 1:10 – 2:40, Trexler 263

Office Hours: Monday 10:50-noon, Tuesday noon-1:00, Wednesday 10:50-noon, or by appointment

Required Texts: T. Schick and L. Vaughn, How to Think About Weird Things 7th edition.
T. Hines, Pseudoscience and the Paranormal 2nd edition.
D. Hacker, A Writer's Reference.

Grading: Critiques 15%, Group Presentation 15%
Term Paper 15%, Individual Presentation 10%
Daily Quizzes 10%, Homework 10%, Test 10%, Final Exam 15%

Overview/Philosophy: INQ 251 is an interdisciplinary course in which we study the nature of the scientific enterprise, and how science and the knowledge obtained from science affects our lives and shapes our understanding of the world. This course also seeks to develop your critical thinking skills through the study of past and current controversial topics that involve science or claim to be supported by science. In modern society we are inundated with all kinds of information: the Internet, TV, the radio, the newspaper, magazines and books, and in our daily contact with others. Unfortunately much of this information is incomplete, biased, or just outright false, and since we base many of our actions on what we learn from these sources, it is important to have skills to critically evaluate this information. We will discuss and apply the main kinds of deductive and inductive arguments, and be able to recognize them as they are used to influence all of us every day. In addition, you will also understand the role of evidence in rational inquiry and be knowledgeable of the many pitfalls of human "common sense" intuition, as well as the proper interpretations of probabilities, in the evaluation of such evidence. We will utilize and explore many popular mysteries such as ESP, Ghosts, Astrology, the Bermuda Triangle, visitation by extraterrestrial beings (UFOs), and others in our discussions.

Intended Learning Outcomes: By the end of this course, successful students will be able to

- apply scientific methodologies and concepts appropriate for the course's discipline and topic.
- write about course topics clearly and effectively.
- communicate effectively about the course topic in an oral format.
- discuss and apply the main kinds of deductive and inductive arguments, and be able to recognize them as they are used to influence historical and popular thinking about science, pseudo-science, and nonsense.
- use evidence in rational inquiry and recognize the many pitfalls within human "common sense" intuition, as well as the proper interpretations of data, in the evaluation of such evidence.
- use facts, ideas, and competing hypotheses to delineate fact from fiction as they pertain to questions of science.

Daily Quizzes: Since participation is an essential part of this course, it is critically important that you come to class prepared by reading the required material. As such, most class periods will begin with a quick quiz based on the daily reading assignment. I will throw out your lowest quiz grade.

Homework: Assignments will be from handouts/postings on Inquire and will usually be due at the beginning of the next class period. In all cases logical and tightly-reasoned explanations of your answers are more important than the answers themselves.

Group Work and Presentation: Very early in the semester you will be asked to indicate a topic (from a handout list) in which you are most interested. I will then group you with others according to your indicated interest. As a group you will meet outside of class and prepare a half-hour presentation and discussion that will be held in class on a specified date. Each group member must show a familiarity with

material on the selected topic as discussed in Hines, and must go beyond that level. Each presentation must present both the “pro” and “con” sides of each case using the available evidence, citing some recent references, and giving some evaluation of the strength of the evidence. This is a cooperative project with each member contributing equally to the presentation; however, each participant will be graded separately according to the information and style of presentation.

Preparation – The group must research their topic in depth. A minimum requirement is that each member must be able to show a detailed understanding of the topic as presented in the textbook by Hines. This is the starting point. Next it is expected that each group member will research the topic using the library, internet and other resources.

The group should then meet and share the material they have found. Next, decide how the presentation will proceed and assign responsibilities to each member of the group, but only after each has done adequate research and contributed a fair share to the pool of information.

Next, prepare a two page outline of the presentation and a list of sources (Books, magazine or journal articles, web pages etc...). **This outline must be turned in to me the week before your presentation.** You are encouraged to be imaginative in your presentation. Please make use of visual aids including pictures, video clips, models, charts, graphs and the use of PowerPoint. Demonstrations, audience participation, guest speakers and other techniques are welcome with the prior approval by me. **Email a draft of your PowerPoint presentation to me the Monday before the presentation.**

Please go through a rehearsal of your presentation with all group members present. The goal is a structured, smooth, and information rich presentation with a focus on justifying major points with in-depth references.

Note that students in the audience appreciate handouts of presentation outlines or printed notes from the PowerPoint presentation.

Required Content

Introduction

Include a history of the topic and the principal proponents with their backgrounds and credentials. Some questions that may be relevant: Who originated the idea? When? Is the idea well accepted? By how much of the population? (cite polls?) Is it more popular in other countries? How many books are there on the topic? Is it in the news? How much money is involved in the enterprise?

Proponents Case

Make the best case of the proponent’s side citing the arguments and evidence from your research. As necessary, define, explain, and clarify in order to meet the needs of your audience. Use visual aids to efficiently present detailed information and complicated aspects of the topic. Cite the best published results if any. Use the strongest arguments of the proponents even if they are flawed— you are not responsible for improving on them, just making the best case possible.

Critics Case

Present the best criticisms found by your research, and include your own using the tools learned in class (pitfalls of human perception, characteristics of pseudoscience, and fallacies in logic). Focus on evaluating the evidence and logic used by the proponents. Also focus on alternative hypotheses and support them with evidence.

Conclusion

Restate and summarize the main points of both sides of the topic. If either side has responses to the criticisms of the other, present those as well.

Timeline

- Outline of presentation and presenters — **due one week before presentation.**
- Draft of PowerPoint presentation — **due the Monday before the presentation.**
- List of used resources in the format of a bibliography — **due presentation day.**

Critiques: Each group presentation will be analyzed by the rest of the class in the form of a written critique. Note, if you are part of the presentation, then you will not have to turn in a critique for that week (i.e., you do not critique your own work). Critiques must be turned in by 5:00 pm Tuesday following the presentation. Additional information will be provided.

Term Paper and Individual Presentation: One term paper is due and will comprise 15% of your total grade. The topic of the paper is to be some pseudoscientific topic of your choice different from your group report topic. The topic can be any of those listed on the handout provided, a topic from any of the textbooks, or a topic found through your own research and interest. All topics must be approved through the instructor. MLA format citations as described in *Hacker's: A Writer's Reference* are required. In addition, you will be responsible for a short (10 minute) presentation to the class on your topic counting for 10% of your course grade. You will be provided with a separate handout with more details about your paper and presentation, suggested topics, and a timeline.

Attendance: You are expected to attend every class. Attendance is checked at each meeting. If you are going to be absent from class then I must be notified ahead of time. More than 5-minutes late to class will be considered an absence. **If 3 classes are missed without prior notification, then I will assume you are not interested in completing the course and you will be dropped from the class (DF).** You are accountable for all work missed because of an absence.

Common Courtesy: Though I encourage a lively, engaged, interactive classroom atmosphere, certain behaviors will not be tolerated. These included the use of a cell phone or other electronic device which makes a noise, whispering/talking with your neighbor when not relevant to the discussion, gum cracking, or other behaviors normally considered to be disruptive. Repeat offenses will be considered grounds for dismissal from the class with a grade of DF.

Grading Scale:

A	: >93		
A-	: 90-92.9	C-	: 70-72.9
B+	: 87-89.9	D+	: 67-69.9
B	: 83-86.9	D	: 63-66.9
B-	: 80-82.9	D-	: 60-62.9
C+	: 77-79.9	F	: <60
C	: 73-76.9		

Make-up Quizzes and Homework Assignments: Make-up quizzes will not be given and homework assignments will not be accepted after their due date.

Academic Integrity: I subscribe to the academic integrity policies as outlined in *Academic Integrity at Roanoke College*. Students are expected to be familiar with these policies. As in real life, failure to learn the rules is not an excuse. Please contact me if you have any questions. Be aware that I am contractually obligated to report students if I suspect that they have engaged in academic dishonesty.

During in-class activities, it is fine – and even encouraged – to discuss and learn from one another. However, unless specifically stated otherwise, you are expected to **individually** complete all steps of the activity and to turn in your own work. Homework and other assignments (unless specifically stated otherwise) are to be completed **individually**. Misrepresentation of your contribution to a group effort will be considered a violation of the academic integrity policy. Copying and pasting directly from a web site and claiming it as your own work is the same as copying and pasting directly from a book – both are violations of the academic integrity policy and will be treated accordingly.

Writing Center: The Writing Center @ Roanoke College is located in the library. Students meet with trained peer writing tutors in informal, one-on-one sessions. Writers may meet with tutors at any point in the writing process, from brainstorming to drafting to editing. Please make use of this resource.

Special Services: The Office of Disability Support Services, located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library, provides reasonable accommodations to students with identified disabilities. Reasonable accommodations are provided based on the diagnosed disability and the

recommendations of the professional evaluator. In order to be considered for disability services, students must identify themselves to the Office of Disability Support Services. Students requesting accommodations are required to provide specific current documentation of their disabilities. Please contact Dr. Bill Tenbrunsel, Director of the Center for Learning & Teaching, at 540-375-2247 or e-mail tenbruns@roanoke.edu.

If you are on record with the College's Office of Disability Support Services as having academic or physical needs requiring accommodations, please schedule an appointment with Dr. Tenbrunsel as soon as possible. You need to discuss your accommodations with him before they can be implemented. Also, please note that arrangements for extended time on exams, testing, and quizzes in a distraction-reduced environment must be made with the Center for Learning & Teaching at least 2 business days (M-F) before every exam.

Proposed Schedule: The following schedule will remind you of the topics being covered, the text chapters for which you are responsible, and the timing of your test, presentations, term paper, and final exam. You should expect to spend at least 12 hours inside and outside of class each week on this course.

Dates		Read Before		Who's Presenting on Thursday	What's Due by 5 p.m. Friday
		Schick and Vaughn	Hines		
January	19, 21	Ch: 1&2	Ch: 1, all	--	
	26, 28			--	
February	2, 4	Ch: 3	Ch: 2, pp. 66-73	--	
	9, 11		Ch: 3, pp. 91-101	Group 1: Psychic Predictions	
	16, 18	Ch: 4	Ch: 3, pp. 101-106	Group 2: Ghosts and Hauntings	Term-paper proposal
	23	Test: Chapters 1-4 of Schick and other material discussed in class			
March	25	Ch: 5	Ch: 3, all	Group 3: Near Death Experiences	
	1, 3		Ch: 7&8	Group 4: Reincarnation	
	8, 10	Spring Break			
April	15, 17	Ch: 6	Ch: 9, pp. 303-305	Group 5: UFOs	
	22, 24	Ch: 7	Ch: 11, pp. 358-362	Group 6: Ancient Astronauts	Annotated bibliography
	29, 31		Ch: 11, pp. 362-370	Group 7: Homeopathy	
	5	Ch: 8	Ch: 11, all	Group 8: Therapeutic Touch	Draft of paper (Turnitin)
	7, 12, 14,	Individual Student Presentations (10 minutes each)			
	19, 21	Individual Student Presentations (10 minutes each)			Final paper (Turnitin)
	29	Final Exam: Comprehensive including content from student presentations.			