

INQ 251-A: Science, Pseudo-Science and Nonsense

Fall 2016, Tue/Thu 10:10-11:40
Trexler 374

Instructor: Dr. Jarrett Lancaster, Trexler 264B, (540) 375-2570

Email: jlancaster@roanoke.edu

Office Hours: Tue/Thu 1:10-2:10pm

Required Texts

Schick, Theodore and Lewis Vaughn. *How to Think About Weird Things*. 7th ed., McGraw-Hill, 2013.

Hines, Terrence. *Pseudoscience and the Paranormal*. 2nd ed., Prometheus, 2003.

Hacker, Diana and Nancy Sommers. *A Writer's Reference For Roanoke College*. 8th ed., Bedford/St. Martin's, 2015.

Overview

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 brief 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.

Grading

Critiques	15%	Daily Quizzes	10%
Group Presentation	15%	Homework	10%
Term Paper	15%	Midterm Exam	10%
Individual Presentation	10%	Final Exam	15%

Group Work/Group Presentation

Very early in the semester you will be asked to indicate a topic (from a list you will receive) 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 the level presented in the book. 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 Hines’ text. This is the starting point. It is expected that each group member will research the topic using the library, Internet and other resources. The group should meet and share the material. 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.

You will prepare a two-page outline of the presentation and a list of sources (books, magazine or journal articles, URLs, 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 that focuses on justifying major points with in-depth references.

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? (how can you gauge this?) 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 just need to make the best case you can with the resources you can uncover, so don't feel responsible for correcting any flaws.

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. Any flaws you uncover in building the proponents case should be carefully discussed here.

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 presenter roles –**due one week before the presentation**
- Draft of PowerPoint presentation –**due the Monday before the presentation**
- List of resources used in the form of a bibliography –**due on day of presentation**

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. Critiques must be turned in by 5:00 pm on the day of the presentation. Additional information will be provided.

Term Paper and Individual Presentation

You will have to write a single term paper to count for 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 to be provided, a topic from any of the textbooks, or a topic found through your own research and interest. The instructor must approve all topics. 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. This individual presentation will count for 10% of your course grade. A separate handout concerning the details of the paper and individual presentation will be provided.

Attendance

You are expected to attend every class. Attendance is checked at each meeting through the daily quizzes. If you are going to be absent from class then I must be notified ahead of time. **Being late to class by more than five minutes 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 include the use of a cell phone or other noisy electronic device, whispering/talking with your neighbor when not relevant to the discussion, and any 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	93-100	C	73-76.9
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

Make-up Quizzes and Homework

Make-up quizzes will not be given and no late submission of assignments will be allowed.

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, I encourage you to discuss topics and learn from each other. 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, and note that you may consult tutors for assistance when preparing your in-class presentations, as well.

Special Services

The Office of Disability Support Services, located in the Good-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 Ms. Joann Stephens-Forrest, Coordinator of Disability Special Services, by phone at (540) 375-2248 or by email at stephens@roanoke.edu.

Proposed Schedule: The following schedule outlines the timeline for the topics to be covered and highlights the reading for which you are responsible. Also pay close attention to the timing of exams, presentations and the due date for the term paper. **You should expect to spend at least 12 hours inside and outside of class each week on this course**

Dates		Read Before		Thursday Group Presentations	Due by Friday at 5pm
		Schick and Vaughn	Hines		
September	1			--	
	6, 8	Ch. 1, Ch. 2	Ch. 1, all	--	
	13, 15	Ch. 3	Ch. 2, pp. 66-73	--	
	20, 22		Ch. 3, pp. 91-101	Group 1: Psychic Predictions	
	27, 29	Ch. 4	Ch. 3, pp. 101-106	Group 2: Ghosts and Hauntings	Term Paper Proposal
October	4	Midterm Exam: Chapters 1-4 of Schick, other material discussed in class			
	6	Ch. 5	Ch. 3, all	Group 3: Near Death Experiences	
	11, 13		Ch. 7, Ch. 8	Group 4: Reincarnation	
	18, 20	Fall Break			
	25, 27	Ch. 6	Ch. 9, pp. 303-305	Group 5: UFOs	
November	1, 3	Ch. 7	Ch. 11, pp. 358-362	Group 6: Ancient Astronauts	Annotated Bibliography
	8, 11		Ch. 11, pp. 362-370	Group 7: Homeopathy	
	15, 17	Ch. 8	Ch. 11, all	Group 8: Therapeutic Touch	Draft of paper
	22	Individual Student Presentations			
	24	Thanksgiving			
December	29, 1, 6, 8	Individual Student Presentations			Final paper
	17	Final Exam: Comprehensive including content from student presentations			