

INQ 251-C: Science and Pseudoscience

Spring 2024

Instructor: Dr. Truong Le (he,him,his)

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Credits for the course: 1

Lectures Time: MWF 9:40-10:40 AM

Lectures Room: Miller Hall 013

Class Environment: I consider this classroom to be a place where we will treat one another with respect, creating an environment that welcomes individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the course so that I may make appropriate changes to my records. **This syllabus will continue to change with students' notice.**

Office Hours: MWF (11-12 pm), and by appointment.

Course Description: 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 affect our lives and shape 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. Since we base many of our actions on what we learn from these sources, it is important to have the 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. **There is no prerequisites for this course.**

Course Material: Required and recommended

- **Textbook (required):** Schick, Theodore and Vaughn, Lewis, How to Think About Weird Things: Critical Thinking for a New Age, 8th ed., McGraw-Hill, 2019. (ISBN: 978-1259922558)
- **Textbook (required):** Lundsford, Andrea, EasyWriter, 7th ed., Bedford, 2018. (ISBN: 9781319149505)

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 and pseudoscience.
- 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.

Discussion, Homework/Experiment: This course is built on participation. The best way to learn about analyzing strange claims is to practice. We will have opportunities to practice during class. In addition to keeping up with the readings, there will be homework along with the reading material on Inquire. There will be a very small number experiments throughout the semester. These will be graded for completion and contribute to your participation grade.

Attendance: If you have a temperature of 100.4 or higher or other COVID symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about COVID symptoms. If Health Services informs you that you should isolate and not attend class for multiple days, inform me so that we can make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused but you will need to do the work and graded assignments even if we extend a deadline for you.

Formal attendance will not be taken in this class. However, I will be assessing your participation in the course based on your engagement with a variety of activities and discussions which will take place during class. You are fully responsible for the material that was covered and for any announcements made during class meetings. To avoid any penalty to your participation grade for a class during which you must be absent, please contact me 24 hours in advance explaining the situation (emergencies excepted of course).

You are fully responsible for the material that was covered and for any announcements made in class, such as changes to the schedule and/or syllabus.

Late Work Policy: If you are unable to complete an assignment by the posted deadline, email me explaining the situation prior to the deadline and we will set a new deadline. Work that is turned in late without prior approval (i.e. a "no-call, no-show") is still eligible for 75% of the credit that it would have received had it been turned in on time.

Exams: Two midterm exams will be given involving multiple-choice and short-answer questions. All material covered in class, including student presentations, is fair game for exam material. If you need to make up an exam for excused reasons (family or medical emergencies, university-recognized commitments, etc.), I am happy to accommodate. When possible, please communicate that you will miss the exam at least 48 hours in advance (emergencies excepted of course). If you miss the exam for an unexcused reason and do not communicate with me ahead of time (a "no-call no-show"), you may still arrange a time with me to complete the exam for up to 75% of the original points available. Exams will be held in class unless otherwise specified (i.e. for make-up exams).

Group Work/Group Presentations: 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 any course material on the selected topic, and must go beyond the level presented in class. 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. In addition to demonstrating facility with any course materials related to the topic, 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 materials they have found. Next, decide how the presentation will proceed and assign responsibilities to each member of the group. The group will then 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, and graphs. Slide shows are the typical medium used in these presentations, but demonstrations, audience participation, guest speakers and other techniques are also welcome. **Email a draft of your presentation materials to me the Thursday 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.

Timeline:

- Outline of presentation and presenters — **due one week before presentation.**
- Draft of PowerPoint presentation — **due the day before the presentation.**
- Final Presentation and 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). **Each student must choose two presentations to critique throughout the semester.** *Critiques must be submitted to the corresponding Inquire link by 11:59 pm on the Friday, one week, following the presentation.*

Term Paper and Individual Presentation: You will have to write one term paper (8-12 pages, doublespaced), which counts for 15% of your total grade. The topic of the paper is a pseudoscientific issue 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 *EasyWriter*) are required. In addition, you will be responsible for a short (10 minute) presentation to the class on your topic. The 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.

Use of Electronic Devices: You can use personal laptops and/or tablets for class meetings and taking notes. While in a class meeting, your phones must be on silent mode and out of reach to limit distractions and must be turned off during exams.

Grading: Class grades will be calculated according to the following distribution

- Participation (in class + discussion + hw/experiments): 25%
- Group Presentation: 15%
- Critiques: 15%
- Term Paper: 15%
- Individual Presentation: 10%
- Midterm-1: 10%
- Midterm-2: 10%

Final Grade: Final course grades will be assigned using the following scale:

A	93% or more	C+	77-79.9%
A-	90-92.9%	C	73-76.9%

B+	87-89.9%	C-	70-72.9%
B	83-86.9%	D	60-69.9%
B-	80-82.9%	F	below 60%

Rounding UP (never down) final course grades may take into consideration the instructor's evaluation of the student's effort, improvement, integrity, and conduct. You should expect to spend at least 12 hours inside and outside of class each week on this course.

Accessible Education Services (AES): located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Becky Harman, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Becky Harman at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

Academic Integrity: Your learning and integrity are at the core of your RC education. For this reason, you must follow the rules outline in the College AI policies. See https://www.roanoke.edu/inside/az/index/academic_affairs/academic_integrity.

Throughout this class, I expect you to discuss and learn from one another. There will be many opportunities throughout the course to collaborate. However, individual assignments must be composed of your own work, in your own words. Even in group projects, misrepresentation of your contribution to a group effort will be considered a violation of the academic integrity policy.

You will be permitted a single page front-and-back during exams. No other resources will be permitted. Please refrain from discussing the exam until I have informed you that all students have taken the exam.

Copying and pasting directly from a website 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.

If I become aware of a possible violation of these guidelines, I am contractually obligated to report it to the Academic Integrity committee.

ChatGPT: Since a central goal of this subject is to help you become independent and critical thinkers, you are discouraged from the extensive use of generative AI (ChatGPT) tools to create (SPECIFY: TEXT — CODE — EQUATIONS — VIDEO — AUDIO — IMAGES) as part of your work. If you do use AI-generated content in your assignments, you must clearly indicate what work is yours and what part is generated by the AI. In such cases, no more than 20% of your work should be generated by AI. Any AI-generated work not cited and/or used for more than 20% of your assignment will be treated as though it were plagiarized. **If any part of this is confusing or uncertain, please reach out to me for a conversation before submitting your work.**

The Writing Center: located on the Lower Level of Fintel Library. It offers tutorials focused on writing projects and oral presentations for students working in any field. Writers and presenters at all levels of competence may consult the Writing Center at any point in their process— including brainstorming, drafting, organizing, editing, or polishing presentation skills—to talk with trained peer tutors in informal, one-on-one sessions. Schedule a virtual or in-person appointment by going to www.roanoke.edu/writingcenter, where staff members and workshops are also posted. If it becomes necessary to temporarily discontinue face-to-face services at any time, online tutorials will still be available. Questions? Email writingcenter@roanoke.edu or call 540-375-4949.

Preliminary Schedule: Topics of discussion from my lectures and videos. I will inform you the reading material at the beginning of every class:

Week	Day	Reading (Schick and Vaughn)	Group Presentation	Deadlines by 11:59 pm
1	17 Jan 19 Jan	Chapter 1		
2	22 Jan 24 Jan 26 Jan	Chapter 2 Chapter 3	Experiment-0	
3	29 Jan 31 Jan 02 Feb	Chapter 4	Group 1: Psychic Predictions and Experiment-1	
4	05 Feb 07 Feb 09 Feb	Chapter 5	Group 2: Ghosts & Hauntings and Experiment-2	
5	12 Feb 14 Feb 16 Feb	Midterm 1: Chpts 1-4	Term Paper Proposal Review for Midterm-1 & all other material	Term Paper Proposal
6	19 Feb 21 Feb 23 Feb	Chapter 5	Group 3: Near Death Experience and Experiment-3	
7	26 Feb 28 Feb 01 Mar	Chapter 6	Group 4: UFOs and Experiment 4	
8	04-08 Mar	Spring Break		
9	11 Mar 13 Mar 15 Mar		Experiment-4b: Scale the Solar System	
10	18 Mar 20 Mar	Chapter 7	Annotated Bibliography Group 5: Ancient Astronauts	

	22 Mar		and Experiment 5	
11	25 Mar 27 Mar 29 Mar	Midterm 2: Chpts 5-7	Review for Midterm-2 & all other material Good Friday: No class	Annotated Bibliography
12	01 Apr 03 Apr 05 Apr	Chapter 8	Group 6: Homeopathy and Experiment 6	
13	08 Apr 10 Apr 12 Apr	Working on Individual Presentation -	Draft of Individual Paper (10 minutes each) -	no class - solar eclipse Draft of term paper Draft of term paper
14	15 Apr 17 Apr 19 Apr	Individual Presentation - -	(10 minutes each) - -	Draft of term paper
15	22 Apr 23 Apr	Individual Presentation Term Paper	(10 minutes each) Due at 11:59 pm	Draft of term paper

I have read and understood this syllabus. Sign, date, and submit this page for 10 points toward your participation grade on your first day of class.

Student's Name:

Date: