

# Weird Science (JINS 375) Syllabus

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## 1 How to Find Me

The best way to reach me is **e-mail**, [edis@truman.edu](mailto:edis@truman.edu).

My office is MG 3004, and my office hours are: Tuesdays and Thursdays: 12:00–14:50; Wednesdays: 12:30–13:20 and 15:30–17:20. If you want to see me then, come by my office.

I'm also available most times when I am not actually teaching or have another meeting scheduled: see my **calendar** ([edis.sites.truman.edu/schedule/](https://edis.sites.truman.edu/schedule/)). When I'm not on campus, at strange hours and so forth, there's still Zoom. Emailing me ahead of time is best: we can set up a time that is good for both of us, and I'll put it on my calendar so that others can see that it's not available. In any case, my Zoom meeting ID is **taneredis**.

I will post course-related notices and documents online. Bookmark the **Weird Science page** ([edis.sites.truman.edu/weird-science-jins-375/](https://edis.sites.truman.edu/weird-science-jins-375/)). I have no use for Brightspace; I'll keep the minimum there to satisfy administrative requirements, but if you want up-to-date details about how you're doing, it's best to email me.

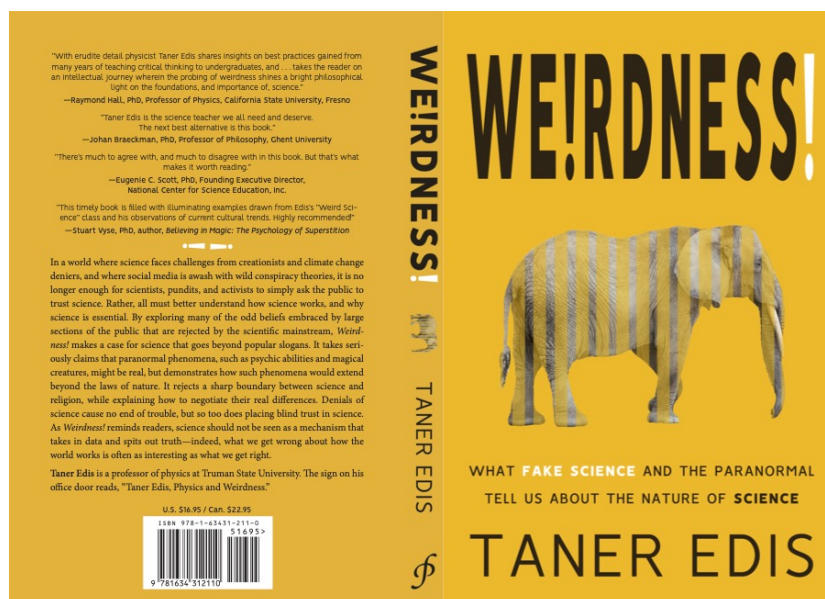
## 2 Schedule

**Class:** Tuesday and Thursday 16:30–17:50, MG 1099.

**Final Paper Due:** Friday December 13, 12:00 noon, MG 3004.

### 3 Course materials

I've recently published a book, *Weirdness!: What Fake Science and the Paranormal Tells us about the Nature of Science*, that is based on this course:



Having said that, *there is no required book for this course!* If you're interested, please check *Weirdness!* out; I'd certainly love more people to read it. But this course is about exploring and developing your own ideas about controversial topics, not learning what I think and repeating that back to me. Nothing I do this semester will assume you have ever cracked open the cover of *Weirdness!*.

To do well, you will need to do a fair bit of reading on the topics we discuss. After all, not only will you have to write a paper on each topic, but I will have you make brief classroom presentations to start discussions. But it's your job to find appropriate materials to introduce yourself to the topics in question. I will not assign readings.

I can, however, provide all sorts of useful advice about sources, and even lend you books from my personal library. It's your job to approach me with questions. Every student will treat the topics at hand somewhat differently, so there is no single piece of reading I can recommend for everyone. Talk to me, and tell me what you have in mind—I can then help.

## 4 Course Overview

Is the universe only a few thousand years old? Can psychics speak with spirits of the dead? Or has contact with extraterrestrial visitors been covered up by a massive government conspiracy?

Scientists usually leave such questions to internet forums, grumbling about public science illiteracy and refusing to engage disreputable ideas. However, “weirdness” like psychic phenomena, alien abductions, and more traditional religious supernaturalism consistently attracts popular interest and support. There are many paranormal shows on TV, large New Age sections in bookstores, and political battles over evolution education.

Moreover, paranormal and fringe-science claims have many articulate defenders, in and out of academia. UFO investigators, “Intelligent Design” proponents, and laboratory parapsychologists all insist that they have legitimate scientific arguments to make. If they were only given a fair hearing, if they could only overcome the closed-minded dismissal they face, they could demonstrate how mainstream opinions are radically mistaken.

So we will join the debate between skeptics and believers. After all, the questions are interesting. Asking whether life is a product of explicit design, or whether some people can demonstrate supernatural mental powers engage many of us. Looking at how science addresses these introduces some fascinating current ideas. However, doing this also takes us beyond the transmission of established knowledge common in science courses. Because these are controversial matters, we will be able to get a taste of how scientists operate while exploring new territory, when criticism and heated debate are the order of the day. When discussing “weird science,” questions about the *process* of science become clearer than with a survey of undisputed knowledge.

We will address a number of “weird” subjects—which ones will be your choice as a class. In each case, we will start by discussing various claims. We will examine the mainstream scientific response, seeing why scientists consider such claims to be theoretically implausible and supported with weak evidence. Common skeptical themes will be caution in accepting “extraordinary claims” which attempt radical revisions in our picture of nature; the unreliability of anecdotes, testimony, and uncontrolled studies; and the unacceptability of statistical results with marginal effect sizes.

We will also consider possible rebuttals, such as charges that the scientific community has dogmatically rejected paranormal claims or arbitrarily excluded personal testimony as evidence. We will address questions raised

when proponents of paranormal claims say that the standards of conventional science unfairly exclude their phenomena, and that their work challenges science to revise its methods and norms.

Our central theme in all this will be to learn to see science as a process of critical inquiry foremost—not as a body of assured facts, not as the application of a cut-and-dried method. Hence I will look for proper criticism in your work, rather than whether you can reproduce “correct” answers.

## 5 Interdisciplinary Aspects

Trying to understand fringe science invites approaches from multiple disciplines. We find physicists and psychologists arguing about the scientific merits of specific claims, folklorists examining themes in UFO abduction narratives, sociologists studying “weird” beliefs in religious movements, or forensics specialists investigating paranormal mysteries. An expert observer of creationism has to be familiar not only with the relevant biology and physics, but also know something about religion, the philosophy of science, and the social circumstances that support populist attitudes.

A student from any major will be able to inject their perspective into the work they do on “weird science.” I encourage you to use your own background, even as I emphasize scientific and philosophical forms of inquiry.

So we will definitely make use of a scientific perspective. However, a specifically *philosophical* approach also comes into play, where we can criticize what the scientists are up to. A philosopher would typically stand back from the debate, ask questions on how we might best attain knowledge, and question in what sense science might approach truth, without letting current scientific practice have the last word.

Combining science and philosophy in this course requires that the student *integrate* these perspectives in thinking about “weird science.” The object is not to write a few paragraphs of science-based analysis and then to switch to a philosophers’ voice—debating paranormal claims requires an approach where philosophical and scientific views interact and correct one another.

## 6 Course structure

In the first week, I will explain to you what the course is about, split you into groups that will work and make presentations together, and have you

discuss and decide upon the five topics we will address during the semester.

After that, each topic will get five class meetings. In each of the first four meetings on a topic, a different group will start by making a brief (20-30 minutes total) presentation. Another group will be assigned to be the official opposition: they will be responsible for questioning and criticizing the group making the presentation. Meanwhile, I encourage anyone else in the audience to join in the questioning. In fact, I will require each of you to write one question on a piece of paper and turn it into me as you leave, whether you have a chance to ask that question or not.

About a week before each presentation, I will send a long email to members of each group involved, outlining what I would like you to do.

For the fifth class meeting on a topic, you will all bring the first drafts of your papers on that topic to class. (Bring whatever you have, even if it's just a rough outline.) You will then exchange papers with others and critique them. *This is important!* I want to see the progress of your thinking before the finalized paper. You will turn your draft in together with your final version of each paper. If I don't see a draft, I will reduce your grade, up to a full letter grade for that paper if it appears from out of the blue. Please email me your draft versions.

Your paper on a topic will be due at the first class meeting after the draft critique session. I can't be flexible about your draft papers for critiquing, since that depends on others in the class, but if you need some extra time for getting your final draft into shape, email me and we'll work it out.

## 7 Classroom discussions

*I will not lecture.*

Our classroom meetings will be devoted to *you*, as a class, discussing the topic at hand. My emphasis in this course will be on the questions you ask and the arguments you construct, not your ability to master information.

To give classroom discussions structure, I will assemble you into groups consisting of three students. I will construct the groups to be internally diverse—a mixture of different majors, and students inclined towards paranormal belief and skepticism thrown together. You will work closely together with members of your group.

The groups will run the show in classroom discussions. One group will start off each class meeting, and one group will be the designated critics.

These group will be responsible for doing background research on the topic, forming some preliminary positions, and presenting what they have concluded to the rest of the class. I expect group members to work together closely: it's important to have others to bounce ideas off of. Talk to each other, and have some idea who is going to research and say what before appearing in front of the class.

If you're in the audience rather than the presenting or opposing groups on a given day, your job will be to ask lots of questions. All of you, not just the groups up front, are responsible for thinking up possible answers, ways to get information that would help, and figuring out what are the really important questions to address.

After each presentation, the presenting group and the designated critics will email me their notes or whatever they based their presentation on. Audience members will give me slips of paper with a question written on them. Part of your grade will be based on your presentations and questions.

## 8 Writing Assignments

Our focus will be on developing skills of intellectual criticism rather than mastering a body of knowledge. But producing well-written essays, though important, is not the only goal. It is easy to find very persuasive, even eloquent arguments which are selective in evidence, highlight weak representatives of rival viewpoints, and seek to score debating points rather than advance genuine inquiry. Instead of just effective advocacy, I want you to practice proper criticism—especially in characterizing opposing views fairly and understanding their intellectual attraction.

### 8.1 Writing topics

You will write five short papers (1000 words minimum each) during the semester. These papers will incorporate research and references that go beyond what we discuss in class. The better papers will take risks and defend strong positions. For example, if we have been discussing creation and evolution, you might investigate the populist aspect of creationism, tying it to philosophies of commonsense realism and the populist democratic strain in American culture. Then you might connect this background to current debates over creationism in education, and perhaps even make a case that

defenders of evolution have taken a heavy-handedly elitist approach.

I encourage you to work together with members of your group. Indeed, you will often have considerable overlap in the list of references you consult. However, each paper should also be individual—you will defend distinct positions in your own style, even when relying on a common list of references.

I will also require that you produce a first draft of your paper before a final version is due, and bring it to class. I will then have you pass the draft to another student, not in your group, and have them produce a short critique. The draft you turn in should have the critique you received attached—I want to see that you addressed the criticisms you receive.

You will also write a final paper that will be longer, at least 2000 words, and probably closer to 3000 if it's any good. This will be an expansion and revisiting of one of your first five papers, where you will have a chance to produce a more in-depth argument and address some of the criticisms that the earlier version drew.

### 8.2 Your audience

Do not write as if I am the person you are writing for. Write as if you were composing an article for the student newspaper. In other words, the audience you should have in mind is your fellow students: bright, reasonably well-informed, but not necessarily deeply knowledgeable about the exact topic you're addressing. (You can assume that your readers have the basic background information about your topic, so don't waste space on that.)

You should avoid saying things like “as we discussed in class” in your paper. You would not do that in the student newspaper, after all.

### 8.3 The content

Many of you are used to writing report-style papers in science courses, or creative writing in English courses. I am looking for something different, which includes aspects of both reports and creative writing.

Reports typically present established knowledge. They don't have much individuality, and they tend to rely on the authority of published research, textbooks and so forth. *Do not write a report!* I want to see your own voice in your writing, to see you argue and directly engage with the claims you're supporting or criticizing. If you fall into the habit of doing some background research and synthesizing what you find, that's not good enough. I want to

see your particular argument.

Creative writing is much more individual. But while I want to see some individuality in your writing, don't get carried away and make your writing center on your personal reflections. You want a good, convincing *argument* to be your centerpiece. Anecdotes and personal experiences are very helpful in livening up your writing, so include them if you can. But don't let your case rest on such personal experiences alone. You want to use them to illustrate a more general argument you are making.

In other words, strike a balance between individuality and reports.

The grade for each of your papers will depend equally on my judgment of the quality of your writing, and the quality of your argument.

### 8.4 Presentation details

Turn in one *double-spaced* hardcopy of each paper. I will cover it in red ink and give it back to you. *Also email me a PDF or Word copy*—something where I can click on your links.

Avoid mistakes in basics such as spelling and grammar; these detract from the presentation and will reduce your grade. Papers must also be well-organized and present a coherent case. I expect you to be already proficient at basic writing.

### 8.5 Citations

You should cite appropriate and varied references. Consult a number of relevant books, articles and similar resources.

Consult both sources that you agree with and those that present an opposite point of view. It's not good if your reference list consists almost entirely of sources that support your point of view. *If you're arguing against a certain claim, you should consult **firsthand** sources defending that claim.* It's not good enough to just look up sources criticizing what you oppose.

Because there is a lot of fringe-science material that is available primarily on the web, I allow citations of web sites. However,

1. *Never* cite an encyclopedia-like source, in particular Wikipedia, as a reference. Such sources are useful to give you a basic introduction and background, and maybe some links to check out, but that is all.
2. *Do not* cite dictionaries. In fact, you should never write any line that



goes like “the dictionary definition of XYZ is . . .”

## 8.6 Citation formats

If you’re already used to one of the standard formats for references, footnotes, or endnotes, you can use that. As long as you’re consistent, and I can understand your citations, everything is fine.

But if you have any doubts, here is the format I prefer:

**Books:** If you wanted to cite something from pages 73 and 75 in a particular book, your paper would include something like this:

As Schick and Vaughn (2008: 73) point out , . . .

“Ordinarily, if a proposition fails to cohere with the rest of our beliefs, we are not justified in believing it” (Schick and Vaughn 2008: 75).

### References

Schick, Jr., Theodore, and Lewis Vaughn. 2008. *How to Think About Weird Things: Critical Thinking for a New Age* (5th edition, Boston: McGraw-Hill).

**Articles:** If you wanted a cite an article in the journal *Reports of the National Center for Science Education*, volume 27 and number 3-4, pages 31 to 34, you would go about it like this:

Educators dispute the value of including intelligent design in science classrooms (Borenstein 2007).

### References

Borenstein, Jason. 2007. “Recurrence of the Same? ‘Intelligent Design’ and the Biology Classroom,” *Reports of the National Center for Science Education* **27**:3-4, 31-34.

**Web Sites:** Include author and date if you can. Use “n.d.” (not dated) if no date is available. Use “Anonymous” if no author is known. Always include the full URL, and don’t forget to send me an electronic copy I can click on. Here’s how it would go:

UFO researchers are especially interested in strange sightings recorded near airports (for example, Rodeghier n.d.).

### References

Rodeghier, Mark. n.d. "UFO Seen Over O'Hare Airport," <http://www.cufos.org/ohare.html>, accessed April 19, 2008.

Note the "accessed" information that you must include.

The reference list should be in alphabetical order.

## 9 Grades

Your grade will depend primarily on the writing assignments.

- **23%** — **Class Participation:** Activity in and contribution to group presentations and class discussions.
- **55%** — **Short writing Assignments:** 11% each.
- **22%** — **Final Paper:** The final paper due after classes are over.

## 10 Attendance Policy

You will need to be present in the classroom to do well in this course. Every class meeting will require you to turn in something, whether it is a question or a critique of a paper draft. So if you miss a class, you won't be able to turn in what you need, and this will be reflected in your grades.

If you know you will miss a class, please *email me ahead of time!* I don't need official excuses, but briefly tell me why, and I'll try and accommodate you as much as is reasonably possible. I cannot guarantee that we can work something out—your best course of action is not to miss anything.

## 11 Academic Integrity

I care about maintaining academic integrity, and I will apply all Truman policies concerning **academic dishonesty**. I expect you to be familiar with the **Student Conduct Code**.

Do not present something that is not your own work as your own, whether you get it from another student or online. The most common form of cheating with writing is plagiarism. Now, I can't sniff out all instances of plagiarism; it's possible to really expertly steal a bit of writing and then greatly modify it so that it looks like something that is your own. But that is difficult to do well and takes a lot of effort. If you're going to do so much work, you might as well develop your own thoughts and bang away at your own writing.

Some of you might be tempted to rely on AI. Some uses of AI are benign: if, for example, you use an AI tool to make sure your grammar is fine, I have no objections. But if you use AI to scrape information off the internet and assemble it into a paper, the result will be a bad piece of writing with no originality and no hint of your own voice in the paper. As with plagiarism, over-use of AI can be hard to detect with certainty, and you can effectively disguise an AI-generated paper by putting a lot of work into modifying it. But again, if you're going to put in so much work, you might as well develop your own skills and get something out of this course besides a grade.

In any case, I do not expect academic dishonesty. If I suspect something is fishy, I'll have you come to my office and explain yourself. Depending on my judgment, I might do anything from dropping you a grade to having you fail the course, though fortunately things haven't ever come to that yet.

## 12 Lawyer Avoidance

*Some of the required small print.*

Truman policy and federal regulations require that students demonstrate that they are academically engaged in the courses they take. You must meet this requirement within the first calendar week of the semester, beginning at 12:00 am on Monday, August 22 and ending 11:59 pm Saturday August 27. Failure to do so, or to provide an explanation of an extenuating circumstance by that date and time will result in your removal from the course. Under certain circumstances, removal could impact your scholarship eligibility or financial aid. For the purposes of this class, establishing academic engagement requires, at a minimum, showing up at a lecture or lab.

The minimum investment of time by the average Truman student necessary to achieve the learning goals in this course are not less than one hour (50 minutes) of classroom instruction and a minimum of two hours of out of class student work each week per credit hour awarded or at least the equivalent of three hours (2:50) of laboratory work, internships, practica, and other academic work each week per credit hour awarded. This average time per week for an average student may have weekly variations.

Education records are protected by the Family Education Right to Privacy Act (FERPA). As a result, course grades, assignments, advising records, etc. cannot be released to third parties without your permission. There are, however, several exceptions about which you should be aware. For example, education records can be disclosed to employees or offices at Truman who have an "educational need to know." These employees and offices may include your academic advisor, the Institutional Compliance Officer, the Registrar's Office, or Student Affairs depending on the type of information.

Behavior that persistently or flagrantly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be asked to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Conduct.