INQ 110Q: Virtual Realities

Fall 2016
MWF: 2:20-3:20pm in Trexler 362

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Office Hours: MW 3:30-4:15pm; TTh 1:30-2:30pm;
and by appointment.
Course Website: http://cs.roanoke.edu/Fall2016/INQ110Q/

Syllabus

Course Synopsis

Most futuristic, and sometimes even present-day, fictional scenarios involve computational device(s) with abilities far beyond what we actually see today. Often, these devices are artificially intelligent beings that can pass off as humans. In this course, we will encounter several such scenarios in our readings. Are such scenarios simply fantasy, or do they have the potential of becoming reality in the future? Is it possible to create an artificially intelligent being that is indistinguishable from a human being? We will learn as much as we can about computation to try and answer these questions.

Required Texts

1. *Turing (A Novel about Computation)*, Christos H. Papadimitriou, 2003.
2. *A Writer's Reference*, Diana Hacker, 7th edition.

Other Readings

1. *Get Real: A Philosophical Adventure in Virtual Reality*, Philip Zhai, 1998.
2. *Minds and Machines*, Ed. Alan Ross Anderson, 1964.
3. *Breaking the Code*, Hugh Whitmore, 1987.
4. *Alan Turing: The Enigma*, Andrew Hodges, 1983.
5. *Novel Gazing: Queer Readings in Fiction*, Ed. Eve Kosofsky Sedgwick, 1997.

Course Objective

Students will be able to apply their knowledge of computing to analyse claims about futuristic computational capabilities.

Course Description

The mathematician Alan Turing is credited with formulating a mathematical model of computation. The model is now called the *Turing Machine,* and all present day computers are instances of Turing Machines. Our primary text is a futuristic novel that deals with computer generated virtual realities, characters in cyberspace and their relationships. While reading the novel, we will follow two highly talented computer programmers as they move in and out of their real and virtual selves. We will get a glimpse of the life of Alan Turing, and learn about computation and Turing Machines from conversations between a digital persona called Turing and an archaeologist. We will be introduced to the nature of artificial intelligence. Using our knowledge of computing and logical arguments, we will assess the existence of the futuristic scenarios presented in the novel.

Besides our primary text, we will read excerpts from the other readings listed above and other current articles from the literature. Through these readings we will get an insight into the life of Alan Turing and his views, and the views of other researchers, about computers and intelligence. Some of the readings will introduce us to other virtual realities and we will use our knowledge of computing to analyse these scenarios.

Intended Learning Outcomes

By the end of the course successful students will have the following abilities:

1. Students will be able to read, discuss, and write about college-level academic texts and ideas.
2. Students will be able to use a process of drafting to write papers that have clear theses, cogent argumentation, proper use of evidence, effective organization, and a minimum of sentence-level errors.
3. Students will be able to use library and other resources to find, evaluate, and synthesize information from multiple sources and use this information in support of a research question.
4. Students will be able to read popular science texts with the appropriate attention to technical detail, and be able to assess the validity of complex ideas.
5. Students will be able to correctly explain the present model of computation and its limitations, and use this information to support or refute futuristic claims.

Mechanics and Grading

Reading material that has technical content is best done with a pencil and paper at hand. It helps to work out for oneself the technical explanations while reading such material to better understand and retain the concepts. We will use this technique in class; reading assignments will give you a chance to practice this technique outside class times. We will have reading quizzes to assess your grasp of the technical material in these readings. These reading quizzes will be announced when the reading assignment is posted/announced.

Writing one's thoughts helps in clarifying them to oneself, and in organising them to formulate arguments. We will discuss material from the readings in class, and you will write summaries of our class discussions to understand the material better, and to identify appropriate questions to guide further study of the material. We will learn to use various resources to survey the literature for possible answers. The class discussion summaries and reliable sources from the literature will be used later in the course to write essays addressing these questions. We will use peer-reviews and individual conferences to critique drafts of the essays, and learn to revise drafts into a final polished product.

You are strongly encouraged to take notes during class. From time to time, as homework, you will be required to hand in summaries of class discussions. Such assignments will be announced in class and will be due at the beginning of the next class period. No late summaries will be accepted.

In this course we will focus on writing logically where each statement in a writeup is either a self-evident fact, is a fact supported by the literature, or follows from earlier statements in the writeup. As homework, you will write solutions to logical puzzles to practice the art of writing logically. These homework assignments will be announced in class and/or posted on the course website (with an email informing you of the assignment). Late homework assignments will not be accepted.

Each assignment (drafts, final essays and the research essay) will have a due date. Late assignments will not be accepted.

All work, unless explicitly specified, is to be done individually.

This course expects you to spend *at least* 12 hours of work each week inside and outside of class.

Graded work in this course will include quizzes and finished essays; they will be weighted as follows:

Quizzes	20%
Homework Assignments	15%
Essay #1	20%
Essay #2	20%
Research Essay	25%

The final course grade will be calculated as follows:

< 60	60-62	63-65	66-69	70-72	73-75	76-79	80-82		83-85	86-89	90-92	> 92
F	D-	D	D+	C-	C	C+	B-		B	B+	A-	A

Attendance Policy

You are expected to attend every class. If you must miss a class because of illness, family emergency, or a conflict with a college-sanctioned event, please let me know **at least 30 minutes before class** by sending me email or calling me in my office and leaving a voicemail, if I do not answer the phone. Any absence for which I do not have notification from you, before class by email or by a phone call, will be considered an unexcused absence. Each unexcused absence beyond two in the semester will cause your grade to go down by one third of a letter grade (e.g., from a B- to a C+). If you have four or more unexcused absences your final course grade will be F.

Special Services

If you are on record with the College's office of Special Services as having special academic or physical needs requiring accommodations, please meet with me as soon as possible to discuss your accommodations. Please note that arrangements for extended time on exams and testing in a semi-private setting must be made at least one week before any exam. If you believe you are eligible for accommodations, but have not yet formally contacted Special Services, please call 375-2249 or drop by the Office of Academic Services in Fintel Library.

Electronic Devices

Cell phones must be turned to the silent mode prior to entering the classroom, and must be put in your backpack. Laptops may be used for note taking during class, but you may not log on to the internet or to an e-mail server unless specifically told to do so. The use of laptops or any other electronic device during an exam is strictly prohibited. Any use of such devices during a quiz or exam will be considered a breach of academic integrity.

The Writing Center @ Roanoke College

The Writing Center @ Roanoke College, located in the Goode-Pasfield Center for Learning and Teaching (CLT) in Fintel Library, is a place where writers working in any academic discipline, at any level of competence, and at any stage of the writing process meet with trained peer writing tutors in informal, one-on-one sessions focused on writing. You are **required to participate in at least one session per essay** with a writing tutor. Your grade for the assignment will go down by 3% if you do not participate in one such session for that essay.

The Writing Center also conducts campus-wide workshops. You are **required to attend at least two such workshops.**

The workshops are conducted at The Writing Center/CLT in the Fintel Library. Lunch is provided at the workshops. Instructors are notified when you attend a workshop. Your course grade will go down by one (e.g., from a B- to a C+) for each of the above workshops that you do not attend. That is, if you do not attend either of the two workshops, your course grade will go down by two (e.g., from a B- to a C).

You can find information about the writing center hours, how to make appointments, etc. at http://www.roanoke.edu/inside/a-z_index/center_for_learning_and_teaching/writing_center

Academic Integrity

During orientation you should have attended a session on academic integrity, during which you learned the specifics of Roanoke College's expectations for academic integrity and the penalties for failing to follow them. All aspects of "Academic Integrity at Roanoke College" will be observed in this class. I am obligated to turn over all suspected cases of academic integrity violations to the Dean's office for investigation. See the Academic Integrity note on all paper assignments. Plagiarism, a prevalent problem on college campuses nationwide, will be discussed in more detail in this class. In brief, you are responsible for citing both *ideas* and *words* that are not your own. Proper citation format can be found in *A Writer's Reference*, 7th edition, by Diana Hacker. Please consult with me if you have any questions about your responsibility to document your work.