Topics in Philosophy: Minds and Machines

MW 3:30 - 4:45
BH 235

http://philosophy.tamucc.edu

Professor:

Don Berkich, Ph.D.

Office: FC-283
Hours: MW 9:00 – Noon, 1:00 – 3:00, and by appointment
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Course Description:

Early projections at the dawn of computing technology that computers would soon match and exceed humans in intelligence are now seen as quaint, if not ridiculous. Despite enormous gains in computing power, genuine artificial intelligence has proven entirely elusive. To be sure, computer scientists have had some modest successes. Yet capturing human-level intelligence in a machine has thus far proven to be an intractable problem. At best, we seem to have achieved insect-level intelligence in some of our more complicated robots. The fact that projections about Artificial Intelligence have proven false begs an important question:

What is it about human intelligence that makes the creation of human-level artificial intelligence so problematic?

This question is especially important in light of the fact that modern neuropsychology assumes the human brain is itself a kind of biological computer. That is, researchers operate on the assumption that we are meat machines. In light of this assumption, we consider some of the most important questions in Philosophy, Psychology, and Computer Science:

- What is the place of the mental in a physical universe?
- How does the human brain underwrite the human mind, if it does?
- Are artificial minds possible, and if so, how?
- Are computational models of perception, intention, and action useful or deceptive?
- Is intentionality compatible with mechanism?
- Is autonomy compatible with mechanism?
- Is consciousness compatible with mechanism?
- Is identity compatible with mechanism?
- Are emotions compatible with mechanism?

It is not our goal in this course to argue that Artificial Intelligence is impossible. Rather, it is our goal to understand what makes human intelligence such an extraordinary and astonishing phenomenon by carefully considering some of the more important skeptical challenges to the possibility of artificial intelligence. Along the way, we learn a great deal about machines, on the one hand, and human minds, on the other.
Topics include:

- Dualism, Idealism, and Materialism
- Functionalism and Computational Psychology
- The Turing Test
- Computability and the Church/Turing Thesis
- Searle's Chinese Room Thought Experiment
- The Frame Problem
- Representationalism and Connectionism
- Mechanism and Autonomy
- Robot Intentionality
- Personhood and Personal Identity
- Consciousness

**Topic Schedule:**

**Week 1**
Cognition in Ancient and Modern Philosophy

**Week 2**
Cognition in Contemporary Philosophy

**Week 3**
Artificial Intelligence and the Turing Test

**Week 4**
Computability and Complexity Theory

**Week 5**
The Church-Turing Thesis and the Chinese Room Thought Experiment

**Week 6**
Robot Intentionality

**Week 7**
Robot Intentionality

**Week 8**
The Frame Problem

**Week 9**
Machine Consciousness

**Week 10**
Machine Consciousness

**Week 11**
Autonomous Machine Agency

**Week 12**
Personal Identity

**Week 13**
Connectionism, Situated Robotics, Genetic Algorithms, and A-Life

**Week 14**
Course Summary

* Tentative, pending class pacing and interest.

**Student Learning Outcomes:**

Students will

1. Learn the names of at least three important philosophers who have written on these topics--e.g., Plato, Putnam, and Turing.

2. Learn the names of at least three important arguments on these topics--e.g., The Chinese Room Thought Experiment, the Modal Argument, and the Knowledge Argument.

*A requirement of the University for accreditation purposes. Derived from feeble but well-intentioned research in educational theory and used as the basis for a pre- and post-test in a facile attempt to demonstrate success in teaching and learning. Fails to reflect any grasp of the distinction between training and education by presupposing that understanding, discovery, and knowledge is to be poured into a mind like oil into an engine--SLO's are presumably the marks on the dipstick. A key component in the commodification of higher education and the corporatization of its institutions. Not to be taken seriously by any sentient being capable of learning and critical analysis. An embarrassing academic fad and an affront to the towering intellects whose investigations we have the privilege of pursuing this semester.*
**Texts:**


* Useful but not required--selections from these and other sources will be provided as necessary.

**Requirements:**

**Term Paper:**

There will be a single, substantial paper due at the end of the term. The term paper will be developed in four stages: Proposal (due 3/7), Annotated Bibliography (due 3/28), Draft (due 4/18), and Final Copy (due 5/9). All due dates are tentative pending problem set and lecture pacing. Content and format instructions will be provided as each stage is assigned.

**Problem Sets:**

Problem sets will be assigned approximately every week. The problem sets will be frontloaded in the course so as to leave time at the end of the semester for the term paper. There are a total of ten problem sets. The two lowest-scoring problem sets are dropped.

**Participation:**

Students should be prepared to contribute to class discussion. Students should also be prepared to answer specific questions about the reading material and should be able to outline key elements of the assigned readings for the class. See below.

**Attendance:**

Attendance is not mandatory, but it is strongly recommended. See below.

**Policies:**

The professor assumes that students enrolled in this course are sincere student-scholars. That is, the professor shall treat them with the respect due scholars, and, as scholars, they shall do their best to live up to the standards of scholars. To wit,

**Preparation:**

Scholars carefully read assignments in advance of class, take notes on their reading, explore specific issues in discussion with fellow scholars, and follow-up class by re-reading portions of the required readings and exploring suggested
Participation:

Scholars are eager to respectfully, openly, and critically discuss arguments and issues raised by the readings. Scholars are adept at following a line of reasoning wherever it may lead. Most importantly, scholars welcome the insights and criticisms of their peers: A scholar understands that it is possible to entertain a proposition without believing it, just as it is possible to present an argument without personally endorsing the argument. Scholars enjoy vigorous deliberations and are always careful to treat fellow scholars with patience and good humor.

Assignments:

Scholars fully immerse themselves in assignments and never assume that an assignment is only legitimate if it will be covered on a test. Scholars are naturally curious and see every assignment as an opportunity to explore new issues, see old issues in new light, and hone their growing skills.

Cheating:

Scholars are very careful to give proper credit and maintain the highest standards of scholarly conduct. Thus, subject to university guidelines, any instance of cheating (including plagiarism) will be vigorously prosecuted.

Attendance:

Scholars always attend class barring serious injury, illness, or disaster. Scholars view class-time as rare and valuable for the thought it evokes and the opportunities it presents. Scholars arrive early for class and never leave class early without obtaining prior approval from the professor.

Grading Formula:

There are 1000 points possible as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Sets</td>
<td>50 points each</td>
</tr>
<tr>
<td>Term Paper Prospectus</td>
<td>50 points</td>
</tr>
<tr>
<td>Critically Annotated Bibliography</td>
<td>100 points</td>
</tr>
<tr>
<td>Rough Draft</td>
<td>200 points</td>
</tr>
<tr>
<td>Final Draft</td>
<td>250 points</td>
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</tbody>
</table>

Total Points = sum of the best eight problem sets + prospectus + bibliography + draft + term paper

Course Grade is determined by the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points Range</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>900 - 1000</td>
</tr>
<tr>
<td>B</td>
<td>800 - 899</td>
</tr>
<tr>
<td>C</td>
<td>700 - 799</td>
</tr>
<tr>
<td>D</td>
<td>600 - 699</td>
</tr>
<tr>
<td>F</td>
<td>000 - 599</td>
</tr>
</tbody>
</table>

Additional Notes:
Any change in the above will be announced in class. No change will be made which would be detrimental to the student's grade.

This syllabus is not authoritative. That is, the syllabus on the course website supersedes this syllabus wherever they differ. The professor and the students are only responsible for the syllabus as it appears in its entirety on the course website, including the schedule of topics and readings.

Any student missing a due date must provide a documented, acceptable reason according to university guidelines. Students with a proper excuse for missing a due date will be given a reasonable extension.

Students without a proper excuse for missing a due date will lose 20 points per day after the due date.

Required University Note to Students with Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Services Office at 825-5816 or visit their office in 116 Corpus Christi Hall.

Required College of Liberal Arts Note on Academic Advising: Academic advisors are available to assist students with course selection, degree plans, and other academic matters. Each college has an academic advising center, staffed by full-time, professional advisors. In our college the undergraduate advisor is Linda Miller (825-3466, Linda.miller@tamucc.edu). The graduate advisor is Rachelle Stanley (825-3466, Rachelle.stanley@tamucc.edu). Both are located on the second floor of Driftwood. Students who have yet to declare a major are advised by the Academic Advising Transition Center. For more information please call (361) 825-5931 or log on to http://www.tamucc.edu/~aac.

Required University Note on the Grade Appeal Process: As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. If the problem cannot be resolved at this level, the student may take the steps below.

1. Presentation of grievance to instructor. (This step must be taken within fourteen calendar days after the beginning of the next term.)

2. Appeal to department chair or area coordinator.

3. Written appeal to the University Academic Standards Grievance Committee.

4. Preliminary review and advising by an ombudsman appointed by the Provost.

5. Submission of file by department chair to the chair of the University Academic Standards Grievance Committee.
6. Review of file by committee chair and submission of case to committee.

7. Proceedings of the University Academic Standards Grievance Committee. (Committee holds hearing, reviews data, presents findings to all parties, and makes recommendation to Provost.)

8. Decision by Provost.

9. Final appeal in writing to the Provost if student or instructor thinks appropriate procedures have not been followed.

For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.htm. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

By accepting this syllabus the student indicates that the syllabus has been read, all requirements are understood, and all policies are acknowledged.