

*AST 321 The Future of Humanity*  
Spring 2018 (Unique Number 47235)

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**TIME, PLACE:** MWF 11:00-11:50 AM, RLM 15.216B

**INSTRUCTOR:** J. Craig Wheeler - a theoretical astrophysicist specializing in exploding stars and related topics.

**Office:** RLM 17.230, phone: 512-471-6407

**Email:** wheel@astro.as.utexas.edu

**Hours:** M,F 12:00 PM, W 1:00 PM or by appointment; do not hesitate to talk to me if you have questions or problems. My job is to help.

**TEACHING ASSISTANT:** Caprice Phillips

**Office:** RLM 15.310E

**Phone:** 512-471-3387

**Email:** clphillips@astro.as.utexas.edu

**Hours:** by appointment

**COURSE DESCRIPTION:** We will explore the possibilities for the future of humanity in an astronomical context: life on a pale blue dot within a vast Universe and a vast expanse of time. We will cover elements of cosmology and astronomy for context, the basics of biological evolution, including human evolution, and consider the current state of humanity. We will then try to extrapolate into the future in terms of natural and self-driven evolution, the digital revolution, nanotechnology, the promise and challenges of space travel, and related topics, all in the context of the great sweep of time before us, 10,000 years, a million years, a billion years.

**GRADES:** This course has a *Substantial Writing Component Flag*. The three formal writing assignments of about 25 pages total will constitute 40% of the grade. Weekly short topical writing assignments will constitute 25% of the grade. Weekly submission of evidence of technological advances (posted to *Canvas* and summarized in class) will constitute 10% of the grade. The remaining 25% of the grade will be based on class participation in discussion.

**Letter Grades:** The individual components of the grade described above will be scored from 0 to 100% and then weighted according to the prescription above to determine the final cumulative percentage grade. Letter grades will be assigned at the end of the term based on the cumulative weighted percentage grades compared to 100%. Plus/minus grading will be used for the final grade; for example: 79.5 – 83.3 B-, 83.4 – 86.6 B, 86.7 – 89.4 B+. Averages above 93.4 get an A (no A+).

**Formal Writing Assignments:** For these papers, we will have discussion of drafts with peers and evaluation of drafts by peers prior to the due date. These papers will be typed, double-spaced, on standard 8.5x11 paper, and submitted electronically to *Canvas*. They will be checked for plagiarism.

**Read the Plagiarism Guide posted on the class website and the UT Guide to Avoiding Plagiarism.**

Paper 1 - 5 pages (10%), Evolution, drawing, at least, on Darwin and Dawkins, Due Friday, February 9.

Paper 2 - 10 pages (15%), Topic of Choice, Due Monday, March 19.

Paper 3 - 10 pages (15%), The Future of Humanity, Due Friday, May 4.

Total fraction of grade, 40%.

**Short Weekly Writing Assignments:** these 1-page papers will deal with technological topics, summaries of chapters, and other pertinent aspects of the course. They are designed to encourage preparatory reading prior to class discussion. Note that while these are short, they are not to be outlines, but complete well-structured words, sentences and paragraphs. These papers will also be typed, double-spaced, on standard 8.5x11 paper, and submitted electronically to *Canvas* on Mondays. Note, other assignments associated with the formal papers are also due on some Mondays. Total fraction of grade, 25%.

**Evidence of Technical Advances:** A major theme of this course is the persistent, essentially exponential, advance of technology. This assignment requires you to keep an eye on your favorite sources of information (the web, blogs, TV, newspapers) for relevant advances in evolution, artificial intelligence, robots, nanotechnology, biology, medicine, space travel, and other aspects of technology. Everyone should submit *one item per week* on the appropriate discussion page on *Canvas* and be prepared to summarize it in class, but otherwise, the timing is up to you. There are 13 weeks in the term so for full credit you will submit 13 of these items. One item is due per week. If you do not submit one in a given week, then you will lose credit for that week. Total fraction of grade, 10%.

**CLASS DISCUSSION:** *Mandatory components* – I will call on individuals and expect them to respond with a summary of readings, their opinions of those readings, and connections to other aspects of the course topics; peer review of draft papers. *Voluntary component* – participation in class discussion. Total fraction of grade, 25%.

**TEXT:** The required text is *The Singularity is Near: When Humans Transcend Biology* (Penguin) by Ray Kurzweil. We will also draw on Darwin, *The Origin of Species* and *Descent of Man* (available as free ebooks and from the UT library system), *The Selfish Gene* by Richard Dawkins (available electronically from the UT library system) and *Who Owns the Future?* (Simon & Schuster) by Jaron Lanier. Extensive use will also be made of online and other material.

**CANVAS:** *Canvas* will be used to post class material and collect writing assignments.

**Twitter:** follow @ast309 (optional) - I post irregularly on the life of an astronomy professor.

**WEB SITE:** <http://www.as.utexas.edu/astronomy/education/fall16/wheeler/321.html>

The college no longer supports class web sites, but this site has a multitude of links and articles collected over years of teaching this course. You are encouraged to browse this material and I may make explicit reference to it on occasion.

### **Writing Flag**

This course carries the Writing Flag. Writing Flag courses are designed to give students experience with writing in an academic discipline. In this class, you can expect to write regularly during the semester, complete substantial writing projects, and to receive feedback from your instructor to help you improve your writing. You will also have the opportunity to revise one or more assignments, and you will be asked to read and discuss your peers' work. You should therefore expect a substantial portion of your grade to come from your written work. Writing Flag classes meet the Core Communications objectives of Critical Thinking, Communication, Teamwork, and Personal Responsibility, established by the Texas Higher Education Coordinating Board.

### **Students with Disabilities**

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259.

### **Academic Integrity and the University Code of Conduct**

A fundamental principle for any educational institution, academic integrity is highly valued and seriously regarded at The University of Texas at Austin. More specifically, you and other students are expected to maintain absolute integrity and a high standard of individual honor in scholastic work undertaken at the University.

The University Honor Code states: "The core values of the University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University

is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community."

Academic dishonesty includes: cheating, plagiarism, unauthorized collaboration, falsifying academic records, misrepresenting facts, multiple submissions, and any other acts or attempted acts that violate the basic standard of academic integrity.

Consequences of academic dishonesty can be severe. Grade-related penalties are routinely assessed but students can also be suspended or even permanently expelled from the University for scholastic dishonesty. Other potential consequences can be particularly far-reaching, such as the creation of a disciplinary record that may very well impact future opportunities. Furthermore, incidents of scholastic dishonesty diminish the overall value of scholastic achievements on this campus and reflect poorly on the University

Helpful resources:

Office of the Dean of Students: [deanofstudents.utexas.edu/](http://deanofstudents.utexas.edu/)

Guide to Avoiding Plagiarism: [www.utexas.edu/cola/centers/cwgs/files/pdf-4/ai2012.pdf](http://www.utexas.edu/cola/centers/cwgs/files/pdf-4/ai2012.pdf)

### **Accommodations for Religious Holidays**

By UT Austin policy, you must notify the professor of a pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

### **Emergency Procedures**

In the event of an evacuation, follow the instruction of faculty or class instructors. Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Students requiring assistance in evacuation should inform their instructor in writing during the first week of class. Familiarize yourself with all exit doors of each classroom and building you may occupy and remember that the nearest exit door may not be the one you used when entering the building. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

Links to information regarding emergency evacuation routes and emergency procedures (including weather closures) can be found at: [www.utexas.edu/emergency](http://www.utexas.edu/emergency). For more information, contact the Office of Campus Safety and Security at 512-471-5767 or [www.utexas.edu/safety/](http://www.utexas.edu/safety/).

### **Behavior Concerns Advice Line (BCAL)**

The Behavior Concerns Advice Line is a service that provides The University of Texas at Austin's faculty, students and staff an opportunity to discuss their concerns about another individual's behavior. This service is a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP) and The University of Texas Police Department (UTPD). An individual can either call the line 512-232-5050 or report online at [www.utexas.edu/safety/bcal/](http://www.utexas.edu/safety/bcal/)

