

AST 321 The Future of Humanity
Fall 2016 (Unique Number 47550)

Schedule

Day 1 8/24 – Discussion of Syllabus, web site, Getting Acquainted Questionnaire, join Facebook Group AST309.

Day 2 8/26 – Self-introductions, astronomical context of life on Earth, overview of course topics. Elements of writing. Discussion of plagiarism. Watch Albert Bartlett "[Arithmetic, Population and Energy](#)" video lecture.

Day 3 8/29 – More elements of writing. Discuss Bartlett video. Linear versus exponential change (estimate pennies to fill room).

Day 4 8/31 – Evolutionary timeline, Sagan video *Cosmic Calendar*. Darwin notes, quotes. **Draft of first paper on Evolution, oral reading to peers.**

Day 5 9/2 – Kurzweil Chapter 1. Discussion of *The Singularity*, exponential growth of knowledge. Linear versus log, knee versus no knee. **Revised drafts to peers for written review.**

Labor Day 9/5

Day 6 9/7 – **Discussion of drafts with peers.**

Day 7 9/9 – Discussion of “unknown” versus “unknowable,” origin of life, chemistry to biochemistry, random change versus variation and selection. Discussion of Darwin *Origin of the Species*, *Descent of Man*. **First Paper Due, 5 pages on Evolution.**

Day 8 9/12 – Continued discussion of evolution, artificial, natural, sexual selection, recursion, complexity and emergent properties. Dawkins, *The Selfish Gene*, memes. Wikipedia Evolution link, Wikipedia Emergence link.

Day 9 9/14 – Kurzweil Chapter 2, Discussion of Moore’s law, computational evolution.

Day 10 9/16 – Continued discussion of human evolution, computational evolution; we are all Africans. Wikipedia Human Evolution link.

Day 11 9/19 – Discussion of current evolution of *homo sapiens*, contemporary evolutionary pressures.

Day 12 9/21 – Discussion of the biological revolution, genome, proteome.

Day 13 9/23 – Discussion of gene switches, epigenetic evolution, CRISPR/Cas9.

Day 14 9/26 – Discussion of Sociobiology, Evolutionary Psychology.

Day 15 9/28 – Discussion of Malthus, Paul Ehrlich, *The Population Bomb*.

Day 16 9/30 – Discussion of *The Singularity*, Chapter 3, capacity of the human brain.

Submit outline for second paper, Topic of Choice.

Day 17 10/3 – Further discussion of *The Singularity*, Chapter 3, capacity of the human brain.

Day 18 10/5 – Discussion of *The Singularity*, Chapter 4. Reverse engineering the brain, artificial intelligence, neural networks, deep learning, nanotechnology.

Day 19 10/7 – **Draft of second paper, oral reading to peers.**

Day 20 10/10 – Further discussion of *The Singularity*, Chapter 4. Reverse engineering the brain, artificial intelligence, neural networks, deep learning, nanotechnology. **Revised drafts to peers for written review.**

Day 21 10/12 – **Discussion of drafts with peers**

Day 22 10/14 – Videos, Rees, Bostrum TED talks (JCW on travel, Scialog).

Second Paper Due, 10 pages on Topic of Choice.

Day 23 10/17 – Discussion of *The Singularity*, Chapter 5, genomics, nanotechnology.

Day 24 10/19 – Further discussion of *The Singularity*, Chapter 5, genomics, nanotechnology.

Day 25 10/21 – **Guest Lecturer, Professor Bob Duke, on human psychology, AI, the brain, and consciousness.**

Day 26 10/24 – Discussion of *The Singularity*, Chapter 6, Impact (first half). Discussion of Bill Joy Wired article, the dystopian view.

Day 27 10/26 – Discussion of *The Singularity*, Chapters 7, consciousness.

Day 28 10/28 – Discussion of human consciousness, complexity, emergent properties. Can “machines” be conscious?

Day 29 10/31 – Discussion of *The Singularity*, Chapter 8, GNR promise and peril.

Day 30 11/2 – Discussion of Smart Weapons, prohibition/restriction.

Day 31 11/4 – Discussion of *The Singularity*, Chapter 9, critiques.

Day 32 11/7 – Discussion of the future of democracy, capitalism, justice, Lanier, *Who Owns the Future?*

Day 33 11/9 – Discussion of the Sharing Economy, robots taking jobs, universal basic income.

Day 34 11/11 – Singularity, Chapter 6 (second half). Discussion of prospects for interplanetary travel.

Day 35 11/14 – Discussion of The Fermi Paradox, speed of light, hyperspace.

Day 36 11/16 – Discussion of string theory, large extra dimensions, worm holes and time machines.

Day 37 11/18 – **Guest lecturer, Dr. Fritz Benedict, on exoplanets and the possibility of life elsewhere in the Universe.**

Day 38 11/21 – **Draft of third paper, oral reading to peers.**

Day 39 11/23 – Informal discussion of class topics.

Thanksgiving Break

Day 40 11/28 – Discussion of open issues. **Revised drafts to peers for written review.**

Day 41 11/30 – **Discussion of drafts with peers.**

Day 42 12/2 – Summary of third papers. **Third Paper Due, 10 pages on The Future of Humanity.**

Day 43 12/5 – Open discussion of class.