

Physics 80C

Spring 2009

COSMOLOGY AND CULTURE

Course Meets: Porter College 144, Wednesdays 7-10:30 pm (including ½ hour break)

Course Description: Introduction to today's scientific revolution in cosmology, which is producing the first picture of the universe as a whole that might actually be true. Ancient, medieval, renaissance, and modern Western cosmologies and their interactions with culture. Possible cultural and religious repercussions of the new cosmos.

Course Requirements: Homeworks, in-class quizzes and midterm, astronomy journal, student group projects and presentations. Optional: Astronomy Night on a clear, moonless night.

Requirements satisfied: Topical in Natural Sciences or Social Sciences (T7). Five units.

Instructor: Joel Primack, Professor of Physics – joel@physics.ucsc.edu
Office hours: ISB 318 Thursdays 2:30-3:30 pm, Phone: 831-459-2580,
Physics Department phone: 459-2329 fax: 831-459-3043

Course website: <http://physics.ucsc.edu/~joel/Phys80C.htm>
Password: Einstein (needed only for copyright material)

Textbook: Joel R. Primack and Nancy Ellen Abrams, *The View from the Center of the Universe: Discovering Our Extraordinary Place in the Cosmos* (Riverhead Books/ Penguin, 2006) – see also <http://ViewfromtheCenter.com>

Syllabus:

Week 1. April 1 – Introduction. What is cosmology? Scientific revolutions, truth, and progress. Common sense, intuition, and myth. The big picture.

Reading: Introduction and Chapter 1. Wrapping Your Mind Around the Universe

Week 2. April 8 – Changing Cosmologies

Reading: Chapter 2. From the Flat Earth to the Heavenly Spheres;
Chapter 3. From the Center of the Universe to No Place Special

Week 3. April 15 – Scientific Cosmology 1

Reading: Chapter 4. What Is the Universe Made of? *The Cosmic Density Pyramid*

Week 4. April 22 – Scientific Cosmology 2

Reading: Chapter 5. What Is the Center of the Universe? *The Cosmic Spheres of Time*

Week 5. April 29 – Scientific Cosmology 3; Student group project proposals due.

Reading: Chapter 6. What Size is the Universe? *The Cosmic Uroboros*

Week 6. May 6 – Before the Big Bang?

Reading: Chapter 7. Where Do We Come From? *The Cosmic Las Vegas*

Week 7. May 13 – Life in the Universe; in-class Midterm Exam

Reading: Chapter 8. Are We Alone? *The Possibility of Alien Wisdom*

Week 8. May 20 – Implications of Modern Cosmology for Society

Reading: Chapter 9. Think Cosmically, Act Globally

Week 9. May 27 – Implications of Modern Cosmology for Ourselves

Reading: Chapter 10. Taking our Extraordinary Place in the Cosmos

Week 10. June 3 – Course summary. Presentations of student group projects.

Recommended Books:

David S. Ariel, *The Mystic Quest: An Introduction to Jewish Mysticism* (Schocken, 1992)

Ian G. Barbour, *When Science Meets Religion* (Harper San Francisco, 2000)

Francis M. Cornford, *From Religion to Philosophy* (Princeton UP, 1991)

Michael Coogan, *Stories from Ancient Canaan* (Westminster, 1978)

Michael Dowd, *Thank God for Evolution* (Viking, 2008; Plume paperback, 2009)

Mircea Eliade, *Myths, Dreams, and Mysteries* (Harper, 1960)

Richard Elliott Friedman, *The Disappearance of God* (HarperCollins, 1996)

Richard Elliot Friedman, *Who Wrote the Bible?* (Harper & Row, 1987)

John Gribbin & Martin Rees, *Cosmic Coincidences* (Bantam Books, 1989)

Evan Hadingham, *Early Man and the Cosmos* (Univ. of Oklahoma Press, 1985)

Edward R. Harrison, *Masks of the Universe* (Macmillan, 1985)

Thomas S. Kuhn, *The Copernican Revolution* (Harvard U. Press, 1957)

C. S. Lewis, *The Discarded Image* (Cambridge U. Press, 1994)

David C. Lindberg and Ronald L. Numbers, *God and Nature* (UC Press, 1986)

James Lovelock, *Gaia: A New Look at Life on Earth* (Oxford U Press, 1979)

James Lovelock, *The Ages of Gaia* (Norton, 1988)

Daniel Matt, *The Essential Kabbalah* (Harper San Francisco, 1995)

Daniel Matt, trans., *Zohar: the Book of Enlightenment* (Paulist Press, 1983)

Daniel Matt, *God and the Big Bang* (Jewish Lights, 1996)

Kenneth R. Miller, *Finding Darwin's God* (Cliff Street Books, 2000)

Jeremy Naydler, *Temple of the Cosmos* (Inner Traditions, 1996)

Martin Rees, *Before the Beginning* (Helix Books, 1997)

Martin Rees, *Just Six Numbers* (Basic Books, 2000)

Martin Rees, *Our Cosmic Habitat* (Princeton University Press, 2001)

Dorothy L. Sayers, *The Mind of the Maker* (Harper San Francisco, 1979)

Lewis Thomas, *The Lives of a Cell* (Bantam, 1974)

Stephen Toulmin & June Goodfield, *The Discovery of Time* (U Chicago Press, 1982)