

RELIGION 332: SCIENCE AND RELIGION: SPRING, 2002

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TEXTS: *God, Humanity, and the Cosmos* (GHC); *Why God Won't Go Away* (WGWGA); handouts and films

COURSE CREDIT: 3 tests (45%); 1 major research paper on science and religion (25%)

1 resource guide on science/religion topic (10%)

1 reflective journal with essays on all 6 sections of course (15%)

Guides for all of these assignments will be furnished.

EXPECTATIONS: a) This course fulfills the sophomore writing requirement. Excellent writing will be expected, and students will be encouraged to consult with instructor at the several stages of preparing research paper.

b) All work for this course is under the Honor Code. Students are expected to do their own work.

c) Attendance is expected. Every unexcused absence over 3 will deduct 2 points from final average. Three tardies (coming in after attendance check) equal one absence.

SCHEDULE OF CLASS SESSIONS (subject to minor readjustment, if necessary)

DATE	TOPIC	READINGS & ASSIGNMENTS
I. OF MATH AND MYTH: How are science and religion related?		
Wed Jan 16	Introduction; film, "Mandelbrot and Julia Sets" (on complexity and chaos)	
Fri Jan 18	Science and religion, starting with wonder – Oliver lecture (handout)	
Mon Jan 21	MLK holiday – no class	
Wed Jan 23	Debate between science and theology	GHC, ch. 1
Fri Jan 25	Truth and reason in science and theology	GHC, ch. 2
Mon Jan 28	The truth of myth Film, "The Message of the Myth" – Joseph Campbell	
Wed Jan 30	Library session: How to do research on topics in religion	
II. QUARKS AND QUASARS: Quantum physics, cosmology		
Fri Feb 1	Relativity and quantum physics	GHC, ch 3 A,B,C – pp. 95-118
Mon Feb 4	Cosmology	GHC, ch 3 D,E,F – pp. 119-136
Wed Feb 6	Film, "Creation of the Universe" Topic for research guide assignment due	
Fri Feb 8	continuation of film, and discussion	
Mon Feb 11	Film, "Soul of the Universe"	
Wed Feb 13	Getting it together: review and discussion	
Fri Feb 15	TEST # 1	
III. GET A LIFE! Biology, evolution, complexity, and God-as-creator		
Mon Feb 18	Evolutionary biology	GHC, ch 4
Wed Feb 20	Film, "Evolving Soul"	
Fri Feb 22	What is life? Autopoiesis, complexity, and ecology (handouts)	
Mon Feb 25	Creation in Judaism, Christianity, Islam: GHC, ch. 9; Genesis, Chs. 1-3	
Wed Feb 27	God in nature: Taoism, Kabbala, Sufism (handouts) Research guides due	
Fri Mar 1	Getting it together: review and discussion	
IV. DO YOU MIND? Psychoneurobiology, consciousness, religious experience		
Mon Mar 4	Consciousness	GHC, ch 5 Term paper topics due
Wed Mar 6	Diving into the brain	WGWGA, chs 1,2,3
Fri Mar 8	Film on the brain	
Mon Mar 11 – Fri Mar 15: spring break, no class		
Mon Mar 18	"Religious" experiences	GHC, chs 4,5,6
Wed Mar 20	Film, "Zen: Alan Watts teaches meditation"	
Fri Mar 22	Neuroscience and theology	WGWGA, chs 7,8,9
Mon Mar 25	Getting it together: review and discussion	
Wed Mar 27	TEST # 2	

V. HOW IS GOD IN THE PICTURE? Doing theology and science together

Fri Mar 29	Christian models of God	GHC, ch 6, A, pp. 199-225	
Mon Apr 1	"Eastern" understandings of suchness	GHC, 6B, pp. 226-244	Term paper drafts due
Wed Apr 3	Does God "act" in the universe?	GHC, ch 7	
Fri Apr 5	Film, "Spirit and Nature"		
Mon Apr 8	Getting it together: review and discussion		

VI. USING SCIENCE AND RELIGION TOGETHER: Biotechnology, healing, and spirit

Wed Apr 10	Biotechnology and genetic manipulation	GHC, ch 11
Fri Apr 12	Religion and healing	(handouts)
Mon Apr 15	Film, "Healing and the Mind"	
Wed Apr 17	Getting it together: review and discussion	

VII. SHARING OUR WISDOM: class reports on research

Fri Apr 19	TERM PAPERS DUE (2-point penalty for each day late, including weekend days)	
Mon Apr 22	class reports on research	
Wed Apr 24	class reports on research	
Fri Apr 26	class reports on research	Reflective journals due
Mon Apr 29	review and discussion	

Tue, May 7, 2:00 – 5:00 p.m. : **TEST # 3**

RELIGION 332: SCIENCE AND RELIGION
GUIDELINES FOR REFLECTIVE ESSAYS
SPRING, 2002

For fifteen percent (15%) of credit in this writing-intensive course, students are asked to keep a reflection journal in which you will write essays in response to each of the six sections of this semester's syllabus:

- I. OF MATH AND MYTH: How are science and religion related?
- II. QUARKS AND QUASARS: Quantum physics, cosmology
- III. GET A LIFE! Biology, evolution, and God-as-creator
- IV. DO YOU MIND? Psychoneurobiology, consciousness, religious experience
- V. HOW IS GOD IN THE PICTURE? Doing theology and science together
- VI. USING SCIENCE AND RELIGION TOGETHER: Biotechnology, healing, and spirit

These six essays should be reflective in style, and may be written in first person, if appropriate.

You should respond to an issue in the particular section of the course that caught your attention, aroused your feelings, made you think, or puzzled you. (e.g., in Section 1, an issue might be, "If religious 'truth' isn't the same kind of 'truth' as scientific or mathematical truth, is the word 'truth' appropriate to both? What do these writers mean by 'truth,' and what do I myself understand to be 'truth'?")

Essays should be from three to ten pages each. Length doesn't matter as much as quality of thought and style in writing.

Essay for each section will be turned in two class days after a unit is finished. The instructor will return them, with comments, for you to keep in a folder. Toward the end of the course, you will turn in the whole folder with all the essays for evaluation.

The instructor will give some guidelines about possibilities for the various essays, but one of the main points of this reflective-writing assignment is to see what YOU are getting out of your reading and thinking. So there isn't one "right way" to do it!

SUGGESTIONS ON STUDYING FOR RELIGION COURSES

Hoyt Oliver, Oxford College of Emory University

I've been addicted to education all my life, so what I'm passing on to you all comes mostly out of experience; I'm not bothering to back it up with references to all the brilliant scholarly studies on learning. My grandmother was my first grade teacher; she'd gotten me hooked on reading by the time I was four, and I haven't been able to escape learning since. Anyway, it's fun to follow the Golden Rule of Teaching: "Do Unto Others As Was Done Unto You!" Here's some suggestions that have worked pretty well for me:

ON STUDYING TEXTBOOKS:

1. When you first get a book for a course, take a little time for a preview. Look at the table of contents to see where you're going. Then speed-read through the book, putting your mind in neutral, just flipping the pages as fast as suits you and letting key headings, terms, charts, pictures, etc. register without stopping to think. Depending on the book, the subject matter, and your already-existing familiarity with the field, this could take from three minutes to an hour.
2. Read the portion assigned on the course syllabus BEFORE the date it's to be discussed in class, BUT DON'T UNDERLINE ANYTHING ON FIRST READING. You don't yet know what are the key points.
3. After class discussion, or at a later time, go back for a more intentional study of the material. Underline or highlight, make marginal notes, whatever helps you. BUT DON'T LEAVE OUT STEP 4:
4. WRITE OUT FOR YOURSELF A CHART of the chapter or other unit you're studying. Put it in organized "picture" form, with clear sections, very short phrases summing up content, diagrams that capture the structure. There are several reasons to do this: a) you're having to be intentional, making the effort to identify the structure of the material; b) you're an active learner, using your hands as well as your eyes and ears; c) since you've made the effort to chart, chances are that when you come to be tested on the material if you recall a part of it, the whole picture will come back to you.
5. KEEP A SECTION OF YOUR NOTES FOR KEY TERMS AND CONCEPTS. In religion courses, you're likely to have to learn a large technical vocabulary of philosophical concepts and terms in foreign languages such as Latin, Greek, Hebrew, Sanskrit, and Chinese. Identify these terms, from boldface or italicized words in texts, terms presented in class, glossaries in textbooks, indexes, etc. Try writing out short, brilliant explanations of the terms.

ON STUDYING IN GENERAL, AND ON STUDYING FOR EXAMS:

1. Establish for yourself a disciplined, orderly schedule for studying, so that there's no question that at a certain time on a certain day, you'll be in your study-place doing just studying. (I myself don't follow this advice much.)
2. It's much better to come back to the same material two or three times in short sessions than to go past your attention-endurance-limit in long sessions.
3. KEEP UP WITH YOUR COURSES ALL ALONG, DON'T PUT OFF STUDYING AND TRY TO CRAM BEFORE SCHEDULED EXAMS! (I have little sympathy for students who try to stay up studying the night before a test, and then gripe because the electricity or the fire alarm went off.) It's much more relaxing and stress-reducing to do your studying regularly, review well in advance of a test, then the day or evening before an exam, quit studying and do something relaxing to you. (When I was an Oxford student, I used to camp out in the woods during finals with no textbooks, just coming in for tests.)
4. If you find it helpful to study together with fellow class members, STUDY TOGETHER EARLY, NOT ON THE NIGHT BEFORE A TEST. Save your final review to do on your own. One reason for this is that, if you're studying together and somebody asks about some information, when you give them an answer your mind goes, "Whew! I knew that one!" and LETS GO OF IT! So you need to come back to recharge the brain-cells by yourself after studying together.

Study suggestions for religion courses: page two

5. In Oliver courses, students get their exam papers back. There may be old tests floating around the campus for the course you're taking. I don't mind if you look at old exams, but BEWARE: IN MY RELIGION COURSES, THE QUESTIONS MIGHT BE THE SAME, BUT THE RIGHT ANSWERS COULD CHANGE EVERY SEMESTER!

ON WRITING PAPERS:

1. A major term paper assignment in a course should take weeks, not hours or days, to do. Start thinking and exploring right away, and give it time to emerge. My image of working on a paper or a lecture is a **funnel** – wide at the top, then narrowing down to the spout where it finally pours out. Start big, just exploring, and make lots of notes on scratch paper, and coming back to it often; keep on finding out relevant materials and jotting down ideas that pop into your head, without any clear decision yet on where you'll end up.
2. When you have that large mess of stuff to work with, look at it and see what pattern starts to emerge. Make tentative charts, grouping together related ideas in possible sections. Play with tentative outlines until you see what are the really important points you want to include.
3. There's a difference between **reports** and **term (research) papers**. Reports are like the assignment in Religion 100, where you learn about a religious group, visit a worship service, talk with people, then do a **descriptive report** on what you have learned. In a **research paper**, such as the major assignment for Religion 332 or Religion 200, there needs to be a **central thesis** which is discussed in an **analytical**, not a descriptive, way in the paper. In preparing research papers, you should work hard to focus on the central point you're trying to make. You should be able to state it in a sentence or two, and it should appear clearly in the first paragraph of your paper.
4. **You must give proper reference credit within your papers to every source of information used, in such a form that the reader can see clearly what are your own thoughts and what you have used from other sources.** This means making reference notes for information used indirectly or summarized, not just words quoted verbatim from your sources. You may use any of several standard forms of referencing: parenthetical, footnotes, endnotes, etc, just so your style is consistent. Papers should contain a page of Works Cited with proper bibliographic information. Consult with Library staff about guides to referencing styles.
5. You may receive help from the Writing Center with your written assignments. Use this resource!
6. Sorry, but I will no longer accept papers written in Urdu. I don't know that language very well.
7. Papers are to be turned in on the date specified in syllabus. There will be points-off penalties for every day turned in late (including weekends).

Religion 332: Science and Religion, Starting with Wonder
Oxford College of Emory University

SUGGESTED READINGS

This is a selected reading list. More suggested readings may be found in Notes and Bibliographies in books such as Gilkey, Nature, Reality, & the Sacred and Barbour, Religion and Science and on the Internet sites, <http://www.science-spirit.org>;
<http://www.counterbalance.org>; <http://www.metanexus.net>;
<http://www.spirituality-health.com>;

Also see these journals: Zygon; science & spirit; Spirituality & Health; Research News in Science and Theology

I. RELIGION AND SCIENCE AS WAYS OF UNDERSTANDING

A) SCIENCE AND THEOLOGY

Barbour, Ian. **Religion and Science: Historical and Contemporary Issues**. HarperSanFrancisco, 1997.

Brown, Warren F., Murphy, Nancy, and Maloney, H. Newton, eds. **Whatever Happened to the Soul?**

Scientific and Theological Portraits of Human Nature. Fortress, 1998.

Capra, Fritjof, and Steindl-Rast, David. **Belonging to the Universe: Explorations of the Frontiers of**

Science and Spirituality. HarperSanFrancisco, 1991.

Dyson, Freeman. **From Eros to Gaia**. Pantheon, 1992.

_____. **Infinite in All Directions**. Harper & Row, 1988.

Gilkey, Langdon. **Nature, Reality, and the Sacred: The Nexus of Science and Religion**. Fortress, 1993.

Margenau, Henry, and Varghese, Roy A., eds. **Cosmos, Bios, Theos**. Open Court, 1992.

Nasr, Seyyed Hossein. **Knowledge and the Sacred**. SUNY, 1989.

_____. **Religion and the Order of Nature**. Oxford, 1996.

Polkinghorne, John. **Serious Talk: Science and Religion in Dialogue**. Trinity, 1995.

B) HISTORICAL PERSPECTIVES ON SCIENCE AND RELIGION

Lindberg, David, and Numbers, Ronald, eds. **God & Nature: Historical Essays on the Encounter between**

Christianity and Science. University of California Press, 1986.

Richardson, W. Mark, and Wildman, Wesley J., eds. **Religion and Science: History, Method, Dialogue**.

Routledge, 1996.

Whitehead, Alfred North. **Science and the Modern World**. New American Library, 1925.

C) EPISTEMOLOGY AND SCIENTIFIC UNDERSTANDING

Kuhn, Thomas. **The Structure of Scientific Revolutions**. University of Chicago Press, 1970.

Polanyi, Michael. **Personal Knowledge**. Harper, 1964.

Whitehead, Alfred North. **Process and Reality**. Free Press, 1978 (c. 1929)

Religion 370R: Suggested reading list – page two

D) RELIGIOUS EXPERIENCE AND UNDERSTANDING

Buber, Martin, trans. Walter Kaufmann. **I and Thou**. Scribner's, 1970.

Campbell, Joseph. **The Inner Reaches of Outer Space: Metaphor as Myth and as Religion**. Harper, 1982.

_____, and Bill Moyers. **The Power of Myth**. Anchor, 1991.

Cousineau, Phil. **Soul: An Archaeology**. HarperSanFrancisco, 1994.

Eliade, Mircea. **The Sacred and the Profane**. Harcourt, Brace, 1959. (see also other Eliade writings)

Hick, John. **God Has Many Names**. Westminster, 1982.

James, William. **The Varieties of Religious Experience**. Random House, 1902.

Niebuhr, Richard. **The Meaning of Revelation**. Macmillan, 1960.

Otto, Rudolph. **The Idea of the Holy**. Oxford, 1958.

Soskice, Janet M. **Metaphor and Religious Language**. Clarendon, 1985.

Tillich, Paul. **Dynamics of Faith**. Harper, 1957.

E) FAR-OUT, PHILOSOPHICAL ATTEMPT AT A BIG PICTURE

Wilbur, Ken. **A Brief History of Everything**. Shambhala, 1996. (see also other Wilbur writings)

II. THEOLOGY: PROPOSALS FOR THEOLOGY THAT WORKS WITH SCIENCE

A) PROCESS, IMAGINATIVE, AND OTHER THEOLOGICAL ATTEMPTS

Cobb, John B., Jr., and Griffin, David Ray. **Process Theology: An Introductory Exposition**. Westminster, 1976

Hefner, Philip. **The Human Factor: Evolution, Culture, and Religion**. Fortress, 1993.

Kaufman, Gordon. **In Face of Mystery**. Harvard University Press, 1993.

McFague, Sallie. **Models of God**. Fortress, 1987.

Peacocke, Arthur. **Theology for a Scientific Age: Being and Becoming – Natural, Divine, and Human**.

Fortress, 1993.

Teilhard de Chardin, Pierre. **The Phenomenon of Man**. Harper, 1959.

B) BOOKS WHICH SEE SCIENCE SUPPORTING CHRISTIAN THEOLOGY

Templeton, John Marks. **The Humble Approach: Scientists Discover the Creator.** Continuum, 1996.

_____, and Robert L. Hermann. **The God Who Would Be Known: Revelations of the Divine in Contemporary Science.** Harper & Row, 1989.

_____ and _____. **Is God the Only Reality?** Continuum, 1994.

Religion 370R: Science and Religion: suggested reading: page three

III. RELIGIOUS, MYSTICAL, AND PHILOSOPHICAL PERSPECTIVES

Abhayananda, Swami. **History of Mysticism: The Unchanging Testament.** ATMA, 1996.

Bhagavad- Gita. trans. Barbara Stoler Miller. Bantam, 1986.

The Holy Bible. selections: Genesis 1-4, Psalms, Isaiah, Job, John, Paul's letters, etc.

Chuang Tzu: Basic Writings. trans. Burton Watson. Columbia University Press, 1964.

Cooper, David A. **God Is a Verb: Kabbalah and the Practice of Mystical Judaism.**
Penguin/Putnam, 1997.

Goodman, Felicitas D. **Ecstasy, Ritual, and Alternate Reality: Religion in a Pluralistic World.**
Indiana University, 1988.

The Essential Koran. trans. Thomas Cleary. HarperSanFrancisco, 1993.

Suzuki, Shinryu. **Zen Mind, Beginner's Mind.** Weatherhill, 1970.

Tao Te Ching: a New English Version. trans. Stephen Mitchell. HarperPerennial, 1991.

Lao-Tzu: Te Tao Ching. trans. Robert Henricks. Ballantine, 1989.

Underhill, Evelyn. **Mysticism.** Dutton, 1961.

Watts, Alan. **The Way of Zen.** Random House, 1985.

Wilbur, Ken. **Quantum Questions: Mystical Writings of the World's Great Physicists.**
Shambhala, 1985.

IV. PHYSICS

Davies, Paul. **God and the New Physics.** Simon & Schuster, 1983.

_____. **The Mind of God.** Simon & Schuster, 1992.

Gell-Mann, Murray. **The Quark and the Jaguar: Adventures in the Simple and the Complex.**
W. H. Freeman, 1994.

Polkinghorne, John. **The Faith of a Physicist.** Princeton University Press, 1994.

V. MATHEMATICS, CHAOS, AND ORDER

Gleick, J. **Chaos.** Viking, 1988.

Hofstadter, Douglas R. **Godel, Escher, Bach: An Eternal Golden Braid.** Basic Books, 1979.

Kosko, Bart. **Fuzzy Thinking: The New Science of Fuzzy Logic.** Hyperion, 1993.

Prigogine, I., and Stengers, I. **Order Out of Chaos.** Bantam, 1984.

Stewart, Ian. **Nature's Numbers: The Unreal Reality of Mathematics.** BasicBooks, Harper, 1995.

Religion 370R: Science and Religion: suggested readings, page four

VI. ASTRONOMY AND COSMOLOGY

Barrow, John D. **The Origin of the Universe.** HarperCollins, 1994.

Hawking, Stephen. **A Brief History of Time.** Bantam, 1988.

Kaku, Michio. **Hyperspace.** Oxford University Press, 1994.

Staguahn, Gerard. **God's Laughter: Man and His Cosmos.** Harper, 1992.

VII. LIFE, BIOLOGY, AND EVOLUTION

Capra, Fritjof. **The Web of Life: A New Scientific Understanding of Living Systems.** Doubleday, 1996.

Crick, Francis. **The Astonishing Hypothesis: The Scientific Search for the Soul.** Scribner's, 1994.

Dawkins, Richard. **River Out of Eden: A Darwinian View of Life.** BasicBooks, Harper, 1995.

Gould, Stephen Jay. **Wonderful Life: The Burgess Shale and the Nature of History.** Norton, 1989.

Kaufman, Stuart. **At Home in the Universe: The Search for the Laws of Self-organization and Complexity.** Oxford, 1995.

Leakey, Richard. **The Origin of Humankind.** BasicBooks, Harper, 1994.

Wilson, E.O. **Sociobiology: The New Synthesis.** Harvard University Press, 1978.

VIII. MIND AND CONSCIOUSNESS

Ashbrook, James B. **Brain, Culture, & the Human Spirit: Essays from an Emergent Evolutionary Perspective.** University Press of America, 1993.

_____, and Carol Rausch Albright. **The Humanizing Brain: Where Religion and Neuroscience Meet.** Pilgrim, 1997.

Austin, James H. **Zen and the Brain: Toward an Understanding of Meditation and Consciousness.** M.I.T. Press, 1998.

Damasio, Antonio R. **Descartes' Error: Emotion, Reason, and the Human Brain.** Putnam, 1994.

deCharms, Christopher. **Two Views of Mind: Abhidharma and Brain Science**. Snow Lion, 1997.

Dennett, Daniel C. **Kinds of Minds: Toward an Understanding of Consciousness**. BasicBooks, Harper, 1996

Gardner, Howard. **Frames of Mind: The Theory of Multiple Intelligences**. BasicBooks, Harper, 1985.

Goleman, Daniel. **Emotional Intelligence**. Bantam, 1995.

Hofstadter, Douglas, and Dennett, Daniel C. **The Mind's I: Fantasies and Reflections on Self and Soul**.
Bantam, 1982.

Maslow, Abraham. **The Farther Reaches of Human Nature**. Viking, 1972.

_____, **Religions, Values, and Peak Experiences**. Ohio University Press, 1964.

Religion 370R: Science and Religion: suggested readings, page five

Palmer, Helen, ed. **Inner Knowing**. Tarchner/Putnam, 1998.

IX: ECOLOGY: HEALTHY PLANET, HEALTHY HUMANS

Berry, Thomas: **The Dream of the Earth**. Sierra Club Books, 1988.

Fox, Matthew. **The Coming of the Cosmic Christ**. HarperSanFrancisco, 1988.

_____, and Sheldrake, Rupert. **Natural Grace: Dialogues on Creation, Darkness, and the Soul
in Spirituality and Science**. Doubleday, 1996.

McDaniel, Jay B. **With Roots and Wings: Christianity in an Age of Ecology and Dialogue**.
Orbis, 1995.

Santmire, H. Paul. **The Travail of Nature: The Ambiguous Ecological Promise of Christian Theology**.
Fortress, 1995.