

Religion, Science, and the Environment

Course Number: RELS 310

Institution: Saint Joseph College

Instructor: J. Milburn Thompson, Ph.D. (Harold T. McKone, Ph.D., Consultant and Guest Lecturer)

E-mail: jthompson@sjc.edu

This course fulfills a Religious Studies requirement (either in Belief or Practice) and the CORE requirement in Science and Technology.

I. REQUIRED READING

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

John F. Haught, Science and Religion: From Conflict to Conversation. Paulist Press, 1995.

Pamela Smith, What Are They Saying About Environmental Ethics? N.Y.: Paulist Press, 1997.

Other readings will be handed out to the class and some will be chosen from "suggested readings" by the student in order to complete an assignment.

II. COURSE DESCRIPTION AND OVERVIEW

This course will explore both the historical tension and the contemporary conversation between religion and science in the West, and then focus on ways that science and religion may have contributed to and may help resolve a variety of environmental problems.

Scientific developments, especially in Physics and Biology, question not only the religious worldview and long-held religious doctrines, but also the idea of God. Some assume that science has or will make God and religion irrelevant, but others, including both scientists and theologians, are presently involved in a rich dialogue between science and religion. This course will trace the historical tension between science and religion and listen to the contemporary conversation.

Technological achievements, rooted in the marriage of scientific developments with the economic desire for greater productivity and a better life, have produced environmental problems that possibly threaten the eco-system of Earth. Some contend that the worldview found in the Judeo-Christian tradition has contributed significantly to what

may be an environmental crisis. A scientific worldview may also share the responsibility for this crisis. What is the relationship between religious and scientific worldviews regarding "nature" and what responsibility do science and religion bear regarding environmental problems and their solutions? Are environmental changes significant or meaningless, a crisis or of little importance? The responses to these questions depend not only on scientific data, but on the meaning of the existence of humanity on Earth. There is a complex relationship between ultimate questions and practical issues involving science and religion. This course is concerned about the nexus between the theoretical and the practical regarding science and religion. It is also concerned about understanding environmental problems and concerns, and responding constructively to them.

III. COURSE OBJECTIVES

1. To introduce students to the historical and contemporary conflict and conversation between religion and the natural sciences.
2. To examine the doctrines of creation and providence and the theology of nature, in light of developments in science, especially cosmology and evolution.
3. To examine the responsibility of religion and science for giving rise to environmental concerns and the role of religion and science in responding to environmental problems.
4. To examine the various scientific, philosophical, ideological, and religious perspectives on environmental problems, with an eye toward their theological, ethical, practical, and policy implications.
5. To enable students to undertake a scientific and ethical analysis of a particular environmental issue from a consciously-chosen theoretical perspective and to make policy recommendations.

IV. REQUIREMENTS

1. *Attendance, Participation, and Assigned Readings.* Students are required to read the chapters or essays assigned each week and to come to class prepared to critically discuss the readings. **A one page summary and/or reflection on the main ideas or issues in the assigned readings is due at the beginning of each class.** Expect to be asked to summarize the readings for the class, to initiate discussion of the readings, and to turn in your summary sheet.

Because this course focuses on critical discussion of the issues your presence and participation are important and will influence your grade. Absence from class can jeopardize your grade. If a student should miss one-third of the class meetings, she will fail to meet the basic requirements for the course, and, ordinarily, she will fail the course.

2. A "*Research-Reflection*" paper on some aspect of the contemporary conversation between religion and science. This five page, double-spaced paper will be rooted in one

of the chapters or sections of Barbour's Religion and Science and Haught's Science and Religion and will incorporate at least two other essays on your topic, chosen from the suggested readings and/or from the bibliography. **Due Oct. 26.**

The following are some of the topics or questions your paper might address. (These are also good questions for the final exam, and they form a sort of outline of the first part of the course.)

1. Discuss the continuities and discontinuities between the medieval and the post-enlightenment worldviews, and the impact of these changes on the developments in science and in theology? (History of the conversation between science and religion.)
 2. Critically evaluate the four ways Barbour and Haught think science and religion relate to one another (conflict, independence/ contrast, dialogue/contact, and integration/confirmation).
 3. Discuss scientific method and theological method and the relationship between the two. (Method, Models, Epistemology, Philosophy of Science and of Religion.)
 4. Discuss the challenge of the theory of evolution to the doctrines of creation and providence and to human dignity, and the response of theology.
 5. Discuss the existence of God and the doctrine of creation in light of the Big Bang and contemporary cosmology. (Was the universe created?)
 6. Discuss the Anthropic Principle, its scientific status and theological response.
 7. Discuss the nature of God in light of contemporary scientific theories, such as, cosmology, quantum physics, chaos theory and complexity, and evolutionary biology. Can a scientist believe in a personal God?
 8. Discuss God's activity in the world in light of contemporary physics and the theory of evolution. (Can a scientist believe in miracles?)
 9. Discuss process thought in relation to contemporary scientific theories and contemporary theology.
 10. Discuss human nature in light of contemporary scientific theories and contemporary theology.
 11. Discuss various scientific and theological conceptions of nature.
3. *Group project paper and class presentation.* Working in pairs or small groups, students will choose an environmental issue (such as: endangered species, overfishing, resource consumption, tropical forests, soil erosion, climate change, population growth, waste disposal, energy use, nuclear power, etc.), investigate it, analyze it, and suggest

ways that individuals and governments might respond to it. Each group will develop their research and analysis into a paper (@ 10 pages), and present their research and analysis to the class (@ 15 minutes). An essential ingredient in each of these projects is the integration of theoretical issues in science and theology with the practical issue under discussion. The group's theoretical perspective must be consciously articulated and defended, and it must consistently influence its scientific and ethical analysis and policy recommendations.

All members of the class must turn in a one-page summary/ reflection paper on the content of the group presentations at the beginning of the next class.

Students must turn in a proposal for their group project (topic and members of the group) on **Sept. 21**. The professor will develop a schedule of presentations, which will begin on **Nov. 16**. Papers are due **Nov. 30**.

4. *Final Exam*. There will be a final exam, in essay format, on the material covered in the course. **Dec. 14**.

V. MARKING

Chapter/essay summaries and participation 25%

Religion & Science research-reflection paper 30%

Group Project on environmental issue 30%

Final Exam 15%

VI. COURSE OUTLINE

PART I RELIGION AND SCIENCE

The first part of the course focuses on theoretical and doctrinal issues in the conversation between science and religion. The Required Readings will generally be chosen from Haught, *Science and Religion* and Barbour, *Religion and Science*. In general, Barbour expands on issues covered by Haught with more depth and detail regarding academic debate. Usually it will make sense to read Haught first, then Barbour. Note the very helpful "**Glossary**" in Barbour, pp. 357-60. If a required reading is not in one of the texts, it will be handed out to you.

"Suggested Reading" points to essays and books that develop the topic with more depth. These essays are recommended for the student who wants to understand the issue better or explore the issue further. "Suggested Readings" can be good resources for your "Research-Reflection" paper. Four texts are referred to often under "Suggested Reading" and will be put on reserve in the library. Each of these four texts also suggests resources for further reading and research.

James E. Huchingson. *Religion and the Natural Sciences: The Range of Engagement*. Harcourt Brace, 1993.

Alister E. McGrath. *Science and Religion: An Introduction*. Blackwell, 1999.

John Polkinghorne. *Science and Theology: An Introduction*. Fortress, 1998.

W. Mark Richardson & Wesley T. Wildman. *Religion and Science: History, Method, Dialogue*. Routledge, 1996.

There is also a more extensive bibliography for each of the two major sections of the course at the end of this syllabus. Most of these resources are in the SJC library--thanks, in part, to the Templeton Foundation grant. A key journal in this field is *Zygon: Journal of Religion and Science* (available at Hartford Seminary or Trinity College Libraries).

Sept. 7 Introduction, syllabus.

Raising the conflict between science and religion and beginning the conversation: a discussion with a panel of scientists, reflecting on religion and faith.

Sept. 14

1. *The History of the Tension between Religion and Science: Galileo, Newton, and Darwin: Scientific Challenges and Religious Adaptation. From a Medieval to a Modern Worldview.* What are the continuities and discontinuities between the medieval and post-enlightenment worldviews? What was and is the impact of developing scientific knowledge on theology and religion in the West?

READ Barbour, Pt. I, Chs. 1, (2 skim), 3, pp. 3-73.

WRITE One page summary/reflection.

Suggested Reading:

J. Hedley Brooke, "Science and Theology in the Enlightenment," in *Religion and Science: History, Method, Dialogue*, eds. W. M. Richardson and W.J. Wildman, pp. 7-28.

Claude Welch, "Dispelling some Myths about the Split Between Theology and Science in the Nineteenth Century," in Richardson and Wildman, pp. 29-40.

Alister McGrath, *Science and Religion: An Introduction*, Ch 1.

John Hedley Brooke, *Science and Religion: Some Historical Perspectives*. (Cambridge University Press, 1991).

David C. Lindberg and Ronald L. Numbers, eds. *God & Nature: Historical Essays on the Encounter between Christianity and Science*. Univ. of CA, Berkeley, 1986.

2. Scientific *Method* and Theological Method: *Ways of Relating the Two*: Conflict, Contrast (independence), Contact (dialogue), and Confirmation (integration).

READ Haight, Ch. 1, pp. 9-26. Barbour, Ch. 4, pp. 77-105.

WRITE One page summary/reflection.

Suggested Reading:

Ted Peters, "Theology and Science: Where Are We?" *Zygon: Journal of Religion and Science* 31 (June, 1996), pp. 323-43 (on reserve).

Wesley J. Wildman, "The Quest for Harmony: An Interpretation of Contemporary Theology and Science," in Richardson and Wildman, pp. 41-60.

Holmes Rolston, III, "Science, Religion, and the Future," in Richardson and Wildman, pp. 61-83.

Group Project Proposal Due Sept. 21.

Sept. 21 Scientific *Method* and Theological Method: *the Relationship between Ways of Knowing* (epistemology). Models and Paradigms in Science and in Religion. Philosophy of Science and of Religion. What is the relationship between scientific method and theological method? Panel presentation representing science, philosophy, and theology.

READ Langdon Gilkey, "Theories in Science and Religion," from Huchingson, pp. 61-66. Barbour, Ch. 5 pp. 106-136.

WRITE One page summary/reflection.

Suggested Reading:

Barbour, Ch. 6, pp. 137-61.

Arthur Peacocke, *Theology For a Scientific Age*. (SCM Press, 1990, 1993), pp. 1-24.

John Polkinghorne, *Science and Theology*, Ch. 1.

James E. Huchingson, *Religion and the Natural Sciences: The Range of Engagement*. Pt I esp. Midgley and Schilling; Pt. II esp. Schmidt, MacCormack, Langer, and Swimme.

Nicholas Wolterstorff, "Theology and Science: Listening to Each Other," in Richardson and Wildman, pp. 95-104, and Part II.

Alister McGrath, *Science and Religion: An Introduction*, Chs. 2, 3, and 7.

Barry Gower, *Scientific Method: An Historical and Philosophical Introduction*. (Routledge, 1997).

Sallie McFague, *Metaphorical Theology*. (Fortress Press, 1997).

Ian Barbour, *Myths, Models, and Paradigms*. (Harper & Row, 1974).

Sept. 28 *Cosmology and Creation*. Was the Universe Created? Is the Doctrine of Creation compatible with the Big Bang Theory? Design and Chance. Does the Universe Have a Purpose? The Anthropic Principle and Creation. Video: "The Powers of Ten."

READ Barbour, Ch. 8, pp. 195-220. Haught, Chs. 5 & 6, pp. 100-41, and 8, pp. 162-82.

WRITE One page summary/reflection.

Suggested Reading:

John Marks Templeton, ed., *Evidence of Purpose: Scientists Discover the Creator*. (Continuum, 1994), Chs. 5-8.

John Horgan, "In the Beginning..." *Scientific American* (Feb., 1991), pp. 117-25.

Alister McGrath, *Science and Religion*, "Physics and Cosmology," pp. 178-86.

James Huchingson, ed., *Religion and the Natural Sciences*, Part IV.

Richardson and Wildman, *Religion and Science*, Case Study I "Cosmology and Creation."

Robert Jastrow, *God and the Astronomers*. (Norton, 1992).

Mark W. Worthing, *God, Creation, and Contemporary Physics*. (Fortress Press, 1996).

Oct. 5 *Evolutionary Biology and Creation*. The Challenge of the Theory of Evolution to the Doctrines of Creation, Providence, and Human Dignity, and the Response of Theology. Guest lecturer invited.

READ Barbour, Ch. 9 pp. 221-249. Haught, Ch. 3, pp. 47-71. Michael D. Lemonick and Andrea Dorfman, "Up From the Apes," *Time* 154 (Aug. 23, 1999), pp. 50-59 (incl. S.J. Gould).

WRITE One page summary/reflection.

Suggested Reading:

Holmes Rolston III, "Life: Religion and the Biological Sciences." *Science and Religion: A Critical Survey*. (Temple Univ. Press, 1987), pp. 81-150.

James Huchingson, ed. *Religion and the Natural Sciences*, Part V "Creation and Evolution."

Alister McGrath, *Science and Religion*, Ch. 5 "Creation and the Sciences," and "Biology" pp. 186-193.

Arthur Peacocke. *God and the New Biology*. (Dent, 1986).

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

Oct. 12 *Physics and Metaphysics, God's Nature and Activity in the World*. Can a Scientist Believe in a Personal God? What Sort of God (Divine Nature) is Compatible with Contemporary Physics (Quantum Theory, Relativity, Chaos Theory, Complexity) and Evolutionary Biology? Is God's Activity in the World (Divine Providence) Compatible with the Laws of Science? Can a Scientist Believe in Miracles? Process Thought and Concepts of God and Nature. Does Process Thought Offer Theology a Plausible Response to the Challenges of Science? Guest lecturer invited.

READ Barbour, Ch. 7, pp. 165-94; "Process Theology," pp. 293-304; Ch. 12, pp. 305-332; Haught, Ch. 2, pp. 27-46; Ch. 7, pp. 142-61.

WRITE A one-page summary reflection.

Suggested Reading:

Gregg Easterbrook, "Science Sees the Light," *The New Republic* (Oct. 12, 1998).

John Polkinghorne, *Science and Theology*, Chs. 2, 4, 5.

James Huchingson, ed. *Religion and the Natural Sciences*, Part III, Einstein and Tillich, and "Miracles."

Richardson and Wildman, *Religion and Science*, Case Study II "Chaos Theory and Divine Action," and Case Study III "Quantum Complementarity and Christology."

John Marks Templeton, ed., *Evidence of Purpose: Scientists Discover the Creator*. (Continuum, 1994), Chs. 1-4.

John Polkinghorne, *Faith of a Physicist*. (Fortress Press, 1996) and *Belief in God in an Age of Science*. (Yale University Press, 1998).

John B. Cobb and David Ray Griffin, *Process Theology: An Introduction*. (Westminster, 1976), esp. Ch. 1.

Oct. 19 *Human Nature and the Sciences*. Genetics, Behaviorism, Sociobiology, and the Possibility of Transcendence. Are Humans Free to Choose? Does Life Have a Transcendent Meaning and Purpose? Is Life Reducible to Chemistry? Theological Anthropology

READ Barbour, Ch. 10, pp. 253-280; Haught, Ch. 4, pp. 72-99.

WRITE One page summary/reflection.

Suggested Reading:

John Polkinghorne, *Science and Theology*, Ch. 3.

Alister McGrath, *Science and Religion*, "Psychology," pp. 193-205.

James Huchingson, ed. *Religion and the Natural Sciences*, Part V "The Approach of Sociobiology."

Richardson and Wildman, *Religion and Science*, Case Study V "Molecular Biology and Human Freedom;" Case Study VI "Social Genetics and Religious Ethics."

Arthur Peacocke, *Theology for a Scientific Age*, pp. 213-254.

Holmes Rolston, III. *Genes, Genesis, and God*. (Cambridge Univ. Press, 1999).

Bernard Haring, *Ethics of Manipulation: Issues in Medicine, Behavior Control, and Genetics*. (Seabury Press (Crossroad), 1975), pp. 109-136.

Religion & Science Paper Due October 26.

PART II RELIGION, SCIENCE, AND THE ENVIRONMENT

The second part of the course focuses on the interplay among religion, science, and the environment. The questions here are more ethical and practical, yet the theoretical questions from the first part of the course will serve as a backdrop for this exploration. If the universe has no purpose or direction, then why care about environmental issues? Is human dominance (anthropocentrism) intrinsic to the Christian doctrine of creation? Have the attitudes fostered by the Judeo-Christian traditions resulted in the environmental crisis? Have the attitudes fostered by the rise of science in the West resulted in the environmental crisis? Is there a scientific basis for the various environmental issues? Can religion and/or science play critical roles in responding to environmental issues?

The principal text for this part of the course is Pamela Smith, *What Are They Saying About Environmental Ethics*. Other required readings will be handed out. Since pairs or groups of students are required to research an environmental issue, analyze it, present it to the class, and write a paper on it, each student will be doing further reading. There is a

bibliography for this section of the course at the end of this syllabus. Smith's book also has a bibliography. A key journal for this section of the course is *Environmental Ethics*. Books listed under "suggested reading" will be on reserve.

Oct. 26 *The Environmental Crisis? Is There Scientific Evidence of Environmental Problems? Is Earth in Crisis? Have Scientific and Religious Worldviews Played a Role in Causing Environmental Problems? What are the Issues that Constitute an Environmental Crisis?*

READ Haught, Ch. 9, pp. 183-201; Lynn White, "The Historical Roots of Our Ecological Crisis," *Science* 155 (March 10, 1967), pp. 1203-07; J. Milburn Thompson, *Justice and Peace: A Christian Primer*. (Orbis Books, 1997), Ch. 3, pp. 61-87.

WRITE One page summary/reflection.

Suggested Reading:

Eileen Flynn, "An Endangered Planet," in *Cradled in Human Hands: A Textbook on Environmental Responsibility*. (Sheed & Ward, 1991), Ch. 1.

David Kinsley, "Christianity as Ecologically Harmful, and as Ecologically Responsible," in *Ecology and Religion*. (Prentice Hall, 1995), Chs. 8 & 9.

Nov. 2 No Class. Faculty Development Day.

Nov. 9 Various Philosophical and Theological Perspectives on Nature, the Environment, and Ecology.

READ Smith Whole Book, pp. 1-91.

WRITE a one-page summary/reflection.

Suggested Reading:

Roger S. Gottlieb, ed., *This Sacred Earth: Religion, Nature, Environment*. (Routledge, 1996), Parts I-V.

Drew Christiansen and Walter Glazer, eds., *And God Saw That It Was Good: Catholic Theology and the Environment*. (U.S. Catholic Conference, 1996).

David Kinsley, *Ecology and Religion*, Chs. 10-17.

Nov. 16 Group Presentations

Nov. 23 Group Presentations

WRITE One page summary/reflection on Nov. 16 presentations

Nov. 30 Group Presentations

WRITE One page summary/reflection on Nov. 23 presentations

Group Papers on an Environmental Issue Due November 30.

Dec. 7 Creating Change: Liturgy, Politics, and Spirituality.

READ Richard N. Fragomeni, "Liturgy at the Heart of Creation: Towards an Ecological Consciousness in Prayer," in Fragomeni and J.T. Pawlikowski, eds. *The Ecological Challenge* (1994), pp. 67-82.

WRITE A one-page summary/reflection.

WRITE One page summary/reflection on Nov. 30 presentations

Suggested Reading:

Gottlieb, *This Sacred Earth*, Parts VI & VII.

Richard N. Fragomeni & John T. Pawlikowski, eds., *The Ecological Challenge: Ethical, Liturgical and spiritual Responses*. (Liturgical Press, 1994), Parts III & IV.

Kevin W. Inwin, "The Sacramentality of Creation and the Role of Creation in Liturgy and Sacraments," in Christiansen and Glazer, eds., *And God Saw That It Was Good*, pp. 105-46.

Dec. 14 *Final Exam*.

This syllabus is a guide to the course and is subject to change. Academic integrity and honesty are, of course, expected of all students.

SUMMARY OF ASSIGNMENTS

A one-page summary/reflection paper is due, except on Sept. 7 and Nov. 16. Two one-page summary/reflection papers are due on Sept. 14 and Dec. 7.

Sept. 7 Introduction, panel presentation.

Sept. 14 **READ** Barbour, Pt. I, Chs. 1, (2 skim), 3, pp. 3-73.

READ Haught, Ch. 1, pp. 9-26. Barbour, Ch. 4, pp. 77-105.

Two one-page summary reflection papers due.

Sept. 21 **READ** Langdon Gilkey, "Theories in Science and Religion," from Huchingson, pp. 61-66. Barbour, Ch. 5 pp. 106-136.

Group Project Proposal Due Sept. 21.

Sept. 28 **READ** Barbour, Ch. 9 pp. 221-249. Haught, Ch. 3, pp. 47-71.
Lemonick/Dorfman/Gould.

Oct. 5 **READ** Barbour, Ch. 8, pp. 195-220. Haught, Chs. 5 & 6, pp. 100-41, and 8, pp. 162-82.

Oct. 12 **READ** Barbour, Ch. 7, pp. 165-94; "Process Theology," pp.293-304; Ch. 12, pp. 305-332; Haught, Ch. 2, pp. 27-46; Ch. 7, pp. 142-61.

Oct. 19 **READ** Barbour, Ch. 10, pp.253-280; Haught, Ch. 4, pp. 72-99.

Oct. 26 **READ** Haught, Ch. 9, pp. 183-201; Lynn White, "The Historical Roots of Our Ecological Crisis," *Science* 155 (March 10, 1967), pp. 1203-07; J. Milburn Thompson, *Justice and Peace: A Christian Primer*. (Orbis Books, 1997), Ch. 3, pp. 61-87.

Religion & Science Paper Due October 26.

Nov. 2 No Class. Faculty Development Day.

Nov. 9 **READ** Smith Whole Book, pp. 1-91.

Nov. 16 Group Presentations

Nov. 23 Group Presentations

Nov. 30 Group Presentations

Group Papers on an Environmental Issue Due November 30.

Dec. 7 **READ** Richard N. Fragomeni, "Liturgy at the Heart of Creation: Towards an Ecological Consciousness in Prayer," in Fragomeni and J.T. Pawlikowski, eds. *The Ecological Challenge* (1994), pp. 67-82.

Two one-page summary/reflection papers due.

Dec. 14 **Final Exam**