Science, Religion, & the Search for God: An Interdisciplinary Seminar

Course Number:
IDC 201

Institution: Bellarmine University

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Seminar Description

Science and religion--two areas of human thought that have had a profound impact on our existence. What do science and religion have to say about us, about our universe? Are these seemingly disparate disciplines at all compatible? Do they have anything in common? Both seem to have the same goal, the pursuit of truth, but can one inform the other? Some have suggested that science and religion don't mix, that they may coexist but deal with distinct areas of human thought and should be kept separate. Others have suggested that the relationship between science and religion is adversarial and that it is not possible to follow both. Still others have suggested that science and religion may not only coexist, but may be partners with a naturally symbiotic relationship.

This is a course about questions--questions about religion, questions about science, questions about reality. We cannot underestimate the importance of these questions. Throughout history, questions have played a significant role in the development of the human intellect and they should play an important role in your personal development. Consider the following quote from the movie "The Matrix." Early in the movie, Trinity says to Neo (our hero)

"I know why you're here--You are looking for something. I know. I was looking for an answer. It's the question that drives us, Neo. It's the question that brought you here."

It's the questions that should drive you, too. But what are those questions? In this course, we will examine questions that scientists, theologians, and philosophers have been debating for centuries. In the process, we will examine personal questions that you may have concerning issues of science and religion.

This will be a journey, of sorts, through a landscape of historical and personal perspectives. Along the way, we will explore the historical development of modern science. What role did religious thought play in this development? What are the sources of conflict between science and religion? Why, in fact, did these conflicts arise? Are these conflicts natural or can a true symbiotic dialogue be developed between these disciplines?

As we continue our exploration through 20th century thought, we will closely examine some of the important philosophical and theological questions raised by developments in relativity and quantum theory. These questions include: Is there such a thing as objective reality? Is quantum mechanics, as Einstein suggested, an incomplete picture of reality? Are there inaccessible hidden variables that determine the outcomes of all experiments? Is it true that "God does not play dice?" Or, is it true, as suggested by Stephen Hawking, that "God not only plays dice, he also sometimes throws the dice where they cannot be seen." Is, as one interpretation of quantum mechanics suggests, the moon not there if you are not looking at it? Or, perhaps more to the point, do you exist if we don't see you? Is it possible for a cat to be both dead and alive at the same time? How does this relate to mind and consciousness? How did the universe begin and how will it end? Why is the universe the way it is? Is the universe the result of accident or design? What is matter? What is mind, and can it survive death? Is there such a thing as free will? What are time and space, and how do they relate to ideas about God? Is it possible to know the truth?

This course is about ideas--some simple, some complex. You may find that the ideas presented here cause you to reevaluate your belief system or you may find that your belief system remains intact. In any event, we hope that you emerge from this course with a greater appreciation for the significant philosophical issues impacting scientific and religious thought in our world today. Bon appetit!

Seminar Organization

At the beginning of the semester, we examine our individual belief systems and explore basic definitions: What is science? What is religion? Do you believe that they are compatible? How do science and religion fit into your current world-view?

After completing this self-examination, we will begin an exploration of these issues from a historical perspective. Our readings will focus on the development of science with special attention paid to the theological and philosophical views representative of each era. We will look at the evolving relationship between science and religion, exploring different models presented by philosophers and theologians. Toward the end of the semester, we will concentrate on 20th century developments in relativity and quantum theory. We will explore the philosophical and theological implications of these theories through our readings and through an examination of how these issues are depicted through popular culture (films, television, plays, fiction, poetry, etc.). Questions we will consider include

- Can science prove or disprove the existence of God?

- How do the ideas generated by these theories and their various interpretations affect our views of reality and of God?

- Can science explain our existence?

- Are there questions that ultimately science cannot answer? Should science even attempt to answer these questions?

At the end of the semester, we will reexamine questions that we asked at the beginning of the course. Have your views of reality changed? What about God and religion? Has your belief system changed? What can you say about the compatibility between scientific and religious thought?

Seminar Objectives

Through your experiences in this seminar, you will

- examine the historical development of science

- examine the historical interaction between religion and science

- explore contemporary issues at the interface between science, philosophy, and religion

- examine and evaluate the basic tenets of your own world-view

- examine the relationship between religion and science as portrayed through popular culture

Consistent with the objectives of a 200-level core curriculum course, you will

- recognize and practice important higher-level reading skills

- recognize and practice higher-level critical thinking skills

- learn to engage in productive small-group work

- develop an active/interactive in-class learning style

- express learning in both oral presentations and formal/informal written work

This course is designed to provide you with the tools necessary to meet the following general curriculum expectations as outlined in the University catalog:

Philosophical Foundation

Students should be able to demonstrate a philosophical foundation by

- investigating how philosophy identifies and responds to the ultimate questions that the experience of being evokes

- recognizing philosophical assumptions in other disciplines

Scientific Knowledge

Students should be able to demonstrate scientific knowledge by

- Being aware of the impact and relevance of science upon their lives

Thinking Skills

Students should be able to demonstrate thinking skills by

- recognizing the strengths and weaknesses of particular models of inquiry

- generating new ideas, concepts, possibilities, and interpretations and connecting apparently disparate ideas

- analyzing their thinking processes, including how their experiences, feelings, ideas, and intuition affect thinking

Comprehensive Integration

Students should be able to demonstrate comprehensive integration by

- discovering the connections among disciplines

- identifying and critiquing the underlying values in different world views

Given the above list of objectives and expectations, it should come as no surprise that this course will emphasize reading, discussion, and writing.

Seminar Resources

Books

Coming of Age in the Milky Way, Timothy Ferris
God and the New Physics, Paul Davies
When Science Meets Religion: Enemies, Strangers, or Partners, Ian Barbour

Important Web Sites

Physics 2000, University of Colorado, http://www.colorado.edu/physics/2000/index.pl
Stephen Hawking's Universe, PBS, http://www.pbs.org/wnet/hawking/html/
Science and Religion Meta Library, Counterbalance Foundation, http://www.meta-library.net/

Additional resources will appear either on the "Science and Religion" Blackboard Web page or through Library Reserve (videos will be available through the library). To access the class Web page, go to http://courseinfo.bellarmine.edu. Enter your ID and password. You will be directed to the Blackboard "Portal" page. The hyperlink to this course should appear on the page.

Grading

Each class will be discussion-based (with some videos mixed in for good measure). There will be few lectures (Hooray!!) and no exams (Yippee!!)! You will be assigned a specific reading for each class period. A panel of three students will be assigned to preside over each day's discussion. Be forewarned: We will serve only to clarify points of confusion. If discussion comes to a screeching halt, do not expect us to interrupt the sounds of silence. It is the responsibility of the student panel to keep the discussion going.

Beyond the classroom discussions, we expect you to critically assess the readings through a variety of writing assignments. These assignments and the corresponding grading scheme are described in more detail below.

Online Discussion - 15%

Throughout the semester, we will post discussion topics on the Blackboard Page. Some of the discussion topics will be suggested by student panels. You are required to provide a thoughtful response to each topic. We also expect you to respond to comments made by other students in the class. Panels will be responsible for moderating their discussion topics.

Online Quizzes - 20%

Before each class, you must submit complete an online quiz based on the assigned reading. Quizzes will be posted through the class Blackboard site.

Short Papers (3) - 20%

Each of these assignments will be based on questions related to class readings. You will submit each response, roughly four to six pages in length, as a Microsoft Word document via the Blackboard Digital Dropbox. You will write three short papers during the semester.

Class Participation - 10%

Participation in classroom discussions is an important component of this course. The entire class period will be devoted to the discussion of the assigned reading. We expect everyone to have read the material and to participate in the discussions. Preparation for class discussions should include reading materials beyond the assigned readings. Click here for discussion guidelines.

Panel Participation - 15%

A panel of three students will be designated to facilitate each day's discussion. We expect panel members to develop a creative plan to motivate discussion. In addition, We encourage the use of outside sources and we expect panels to use PowerPoint for their presentations. Each member of the team should contribute to the discussions. Your team is also responsible for initiating and moderating an online discussion based on relevant readings. Check the schedule for panel assignments. Click here for panel guidelines.

Final Project - 20%

The semester will conclude with a final project that should tie together many of the ideas presented in course. Be original! Let the ideas presented in the reading be a springboard to further research; we expect you to do further reading. Your final project does not have to be a formal paper. It may take the form of art, music, poetry, fiction, video, a Web Page, or anything else you can think of (pending approval of the instructor, of course). We encourage creativity and will provide addition guidance for those who choose to develop a creative project. If you choose to write a formal paper, it should be roughly twelve to fifteen pages in length. You will use PowerPoint to present a summary of your project to the entire class during the Final Examination Period. This presentation should last seven minutes, followed by a 3-minute discussion period.

Attendance

You are expected to attend all classes. You are permitted two (2) unexcused absences. For each unexcused absence in excess of two, you will be penalized one letter grade. Five (5) unexcused absences will result in a failing grade.

Academic Honesty

Students are expected to obey all of the rules for academic honesty, as expressed in the Student Handbook. Specifically, the prohibitions of cheating and plagiarism shall be strictly enforced. The first violation will result in a grade of F on the specific assignment and the second violation will result in a failing grade for the entire course.

Disability Accommodation Policy

Students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Disability Services Coordinator (Room 225 Horrigan Hall or 452-8150).

Tentative Schedule

A detailed schedule for each class is offered below.

January 8 Course Introduction

Basic questions: What is science? What is religion? What is the relationship between science and religion? Students will write a brief summary of their personal answers to these questions.

January 10 Introduction to Technology

Students will meet in the Online Classroom to learn about technology and Web Resources used in the course.

January 15 The Four Views of Science & Religion

Reading: Barbour, *When Science Meets Religion*, Preface, Introduction, Chapter 1
Lawrence Krause, *Science & Religion Don't Mix*, The Chronicle of Higher Education

Barbour's text introduces his fourfold typology. The Krause article presents an argument against the formation of Science and Religion courses; he argues for the Independence Model. Is the Krause model a reasonable view or are both science and religion best served by a relationship that permits dialog and integration?

January 17 Concepts of Space: A Historical Perspective I

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 1 - 2
Video: *Stephen Hawking's Universe*, Part 1

This begins our historical exploration of scientific thought concerning the nature of space. Part 1 of *Stephen Hawking's Universe* (from the PBS series) serves as an excellent background for this conversation. Our opening discussion will focus on ideas proposed by ancient Greek philosophers.

January 22 Concepts of Space: A Historical Perspective II

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 3 - 4

We continue our historical examination with discussions of the heliocentric concept of space. How did belief in God impact the scientific theories of the time?

January 24 Concepts of Space: Galileo & Newton

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 5 - 6

Here, we concentrate on these two influential scientists, their work and their relationship with religion. Did religious belief shape the development of their scientific theories? How did science affect their religious belief?

January 29 Concepts of Space: The Solar System, Stars, & Deep Space

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 7 - 9

This discussion will focus on developments in the 18th and 19th centuries as scientists begin to comprehend the immensity of space. What conceptions of the relationship between science and religion emerged during this time? We will examine the philosophical and theological ramifications of corresponding revelations.

January 31 Concepts of Space: 20th Century Developments

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 10 - 11

We begin our first discussion of Einstein's theories of special and general relativity (we will discuss both in more detail later in the semester). From this we move on to the birth of the Big Bang Theory. Is the Big Bang theory consistent with a view of God the Creator?

February 5 Concepts of Space: A Historical Perspective II

Video: *Stephen Hawking's Universe*, Part II

We conclude section of the course with a discussion of the Hawking video, which details the development of the Big Bang Theory. How does the physics community view the relationship between science and religion?

February 7 Concepts of Time

Reading: Ferris, *Coming of Age in the Milky Way*, Chapter 12

Here, we begin a historical exploration of concepts of time. We will examine the views of ancient Greek philosophers and the evolution of theological discourse on this topic up until the time of Darwin. How were concepts of time shaped by religious thought? Does creation in time imply a Creator?

February 12 Concepts of Time & Evolution

Reading: Ferris, *Coming of Age in the Milky Way*, Chapter 13

We will examine the biological and geological evidence that led to the development of evolution theory. What has been the response of religious groups to these developments?

February 14 Concepts of Time: Evolution of Atoms & Stars I

Reading: Ferris, *Coming of Age in the Milky Way*, Chapter 14
Video: *Stephen Hawking's Universe*, Part 3

We explore theories regarding the structure of stars and the processes by which they generate energy. How was matter created? Are we really star stuff? Included in this discussion will be an examination of mechanisms responsible for the generation of atoms.

February 19 Concepts of Time: Evolution of Atoms & Stars II

Reading: Ferris, *Coming of Age in the Milky Way*, Chapter 14
Video: *Stephen Hawking's Universe*, Part 3

We will continue the discussion begun on February 14th. What are Hawking's views of religion?

February 21 Concepts of the Universe: Particle Physics and the Search for Symmetry

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 15 - 16

We explore basic concepts in particle physics and initiate discussions regarding basic symmetry in the universe. How does quantum indeterminacy affect our views of reality and God? Does symmetry imply intelligent design? Does a grand unified theory obviate a need for God?

February 26 Concepts of the Universe: The Origin of the Universe I

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 17 - 18

Here we begin our discussion of theories concerning the origin of the universe. How did the universe evolve?

February 28 Concepts of the Universe: The Origin of the Universe II

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 17 - 18

We continue the discussion begun on February 26th. Does quantum theory imply that the universe was created ex nihilo?

March 4 - 8 Spring Break

March 12 Concepts of the Universe: Is There Life Out There?

Reading: Ferris, *Coming of Age in the Milky Way*, Chapters 19 - 20

We discuss the possibility of extraterrestrial life. How would the discovery of such life affect our views of life and God? This wraps up our discussion of Ferris' text.

March 14 Religion and Science: Astronomy and Creation

Reading: Barbour, *When Science Meets Religion*, Chapter 2

We examine Conflict, Independence, Dialogue, & Integration with regard to theories concerning the origin of the universe. Which of these views best describes the relationship between astronomy and religion within the context of our culture? From a personal perspective, which of these views you believe is most appealing?

March 19 Religion and Science: Quantum Physics

Reading: Barbour, *When Science Meets Religion*, Chapter 3

We examine Barbour's fourfold typology as it applies to philosophical interpretations of quantum mechanics. Again, we will ask which of these views appears to most appealing from both cultural and personal perspectives.

March 21 Religion and Science: Evolution

Reading: Barbour, *When Science Meets Religion*, Chapter 4

We examine Barbour's fourfold typology with as it applies to evolution and continuing creation. As before, we will explore each of Barbour's models from both cultural and personal perspectives.

March 26 God and Creation I

Reading: Davies, *God and the New Physics*, Chapters 1 - 4

We examine concepts of God with respect to theories concerning the creation of the universe. Was there a creation event? Is the universe infinite? Is God the "cause?" Can science say anything about the "cause?" Must there be a first "cause?" Is it possible to conceive of creation without God? Does God have a cause or is he/she a "necessary" being? These discussions will focus on philosophical issues more thoroughly than similar discussions conducted earlier in the semester.

March 28 - Easter Break

April 2 God and Creation II

Reading: Davies, *God and the New Physics*, Chapters 1 - 4

This is a continuation of the March 26th discussion. Given that modern theory indicates that the appearance of the universe coincided with the appearance of time, is it even possible to define first "cause?" Does God transcend time? Does the universe have a meaning or purpose or is it random? Why does the universe have the structure that it does?

April 4 God, Mind, & Self

Reading: Davies, *God and the New Physics*, Chapters 6 - 7

Our discussion will focus on the basic ideas of Mind, Self, and the Soul. Important questions include What is the Mind? What is the Soul and is it different from the Mind? Is God a Mind Is it possible to have free will and is the existence of free will inconsistent with a rational, scientific view of the universe? What is the Self and is it just a collection of experiences? How do we define consciousness?

April 9 God, Quantum Mechanics, & Time

Reading: Davies, *God and the New Physics*, Chapters 8 - 9

We will explore questions regarding quantum mechanics and time, both presented earlier in the semester, in more depth. We will examine the role of quantum mechanics and what it has to say about the nature of the universe. Is there objective reality? Is there "spooky" action at a distance? Do multiple universes or minds exist? Is God a timeless being? Can a timeless being have knowledge?

April 11 God, Free Will, & Design

Reading: Davies, *God and the New Physics*, Chapters 10, 12

We will once again examine the concept of free will, taking into account our previous discussions concerning quantum mechanics and time. Does the uncertainty of quantum mechanics allow for free will? Does God possess free will? Is the universe a product of quantum randomness and probability or is it a product of design?

April 16 God, Cosmic Chaos, and Miracles

Reading: Davies, *God and the New Physics*, Chapters 13 - 14

We will continue our discussions regarding the universe and "design." How did the universe come to be the way it is? Is there any order to the universe? If the universe was different would we exist? What is the anthropic principle?

April 18 God and the Universe

Reading: Davies, *God and the New Physics*, Chapters 15 - 17

This discussion allows us to summarize our search for God through science. Was the universe created out of nothing? Is the universe subject to intelligent control? How will the universe end? Is the universe tending toward maximum entropy and does that signal its ultimate demise? Does science, as Davies suggests, offer a surer path than religion in the search for God?

April 23 The Nature of God

Barbour, *When Science Meets Religion*, Chapter 6

What is God's relation to nature? How does science respond to the views of classical theism? We will examine these issues through each of the models derived from Barbour's fourfold typology.

April 25 Science, Religion, & Popular Culture

Video Vignettes: *Contact*, *The Matrix*, *Frankenstein* & *Star Wars*

Through a series of short video clips, we will examine the relationship between science and religion as depicted through popular culture. We will use Barbour's fourfold typology to analyze the many ways that science and religion are portrayed.

April 30 Final Presentations (8 - 11 AM)