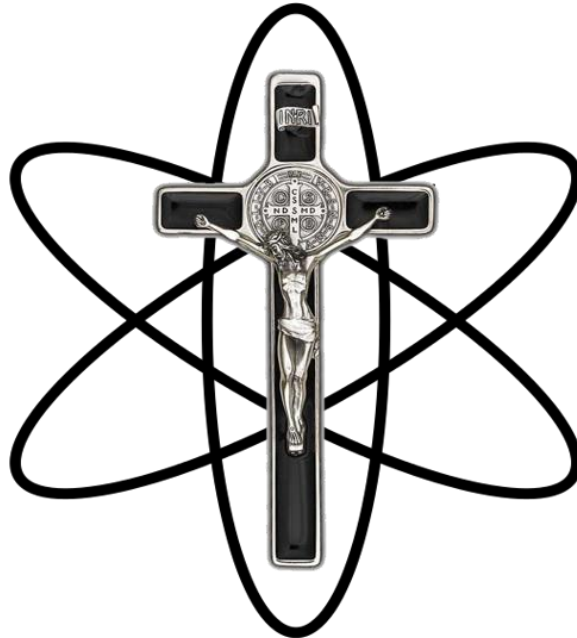


Department of Catholic Studies  
Seton Hall University

# Catholic Theology of Science

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**Instructor: Stacy A. Trasancos, PhD**  
**CAST WB, CORE WB 3.00**



## Course Description

There is a need in the modern theology and science discussion to articulate a “theology of science.” Theologians and philosophers have expressed the ways that science (physics, chemistry, and biology) can enrich theology. Others, such as Fr. Stanley L. Jaki suggested that to further the dialogue down the correct path, we must return to the unity that existed when modern science emerged among Catholic scholars. Popes St. John Paul II, Pope Emeritus Benedict XVI, and Pope Francis have provided guidance, and there is still much to be mined from their wisdom. In this course, we will break the consideration of the “theology of science” into three sections: 1) the definitions of “theology” and “science”; 2) the history of science from ancient cultures to modern times; and 3) the thought of the last three popes on the “theology of science.” Students will be guided to learn what theologians have written and then to express these

thoughts in their own words and with their own metaphors so that they may participate or lead the ongoing dialogue between theology and science. The modern dialogue needs communicators.

## Course Goals

After completing this course, students will be able to:

- Articulate the definition of “theology” and “science.”
- Understand how theology affects science and science affects theology.
- Gain knowledge of some major scientific insights, achievements, and breakthroughs in ancient cultures, and be aware of the role theology played in the events.
- Appreciate how theological outlooks promoted or hindered scientific advancement.
- Comment specifically on Christianity’s influence on the emergence of modern science.
- Express the thought of Pope John Paul II, Pope Benedict XVI, and Pope Francis on the theology of science and the future of the dialogue.
- Communicate with the public via digitally published essays about the future integration of science and theology.

## Measurable Learning Objectives

The students will demonstrate understanding of the material in the following assignments:

- Compose a response to questions about the reading material each week.
- Produce a term paper or critical thinking essay that analyzes and compares thoughts of theologians and explains what is meant by a “theology of science” with solid and insightful understanding and organized and concise syntax.

## Course Materials

Purchase the first three books before the class begins:

- Joseph Cardinal Ratzinger, *In the Beginning: A Catholic Understanding of the Story of Creation and the Fall* (Grand Rapids: William B. Eerdmans Publishing Company, 1995). [[Purchase](#)]
- Stanley L. Jaki, *Science and Creation: From Eternal Cycles to an Oscillating Universe* (New Hope: Real View Books, 2017). [[Purchase](#), Kindle version recommended]
- Stacy A. Trasancos, *Particles of Faith: A Catholic Guide to Navigating Science* (Notre Dame: Ave Maria Press, 2016). [[Purchase](#)]
- St. Thomas Aquinas, *Summa Theologiae*, First Part, Question 45, Articles 1, 2, and 6. [[Online](#)]
- Pope John Paul II, *Fides et Ratio* (Vatican, 1998). [[Online](#)]
- Pope Francis, *Lumen Fidei* (Vatican, 2013). [[Online](#)]
- Optional: Stacy A. Trasancos, *Science Was Born of Christianity: The Teaching of Fr. Stanley L. Jaki* (Titusville: Habitation of Chimham, 2014). [[Purchase](#)]

## Other Essays

### **Fr. Stanley Jaki's Definition of Science**

### **Why Pantheism Stifles Science (and Christianity Does Not)**

### **The Stillbirths of Science in Ancient Cultures**

- [Ancient Egypt](#)
- [China](#)
- [India](#)
- [Babylon](#)
- [Greece](#)
- [Arabia](#)

### **The Radical Scientific View of Biblical Cultures**

### **The Christian Middle Ages and the Greek Scientific Corpus**

### **Fr. Jean Buridan's Impetus Theory**

### **The Uniquely Christian Birth of Science**

# Modules

All assignments are due by Friday at 11:59 p.m. of the week assigned. The professor will leave feedback and suggestions in the discussion threads.

## Module 1 - Introduction

### Introduction

In this first module, we will become familiar with the purpose and structure of the course. I will explain where to find the course materials both online and elsewhere in your textbooks. I will articulate the specific technology requirements. I will explain expectations and provide an overview of the term paper you will write. We will also review learning objectives, assessment criteria, and we will introduce ourselves to the class. Last, I will go over your first reading and composition assignment, which we will discuss in more detail in the next class.

### Module Objectives

Student will be able to:

- Locate course materials.
- Define assessment criteria and rubrics for composition works.
- Explain expectations for appropriate behavior.
- List assignments and papers due during the course.
- Get to know classmates by reading introductions.

### Assignments

#### *Lecture*

- Watch the lecture for this module.

#### *Other*

- Make sure you have ordered the books!
- Post a personal introduction.
- Read introductions and respond if desired.
- Check to make sure you can access all materials.
- Read the syllabus and study the assessment rubrics.
- Create a Word document to store all your brief essays. Compose the essays in your Word file. Then copy/paste the completed essay in the assignment for each

module. You will use these essays to compose your topic papers, final paper, or publishable essay.

## Module 2 – Definitions of Theology and Science

### **Introduction**

In this first section, we are going to articulate the relationship between theology and science and examine what is meant by a “theology of science.” In this module, we are going to focus on definitions. Before exploring the “theology of science,” these terms must be understood both in their historical context and in their modern usage. In the readings, you will consider the definitions of “theology” and “science” and write an essay to summarize your understanding.

### **Module Objectives**

Student will be able to:

- Define “theology” and “science.”
- Compare views about the relationship between theology and science.
- List examples where there is confusion about science and theology.
- Compose a brief essay as assigned.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

#### *Lecture*

- Watch the lecture for this module.

#### *Readings*

- Definitions of “theology” and “science” from the Oxford English Dictionary (OED).
- St. Thomas Aquinas, *Summa Theologiae*, First Part, Question 45, Articles 1, 2, and 6.
- Pope John Paul II, *Fides et Ratio*, Section 88 only.
- Pope Francis, *Lumen Fidei*, Section 34 only.

## Essay

Compose a brief *critical-thinking* (300-word minimum) essay to respond to these prompts:

- What is “theology”? 10 points
- What is “science”? 10 points
- Elaborate on one quote from the readings and explain how confusion about definitions might have contributed to the dilemma that theology and science are opposed. You will be graded on how well you support and defend your argument. 60 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## Module 3 – Navigating Science in the Light of Faith

### **Introduction**

In this module, we are going to learn how to responsibly navigate scientific discoveries and questions in the light of faith. There is a primal and unique bond between Christianity and science, and this course will help you articulate what that bond is, how that bond has existed in biblical history, and how it can affect the understanding of the “theology of science” today. It is critical to view the world as creation. We will read the appendix of *In the Beginning* and chapters two and three of *Particles of Faith*.

### **Module Objectives**

Student will be able to:

- Summarize the consequences of faith in creation.
- Propose an analogy to demonstrate the relationship between faith and science.
- Name three guidelines for navigating science in the light of faith.
- Compose a brief essay.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

## Lecture

- Watch the lecture for this module.

## Readings

- Pope Benedict XVI, *In the Beginning*, Appendix: “The Consequences of Faith in Creation.”
- Trasancos, *Particles of Faith*, Chapter 2: “Analogies about How Faith and Science Relate,” and Chapter 3: “Navigating Science in the Light of Faith.”

## Essay

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Select two single-sentence quotes from Pope Benedict XVI’s essay (appendix) and elaborate on what he means by them. 20 points each
- Propose your own analogy for the relationship between faith and science. 20 points
- What are three guidelines for navigating science in the light of faith? 20 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## Module 4 – The Universe and World View

### Introduction

In this module, we are going to focus on how science affects our understanding of the universe and our place in it. The modern person has a very different view of the world than people held before modern science. There is evidence that the universe expanded from a singularity about 13.8 billion years ago. We now know that the Earth, once thought to be the center of the universe, is but one of other planets orbiting the sun, which itself is a star in a spiral-shaped cluster of 200 billion stars rotating in space among thousands of galaxies existing within 100 million light-years of Earth. The largest telescopes can detect billions of galaxies. In the readings, you will read the first homily of *In the Beginning* and chapter four of *Particles of Faith*. Then you will write an essay on how theology affects our view of science.

### Module Objectives

Student will be able to:

- Summarize how Catholics view the universe.
- List scientific examples of how the understanding of the universe affects world views.
- Explain the kinds of proof science can provide to theology and theology to science.
- Compose a brief essay.

## **Assignments**

### *Feedback*

- Review any comments from the professor.

### *Lecture*

- Watch the lecture for this module.

### *Readings*

- Pope Benedict XVI, *In the Beginning*, Homily 1: “God the Creator.”
- Trasancos, *Particles of Faith*, Chapter 4: “Does the Big Bang Prove God?”

### *Essay*

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- What is the difference in “form” and “content” in the creation narrative? 20 points
- What is the criterion for unity in the Bible? 20 points
- What is the criterion for Christ? 20 points
- What is the difference in inductive and deductive proofs? 10 points
- In what way does the Big Bang prove God’s existence? 10 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## **Module 5 – Evolution and Freedom**

### **Introduction**

In this final module of the first section, we are going to focus on evolution, freedom, and purpose. We will use the word “evolution” in the biological sense and in the sense of change, particularly change related to the future of humanity. We will also explore why



free will is not explained by physics. In the readings, you will read the third homily of *In the Beginning* and chapters six and nine of *Particles of Faith*. Then you will write an essay on how theology affects our view of evolution and freedom.

### **Module Objectives**

Student will be able to:

- Comment on what it means to be human.
- List the evidence for evolution.
- Explain whether a Christian can accept the theory of evolution.
- Describe how a Christian explains human free will.
- Compose a brief essay.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

#### *Lecture*

- Watch the lecture for this module.

#### *Readings*

- Pope Benedict XVI, *In the Beginning*, Homily 3: “The Creation of the Human Being.”
- Trasancos, *Particles of Faith*, Chapter 6: “Does Quantum Mechanics Explain Free Will?” and Chapter 9: “Can a Christian Accept the Theory of Evolution?”

#### *Essay*

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Citing Pope Benedict XVI’s homily, explain in at least two full paragraphs what you think it means to be human. 20 points
- Briefly list the evidence for evolution. 20 points
- In what ways can a Christian accept the theory of evolution? 20 points
- How do Christians explain human free will? 20 points
- Content (see rubric) 10 points

- Expression (see rubric) 10 points

## Module 6 – History of Science: India and China

### **Introduction**

In this second section, we are going to explore the history of science from ancient cultures to modern times. Because we are spanning such a vast time, think of this as an overview, like if you were standing on a hill surveying the landscape by focusing certain points across it. In this first module, we start with the theologies of ancient India and China. The goal is to understand their religious world views, so you can compare them to the biblical and Christian world view. We are studying the history to gain perspective when communicating the theology of science to peers. Fr. Jaki reviews these cultures and religions in *Science and Creation: From Eternal Cycles to an Oscillating Universe*.

### **Module Objectives**

Student will be able to:

- State the world view of ancient India and China.
- Explain how their religious and cosmic world views are alike and different.
- List scientific accomplishments and skills in these cultures.
- Compose a brief essay.

### **Assignments**

#### *Lecture*

- Watch the lecture for this module.

#### *Feedback*

- Review any comments from the professor.

#### *Readings*

- Jaki, *Science and Creation*, Chapter 1: “The Treadmill of Yugas,” and Chapter 2: “The Lull of Yin and Yang.”

## Essay

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Write one paragraph each to state the world view of ancient India and China. 40 points
- Write one detailed paragraph each to list the scientific accomplishments and skills in these cultures. 40 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## Module 7 – History of Science: Egypt and Babylon

### Introduction

We continue to explore the history of science from ancient cultures to modern times. Because we are spanning such a vast time, think of this as an overview, like if you were standing on a hill surveying the landscape by focusing certain points across it. In this second module, we study the theologies of ancient Egypt and Babylon. The goal is to understand their religious world views, so you can compare them to the biblical and Christian world view. We are studying the history to gain perspective when communicating the theology of science to peers. Fr. Jaki reviews these cultures and religions in *Science and Creation: From Eternal Cycles to an Oscillating Universe*.

### Module Objectives

Student will be able to:

- State the world view of ancient Egypt and Babylon.
- Explain how their religious and cosmic world views are alike and different.
- List scientific accomplishments and skills in these cultures.
- Compose a brief essay.

### Assignments

#### Feedback

- Review any comments from the professor.

## *Lecture*

- Watch the lecture for this module.

## *Readings*

- Jaki, *Science and Creation*, Chapter 4: “The Shadow of Pyramids” and Chapter 5: “The Omen of Ziggurats.”

## *Essay*

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Write one paragraph each to state the world view of ancient Egypt and Babylon. 40 points
- Write one detailed paragraph each to list the scientific accomplishments and skills in these cultures. 40 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## **Module 8 – History of Science: Greece and Arabia**

### **Introduction**

In this third module, we continue with the theologies of ancient Greece and Arabia. The goal is to understand their religious world views, so you can compare them to the biblical and Christian world view. We are studying the history to gain perspective when communicating the theology of science to peers. Fr. Jaki reviews these cultures and religions in *Science and Creation: From Eternal Cycles to an Oscillating Universe*.

### **Module Objectives**

Student will be able to:

- State the world view of ancient Greece and Arabia.
- Explain how their religious and cosmic world views are alike and different.
- List scientific accomplishments and skills in these cultures.
- Compose a brief essay.

## **Assignments**

### ***Feedback***

- Review any comments from the professor.

### ***Lecture***

- Watch the lecture for this module.

### ***Readings***

- Jaki, *Science and Creation*, Chapter 6: “The Labyrinths of the Lonely Logos,” and Chapter 9: “Delay in Detour.”

### ***Essay***

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Write one paragraph each to state the world view of ancient Greece and Arabia. 40 points
- Write one paragraph each to list the scientific accomplishments and skills in these cultures. 40 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## **Module 9 – History of Science: Biblical Cultures and Early Christianity**

### **Introduction**

In this fourth module, we continue the overview of the history of science by focusing on the ancient Hebrew culture codified in the Bible and the way early Christian authors defended this world view. You will compare the biblical and Christian world view with those of the ancient cultures we studied in the previous modules. Again, we are studying the history to gain perspective when communicating the theology of science to peers. Fr. Jaki reviews the ancient Hebrew biblical world view and the early Christian authors in *Science and Creation: From Eternal Cycles to an Oscillating Universe*.

### **Module Objectives**

Student will be able to:

- Summarize the biblical world view codified in the Old Testament.
- Explain the religious and cosmic world view of early Christianity.
- Compare the biblical and Christian world view with those of ancient cultures.
- Compose a brief essay.

## **Assignments**

### *Feedback*

- Review any comments from the professor.

### *Lecture*

- Watch the lecture for this module.

### *Readings*

- Jaki, *Science and Creation*, Chapter 7: “The Beacon of the Covenant” and Chapter 8: “The Leaven of Confidence.”

### *Essay*

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Find three scripture passages from Chapter 7, *Science and Creation*, and use them to summarize the biblical world view codified in the Old Testament. 30 points
- Find three quotes from early Christian authors in Chapter 8, *Science and Creation*, to explain the religious and cosmic world view of early Christianity. 30 points
- Write one paragraph to compare the biblical and Christian world view with those of ancient cultures from your previous essays. 20 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## **Module 10 – History of Science: European Middle Ages, the Renaissance, and the Scientific Revolution**

### **Introduction**

In this fifth module of the second section of the course, we complete the overview of the history of science by focusing on the European Middle Ages, the Renaissance, and the

Scientific Revolution. You will explain how the Christian world view influenced the emergence of modern science. Remember, we are studying the history to gain perspective when communicating the theology of science to peers. We are spanning vast amounts of history, looking for details to tell the story. Fr. Jaki reviews the Scholastic authors in *Science and Creation: From Eternal Cycles to an Oscillating Universe*.

### **Module Objectives**

Student will be able to:

- Explain how the Christian world view influenced the emergence of modern science.
- Describe the contributions of five scholars to the development of modern science.
- Compose a brief essay.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

#### *Lecture*

- Watch the lecture for this module.

#### *Readings*

- Jaki, *Science and Creation*, Chapters 10-12, “The Sighting of New Horizons,” “The Interlude of ‘Re-naissance,’” and “The Creator’s Handiwork.”

#### *Essay*

Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- How did the Christian world view influence the emergence of modern science? 30 points
- List and describe the contributions of five scholars to the development of modern science (one paragraph each). 50 points
- Content (see rubric) 10 points

- Expression (see rubric) 10 points

## Module 11 – Thought of Pope St. John Paul II

### **Introduction**

In this final section, we are going to explore the thought of Popes St. John Paul II, Pope Emeritus Benedict XVI, and Pope Francis on the theology of science. We will read the writing of one scholar each and comment on it. These three commentaries will form the final part of the term paper. In this first module of the final section, we are going to study the 1998 encyclical of Pope John Paul II, *Fides et Ratio*.

### **Module Objectives**

Student will be able to:

- Articulate the contributions of Pope John Paul II's thought to the faith and science dialogue from his encyclical *Fides et Ratio*.
- Opine on the way his teaching could help peers understand what is meant by a "theology of science."
- Compose a brief essay.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

#### *Lecture*

- Watch the lecture for this module.

#### *Readings*

- Pope John Paul II, *Fides et Ratio* (Vatican, September 14, 1998).

#### *Essay*

Tie this encyclical to your studies earlier in the course. Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:



- Find a section of the encyclical that relates to the readings and specifically to your essays in the first section of this course where we reviewed Pope Benedict XVI's homilies and the chapters in *Particles of Faith*. 30 points
- Find a section of the encyclical that relates to the readings and specifically to your essays in the second section of this course where we reviewed the history of science. 30 points
- Write one paragraph about the way his teaching could help peers understand what is meant by a "theology of science." 20 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## Module 12 – Thought of Pope Emeritus Benedict XVI

### **Introduction**

In this second module of the final section, we are going to finish Pope Benedict XVI's homilies in his 1986 book, *In the Beginning: A Catholic Understanding of the Story of Creation and the Fall*. You will read the second and fourth homilies. You will also comment on the meaning of the biblical creation account and describe how it is connected to the history of science.

### **Module Objectives**

Student will be able to:

- Articulate the contributions of Pope Benedict XVI's (Joseph Cardinal Ratzinger) thought to the faith and science dialogue from his homilies *In the Beginning: A Catholic Understanding of the Story of Creation and the Fall*.
- Opine on the way his teaching could help peers understand what is meant by a "theology of science."
- Compose a brief essay.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

#### *Lecture*

- Watch the lecture for this module.

## Readings

- Joseph Cardinal Ratzinger, *In the Beginning: A Catholic Understanding of the Story of Creation and the Fall*, Homily 2: “The Meaning of the Biblical Creation Accounts” and Homily 4: “Sin and Salvation.”

## Essay

Tie these homilies to your studies earlier in the course. Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Summarize the homily about sin and salvation and tie this to your earlier essays on what it means to be human and exercise free will. 30 points
- Summarize the second homily tying his comments about the meaning of the biblical creation account to Fr. Jaki’s research on the history of science. 30 points
- Write one paragraph about the way his teaching could help peers understand what is meant by a “theology of science.” 20 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## Module 13 – Thought of Pope Francis

### Introduction

In this third module of the final section, we are going to study Pope Francis’s 2013 encyclical, *Lumen Fidei*. You will select a section to comment on and connect it to your earlier writings about creation, free will, evolution, or what it means to be human. You will also comment on how the history of science, going back to ancient cultures, can affect the faith and science dialogue, particularly focusing on Chapter 2 of the encyclical “Unless you believe, you will not understand.”

### Module Objectives

Student will be able to:

- Articulate the contributions of Pope Francis’s thought to the faith and science dialogue from his encyclical *Lumen Fidei*.
- Opine on the way his teaching could help peers understand what is meant by a “theology of science.”
- Compose a brief essay.

## **Assignments**

### ***Feedback***

- Review any comments from the professor.

### ***Lecture***

- Watch the lecture for this module.

### ***Readings***

- Pope Francis, *Lumen Fidei* (Vatican, 2013).

### ***Essay***

Tie this encyclical to your studies earlier in the course. Compose a brief critical thinking (500-word minimum) essay to respond to these prompts:

- Find a section of the encyclical and tie it to your earlier essays on creation, free will, evolution, or what it means to be human. 30 points
- Find a section of the encyclical that relates to the readings and specifically to your essays in the second section of this course where we reviewed the history of science. 30 points
- Write one paragraph about the way his teaching could help peers understand what is meant by a “theology of science.” 20 points
- Content (see rubric) 10 points
- Expression (see rubric) 10 points

## **Module 14 – Organizing Your Final Paper**

### **Introduction**

You will now bring it all together in a final term paper. Your assignment is to submit a rough draft, which counts as a grade. Use the essays you have written and the feedback from your professor to compile the term paper rough draft. In the final module of the course, you will polish the paper and submit the final draft.

### **Module Objectives**

Student will be able to:

- Compile previous essays, responses, and feedback to form a rough draft of the term paper.
- Or, students will compose a publishable essay from a selected module.
- Appropriate the knowledge of how God reveals Himself in creation, of the history of science, and of the thought of the last three popes.

### **Assignments**

#### *Feedback*

- Review any comments from the professor.

#### *Readings*

- Read your previous essays from this course and feedback from your professor.

## **MOST IMPORTANT GRADE: Term Paper or Essay**

- Complete one of these assignments for the final 50% (total) of your course grade.
- The rough draft is due for 10% in Module 14.
- You will submit the final paper in Module 15 for 40% of your total course grade.

**Term Paper:** Compile previous essays to form a rough draft of the term paper according to the format provided by the professor. **Download the Term Paper Format here.** Propose a title for your term paper. Submit the rough draft in the discussion forum.

**Publishable Essay:** Compose an essay (1,000-2,000 words) to elaborate on your studies in one of the course modules. The essay should follow the protocol for publication provided by the professor. **Download the publishable essay instructions here.** Ground your essay in the research we have done. Then go beyond it with an opinion of your own about the future of the integration of science and theology. The essay will be eligible for publication on the “Catholic Theology of Science” website, which is a Digital Humanities TLTC (Teaching, Learning, and Technology Center) project. Your work will be edited.

## Module 15 – Explaining Catholic Theology of Science

### **Introduction**

In this final module of the course, you will edit, polish, and submit your final term paper or publishable essay.

### **Module Objectives**

Student will be able to:

- Engage in a discussion about the theology of science intelligently with beneficial metaphors and factual knowledge.

### **Assignments**

#### *Feedback*

- Review any feedback from the professor about your rough draft.

#### *Readings*

- Read your term paper or essay aloud to yourself or someone else. This is an excellent way to proofread your work.

#### *Submit your final paper.*

- Submit your final term paper or essay following the instructions given in Module 14.

# Course Policies

## *Communication:*

- The instructor is available by email and will do her best to respond within 24 hours. Please include the course number in all caps in the subject line.

## *Attendance:*

- The student is expected to check Blackboard for assignments, read the materials, write the essays, submit the assignments on time.

## *Assignments:*

- All assignments are due by Friday at midnight of the week assigned. The student may work ahead. Unless arrangements are made *in writing* (i.e. email stacy.trasancos@shu.edu) prior to the due date for an extension, assignments will receive a 10-point deduction for being late.

## **Grading**

- Module Essays: 50%
- Rough draft of term paper or essay: 10%
- Final term paper or essay: 40%

All assignments are due by Friday at 11:59 p.m. of the week assigned.

## **Extra Credit**

The following optional assignments may be done for extra credit on any essay towards the “Module Essay” grade:

- Cite a book or article beyond those required in course readings. (+3 points each)
- Write an extra 500-word essay about another related topic from the readings. (+10 points)

# Evaluation

## Grading Rubrics for Discussion Questions and Papers

### CONTENT

0	1-2	3-5	6-7	8-10
<p><b>No understanding</b></p> <p>Answer shows no knowledge of the concepts addressed in the question or topic.</p>	<p><b>Wrong understanding</b></p> <p>Answer shows misunderstanding of the concepts addressed in the question through an inability to explain them.</p>	<p><b>Some understanding</b></p> <p>Answer shows adequate understanding of the concepts addressed in the question.</p>	<p><b>Solid understanding</b></p> <p>Answer shows understanding of the concepts addressed in the question and uses that understanding effectively in an example.</p>	<p><b>Insightful understanding</b></p> <p>Answers shows understanding of the concepts addressed in the question, uses that understanding in an example which makes a connection to other concepts.</p>

### WRITING AND EXPRESSION

0	1-2	3-5	6-7	8-10
<p><b>Incomplete, fails to address topic</b></p> <p>Writing does not address the topic at all, is confused, insufficient, and unacceptable.</p>	<p><b>Unclear, poorly organized</b></p> <p>Writing barely addresses topic, goes off-topic, is poorly developed with little elaboration; errors in sentence structure, vocabulary, grammar, mechanics and usage.</p>	<p><b>Acceptable, needs sharpening</b></p> <p>Writing is unevenly addresses topic, is satisfactorily organized; could use more vigor; errors in sentence structure, vocabulary, grammar, mechanics and usage.</p>	<p><b>Solid, interesting perspective</b></p> <p>Writing adequately addresses topic, is persuasively organized, uses reasons and examples, few errors in sentence structure, vocabulary, grammar, mechanics and usage.</p>	<p><b>Command, makes clear impression</b></p> <p>Writing thoroughly addresses topic, is concise, cogent, and insightful; superior syntax and diction; error-free grammar, mechanics, and usage.</p>

## Bibliography

- Stanley L. Jaki, *Science and Creation: From Eternal Cycles to an Oscillating Universe* (Edinburgh: Scottish Academic Press, 1986; New Hope: Real View Books, 2016).
- Stanley L. Jaki, *Questions on Science and Religion* (Pinckney: Real View Books, 2004).
- Stanley L. Jaki, *A Late Awakening and Other Essays* (Port Huron: Real View Books, 2006).
- Benedict M. Ashley and John Deely, *How Science Enriches Theology* (South Bend: St. Augustine's Press, 2012).
- Pope John Paul II, *Fides et Ratio* (Vatican, 1998).
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## Grant

### Digital Humanities Grant

#### 2018 Digital Humanities Faculty Fellows

#### Integrating Science and Theology With the Web

A new course, *Catholic Theology of Science*, was developed for Seton Hall University and taught for the first time in Spring of 2017. *Catholic Theology of Science* is a core Engaging the World (ETW) listing, a discipline-specific “signature” course that links the principles of the Catholic intellectual tradition to the degree curricula.



The course explores the integration of science and religion. It has scientific, philosophical, theological, ethical, and historical components. Students read from a variety of sources to learn about the role of Christianity in the development of modern science and how future science can be guided in the light of faith.

Students analyze texts from ancient religions, theologians, and recent popes, and they compose weekly essays to summarize their insights about what they have learned. In the term paper, students synthesize the 10 weekly essays to formulate a position about the future integration of science and theology.

Upon being awarded a Digital Humanities Grant by Seton Hall's Teaching, Learning, and Technology Center, the course now includes a digital humanities component. The students are asked to become educated about different perspectives and to form their own opinion carefully. Students are invited to prepare one of the weekly essays to be published on this website, under the editorial guidance from the instructor. This website will not only make the course materials and lectures publicly available but will also showcase the work of the students.

By writing for more readers than a single professor, the students will add their voice to the ongoing science and theology dialogue. They will gain leadership experience. Over time, the website itself will serve as a resource for other students. In this way, the course takes on its own organic growth as ideas progress.

The learning challenge to be addressed with this project is the difficulty of articulating an educated personal position about the future of scientific progress. The course is intended to prepare students to become societal leaders, so cogent communication is necessary in this digital age. Ideas drive progress. Therefore, instead of a traditional read-write-submit approach, a *class website* will enhance the student experience.

## Course Goals

In the spirit of His Holiness, Pope Paul VI's 1965 Pastoral Constitution on the Church in the Modern World, *Gaudium et Spes*, Seton Hall understands the modern dilemma that students face, that they are "becoming conscious that the forces they have unleashed are in their own hands and that it is up to themselves to control them or be enslaved by

them” (paragraph 9). The “Engaging the World” core courses link the general principles of the Catholic intellectual tradition to the various fields of study at the university.

The *Catholic Theology of Science* course fulfills the evangelical mission by guiding the students through an expansive reading survey of different Catholic views of science. The course is the first of its kind to forwardly integrate science and theology, to forge a new expression of the *Catholic Theology of Science*. This innate uniqueness and integrative character lend the course well to going one step further—to integrating the course itself with cyberspace beyond the classroom.

The benefit is threefold: 1) The students will have the opportunity to publish an essay under the guidance of the instructor. 2) The public will be able to appreciate the insights of the students taking the course. 3) The course takes advantage of the reach of the internet to become not only a learning experience, but an engaging-the-world experience, true to the intended purpose of the ETW core curriculum of Seton Hall University. In short, the course allows students to become leaders.

Students are introduced to Fr. Jaki’s controversial thesis that science was born of a Christian world view. This thesis requires careful presentation because it is easy to misunderstand as an arrogant and exclusive claim of superiority. The fuller story is not one of triumphantism, however. It is a story of unity and taught to show students that science—the study of creation—is a venue through which they can reach out into the world. Science unites the human race: it is uniquely human, it studies the world we are all a part of, and it inspires awe and wonder, even a transcendental sense of purpose and meaning because science points beyond itself to the Creator of heaven and earth.

The uniqueness of this course is that it changes the worn-out dialogue about “conflict” in the science and faith discussion. The title itself, *Catholic Theology of Science*, shows that science is way to study God. The course name establishes a theology of creation, and invites the world’s next leaders to become a part of defining the integration of the two most significant intellectual aspects of modern life: faith and science.

*The Catholic Theology of Science course, therefore, teaches that humanity is united by science.*

The history of science is a history of searching for truth about the universe we occupy. Almost all the secular discussion about science and religion is focused on division. Indeed, many students have the impression that the two disciplinary fields are opposed, but without understanding why. This course reverses that impression and allows the students to formulate how both science and theology are necessary to search for ultimate truth.

Catholics need to lead, to be firm in our faith—our belief in Christianity—and be ready to guide colleagues as guardians of truth in obedience to the magisterium, to recognize legitimate scientific progress, and to reject any claims that overstep the bounds of science. Faith in an ordered world is the reason we do science, and this course seeks to instill this innovative *but ancient* world view in the minds of young scholars.

## Course History

This course was developed starting in 2015 following a conference organized by the Director of Catholic Studies, Dr. Ines Murzaku in collaboration with the Physics Department, to honor the memory of Fr. Stanley L. Jaki, a Distinguished Professor and Templeton Prize winner at Seton Hall University. Fr. Jaki was both a theologian and a physicist.

The idea was to teach students Fr. Jaki's thesis that science has an intimate relationship with theology, that of an offspring and parent. However, the course was intended to go beyond that one thesis. The course was also intended to teach various Catholic opinions on the ways that *science enriches theology*. Students are invited to explore the relationship's richness and develop their own language to express an authentic Catholic theology of science with references, comparisons, explanations, and metaphors. This is an enormous undertaking in a single course.

Part of the development of the course entailed a republication of Fr. Jaki's monumental 1986 work, *Science and Creation: From Eternal Cycles to an Oscillating Universe*. This book was not available as a new print, and only available in used form at a high price. Real View Books, a publisher of Fr. Jaki's works during his lifetime, agreed to produce a digital version of the book, complete with the updates Fr. Jaki indicated he desired before his death and a foreword from the scholar, Dr. Peter Floriani, who digitized Fr.

Jaki's works. The book was thus made available to students at a much lower cost thanks to much collaboration and labor by those who knew and loved Fr. Jaki.

This is an undergraduate course, but the readings are substantial in length and difficulty, as are the writing assignments. Reading Fr. Jaki's writing is tedious and requires patience to follow each line. Fr. Jaki at times instructs into topics that assume the reader has some background in theology, philosophy, physical science, and history. The students also explore the thought of Pope St. John Paul II, Pope Emeritus Benedict XVI, and Pope Francis.

This course is a manifestation of the vision of the modern search for truth embraced by the organization's mission. Seton Hall University has proactively advanced the synthesis of philosophical, theological, and scientific knowledge for its students. True to the original purpose of the university in general, Seton Hall not only provides a rigorous education in the specific disciplines, but also teaches the student how to integrate knowledge from all areas in the quest for truth. If this course is approved for a digital humanities component—that being a dedicate website to publish selected student essays—it is the hope of the professor that the recognition will foster a confidence among other courses to pursue such approaches to education. Perhaps we can renew the appreciation for the unity of knowledge espoused in antiquity among the first universities in a new globally integrated setting, thereby uniting the best of the old with the best of the new.