

SW 208 / SNC 191:

ISSUES IN SCIENCE AND RELIGION

Winter 2010

Meets: Wednesdays, January 6 – March 10, 2009, 6:30-9:30 p.m.
Location: O'Hare Campus (Room TBA)
Credits: SNL sections: 2 credits per competence; SNC section: 4 credits

Faculty: Donald L. Opitz, Ph.D.
Office: 1453 Lytton Building, 14 E. Jackson Blvd. (Loop Campus)
Hours: Before and after class, or by appointment
Phone: 312-362-6426
Email: dopitz@depaul.edu

Course Description

This course develops students' understandings of the scientific and religious constructions of self in the modern world (natural and social). The institutions and bodies of knowledge comprising science, religion, and their overlap are critically analyzed. Key historic debates are examined, for example: the Vatican's trial of Galileo for his teachings of a heliocentric universe; the controversial reception of Darwin's theory of evolution; and the 2001 U.S. policy on embryonic stem cell research. Through such analyses, the course develops students' skills in making ethically-informed decisions and thus recognizing their roles in the public debates involving the intersection of science and religion.

Course Learning Goals

This course intends to provide students opportunities to develop learning outcomes associated with the Self, Society, and Modern World Liberal Studies requirements, designated SNL liberal learning competencies, and core skills in communication, inquiry, experiential learning, and decision-making. This course particularly emphasizes development of persuasive writing and critical thinking skills. Topic-specific learning outcomes are specified further in the course schedule.

Course Resources

Readings. The required text is John A. Moore, *From Genesis to Genetics: The Case of Evolution and Creationism*, Berkeley: University of California Press, 2003, ISBN 0-520-24066-9. Additional required readings are available at the DePaul Libraries' eReserves site, <http://eres.lib.depaul.edu>. Students can expect to read, on average, 40 pages per week.

Course Website. Additional resources and discussion threads will be available on Blackboard™ at DePaul's Online Learning (OLL) site, <http://oll.depaul.edu>.

Writing Resources. These are available from DePaul's Writing Center's on-site and online services. For locations, hours, and a description of services, call 312-362-6726, email wcenter@depaul.edu, or visit the Website at <http://condor.depaul.edu/~writing/>.

SNL Competences (for SNL Students)

In this course, you will develop the following competences:

Competence	Competence Statement and Criteria
S2X	Can describe and analyze a theory that explains a natural pattern and its scientific basis. <ol style="list-style-type: none"> 1. Can identify and describe a theory and the natural pattern that it explains. 2. Can identify and describe scientific methods. 3. Can analyze the basis of a theory and judge the extent to which it is scientific.
S3D	Can use scientific knowledge to understand varying perspectives on a policy issue. <ol style="list-style-type: none"> 1. Can identify and describe a public policy issue that has significant scientific and/or technological elements. 2. Can analyze the scientific theories, methods or standards taken by two perspectives on this issue.
H1F	Can describe and explain the roles of individuals, groups, societies, or states in history. <ol style="list-style-type: none"> 1. Can demonstrate an understanding of connections among selected events over time. 2. Can use an informed historical approach to interpret events or roles of individuals, groups or states.
A3X	Can make an ethical judgment on a public policy issue based on scientific, religious and/or historical arguments. <ol style="list-style-type: none"> 1. Can analyze the ethical dimensions of a public policy issue. 2. Can make an ethical decision based, in part, on valid scientific, religious and/or historical reasons.

Liberal Studies Learning Outcomes (for Liberal Studies Program Students)

This course intends to provide students opportunities to achieve the following learning outcomes associated with the Self, Society, and Modern World Liberal Studies requirements:

Category	Learning Outcome
Substantive	Students will be able to analyze the central institutions of science and religion and their impact on the larger society (SSMW SUBST #3).

<p>Methodological & Critical Thinking</p>	<p>Students will be able to articulate an argument (for or against) based on scientific and religious theory and empirical evidence regarding a matter of public of policy in the modern world (SSMW M&CT #1).</p> <p>Students will be able to critically analyze research and arguments in science and religion about the modern world (SSMW M&CT #2).</p>
<p>Personal/Reflective</p>	<p>Students will be able to reflect, in writing, upon their roles in the public debates concerning scientific and religious issues, including their relationship to their own and/or other communities where these issues are concerned (SSMW P/L #1).</p> <p>Students will be able to analyze social problems and public policies involving science and religion on the basis of ethics and values (SSMW P/L #2).</p>

Demonstration and Assessment

Students demonstrate learning outcomes through 4 assessed activities: *discussion*, *journals*, *position papers*, and *case-study analyses and presentations*. For SNL students, point totals are *per competence*. Although further detail about the activities will be provided on handouts, the following descriptions identify the key expected outcomes and assessment criteria:

Discussion. (20 points each week; 200 total.) Students’ contributions to in-class discussions and activities be assessed based on how effectively learning outcomes are developed, how substantively topics and questions are addressed, and how extensively prior experiences, reading, and reflection are integrated. (Discussions must abide by DePaul’s Code of Student Responsibility governing student behavior in classroom learning environments. For the policy, see <http://studentaffairs.depaul.edu/homehandbook.html>.)

Journals. (50 points each entry; 300 total.) The style of journal writing is both personal and reflective. Journal writings will be assessed based on the breadth, depth and relevance of students’ reflections upon their learning experiences during the course, inclusive of their reading, class activities, and relevant outside experiences. Students should strive to make connections between their personal experiences and their learning outcomes in the course. To encourage honest and personal writing, only the instructor reads students’ journal writings, and these are not assessed for grammar or style. Although the length of entries will vary by student, at least 500 words per entry are required (roughly 2 double-spaced typewritten pages using 12-point standard font like Times New Roman).

Position papers. (300 points.) Position papers are opportunities for students to develop a persuasive argument on an issue raised by readings or class discussions in terms of the perspectives emphasized in this course (scientific, religious, historical, ethical). Papers for 2-credit enrollments have a minimum word requirement of 1250 words (about 5 pages), and papers for 4-credit enrollments have a minimum word requirement of 1750 words (about 7 pages) when adopting the required formatting: 1-inch margins, standard 12-point font like Times New Roman, and double-spacing. The instructor will assess the papers for (1) the effectiveness of the argument: clear, strong thesis, coherent and logical flow of argument, and relevant sup-

porting evidence from course readings; (2) development toward competencies/learning outcomes; (3) effectiveness of the writing style and grammar; and (4) proper citation of sources. Students will develop the paper in stages throughout the term.

Case-studies. (200 points.) This culminating assignment, due in the last week of the course, provides students an opportunity to integrate their learning and demonstrate development of outcomes through critical analysis and presentation of case-studies. Presentations may take on different formats that are accessible and viewable in an online medium (e.g., Word or PowerPoint file). Presentations will be assessed using the following criteria:

- Effectively demonstrates development toward competencies/learning outcomes;
- Achieves good presentation mechanics: focus, organization, coherence, and clarity;
- Supported by relevant and well-documented evidence from required readings and other sources;
- As appropriate, effectively supported with clear, relevant, and well-integrated media;
- As appropriate, formal writing demonstrates good use of style and grammar.

Policy on Late Assignments

Any missed assignment or work submitted late will merit no credit unless an arrangement was negotiated with the instructor prior to the due date. (Documented emergencies are exceptions.) All negotiated late submissions are subject to a grade reduction of 5% for each weekday for which the submission is late.

Course Grading Scale

Overall grades are determined using the following percent scale; letter grades are interpreted according to the university definitions:

A = 93 to 100	B+ = 87 to 89	C = 74 to 76	D = 65 to 66	F = 64 and below
A- = 90 to 92	B = 84 to 86	C+ = 77 to 79	D+ = 67 to 69	
	B- = 80 to 83	C- = 70 to 73		

- A** Accomplished the stated objectives of the course in an EXCELLENT manner
- B** Accomplished the stated objectives of the course in a VERY GOOD manner
- C** Accomplished the stated objectives of the course in a SATISFACTORY manner
- D** Accomplished the stated objectives of the course in a POOR manner
- F** Did NOT accomplish the stated objectives of the course

IN Temporary grade indicating that the student has a satisfactory record in work completed, but for unusual or unforeseeable circumstances not encountered by other students in the class and acceptable to the instructor is prevented from completing the course requirements by the end of the term. The student must request this grade from the instructor by submitting the form, "Contract for the Issuance of an Incomplete (IN) Grade," available on the SNL Web site. At the end of the second quarter (excluding summer) following the term in which the incomplete grade was assigned, a remaining IN grade will automatically convert to an F grade. Ordinarily no incomplete grade may be completed after the grace period has expired. In-

structors may not change IN grades after the end of the grace period without the SNL Exceptions Committee's permission.

PA Passing achievement in a pass/fail course. (Grades A through C-.) Students who take this course pass/fail must request this option from the instructor **before the end of the 2nd week of the quarter**. Students who request pass/fail grading cannot revert to A-F grading.

W Automatically recorded when the student's withdrawal is processed after the deadline to withdraw without penalty, but within the stipulated period.

FX Student stopped attending course. This is an apparent withdrawal. The grade can be changed to a grade of W. If not administratively removed, it is scored in the grade point average the same as an F. Students are advised to contact their college office to initiate the request to amend an FX grade. An FX grade may not be changed if it has remained on the student's record beyond twelve months except in extraordinary circumstances.

Percentage distribution of Assessments

200	Online discussion
300	Journal entries
300	Position paper
200	Case-study presentation
1000	Total*

(*per competence, for SNL students)

Policies

Academic Integrity

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas. Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to <http://studentaffairs.depaul.edu/homehandbook.html> for details.

Plagiarism: Plagiarism is a major form of academic dishonesty involving the presentation of the work of another as one's own. Plagiarism includes but is not limited to the following:

- The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or part, without proper acknowledgement that it is someone else's.

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- Copying of any source in whole or part with only minor changes in wording or syntax, even with acknowledgement.
- Submitting as one's own work a report, examination paper, computer file, lab report or other assignment that has been prepared by someone else. This includes research papers purchased from any other person or agency.
- The paraphrasing of another's work or ideas without proper acknowledgement.

Plagiarism, like other forms of academic dishonesty, is always a serious matter. If a instructor finds that a student has plagiarized, the appropriate penalty is at the instructor's discretion.

Disability Accommodations

Reasonable accommodations will be provided for students with disabilities on an individualized and flexible basis. The Office of Students with Disabilities (OSD) determines appropriate accommodations through consultation with the student. For certain learning disabilities and/or attention deficit disorders, the Productive Learning Strategies Program (PLuS) determines the appropriate accommodations. See the instructor for more information or call OSD at 773-325-1677 (phone) or 773-325-7296 (TTY); or call PLuS at 773-325-1677.

Incomplete Grades

The intent of the Incomplete grade (IN) is to allow students extra time to complete their final assignments. This need arises because, in the closing weeks of the course, they have an event of significant magnitude that adversely affects their ability to complete the course, e.g. serious illness, death in the family, overseas deployment, or natural disaster.

You must request an incomplete grade in writing two weeks before the end of the quarter. Incomplete grades will be considered only after you have satisfactorily completed at least 75 percent of the coursework, and you have such an unexpected, uncontrollable event that prevents you from completing your course. Do not assume that you will qualify for an incomplete. Students who are failing the course at the point when they request an incomplete will not receive one, nor will they be granted one after the end of the quarter. Incomplete grades are given at the discretion of the instructor.

If you do receive permission from the instructor to take an incomplete in the course, you will be required to complete a contract with the instructor, specifying how you will finish the missing work within the next two quarters (excluding summer). Incompletes not finished by the end of the second quarter (excluding summer) will automatically become an F grade on your transcript.

Instructors may not change incomplete grades after the end of the grace period without the permission of a college-based Exceptions Committee.

NOTE: In the case of a student who has applied for graduation and who has been approved for an Incomplete in his or her final term, the incomplete must be resolved within the four week grace period before final degree certification.

Protection of Human Subjects [For more information see: <http://research.depaul.edu/>.]

This course may involve research activities intended solely for classroom learning outcomes. Collecting data from human beings for such activities do not require institutional review if there is no intent to generalize, publish, or otherwise disseminate the findings. However, students must still abide by federally-mandated guidelines for the protection of human beings

who may be the sources of such data. These include, but are not limited to, keeping persons' identifiable characteristics confidential and taking care to minimize or entirely remove the possibility of mental, social, financial, or physical harm. If findings from your research activities may be disseminated beyond classroom discussion, your activities carry risk of harm to the participants, or the identities of the participants are ascertainable, students must obtain approval from the SNL Local Review Board and DePaul Institutional Review Board. Please consult with the course instructor and visit the website of the Office of Research Protections at DePaul University (<http://research.depaul.edu>) for additional information and guidance.

Workload Expectations

For *satisfactory* completion of this course, students in this class are expected to spend *at least* 2 hours of outside class preparation for every hour spent in class. That translates to 6 hours per week of homework for enrollment in 4-credits.

About the Instructor

Donald Opitz, Ph.D., is an Assistant Professor at DePaul University's School for New Learning, where he teaches courses that address science competencies within liberal learning. He received his Ph.D. in history of science from the University of Minnesota and B.S. in physics and mathematics from DePaul University. His teaching and research interests include topics in the history of science (especially 19th and 20th centuries), science and religion, science and math education, and assessment in higher education.

Class Schedule – *May change with advance notice.*

Except for the Moore text all required readings are available at DePaul Libraries' eReserves site, <http://eres.lib.depaul.edu>.

Date	Topic and Description	Reading Due*	Assignment Due*
1/6	<p>Week 1: Course overview: Course learning outcomes, learning resources and assignments.</p> <p>Learning outcomes:</p> <ul style="list-style-type: none"> • Describe one's prior understanding of science and religion. • Develop an awareness of the complexities involved in the meanings of these terms. • Develop an awareness of the range of ways in which science and religion are interrelated. 	No reading due.	No assignment due.

*Readings and assignments are due before the start of class on the date indicated.

Date	Topic and Description	Reading Due*	Assignment Due*
1/13	<p>Speaking of science and religion: Perspectives from scientific cosmology, natural history, psychology, and theology on the nature and interrelationship of science and religion.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Develop an awareness of the fuller complexity of religious belief. • Be more fully aware of one's religious upbringing and experience of spirituality/ authenticity. • Describe the early period of biblical history and differentiate between the versions of Genesis. • Appreciate the diversity of creation stories that have arisen within different civilizations. 	<ul style="list-style-type: none"> • Hawking • Chickering • Gould • Dictionary entries for "science" and "religion" 	<ul style="list-style-type: none"> • Journal 1: Reflection on definitions and spiritual autobiography
1/20	<p>Week 3: Religious Complexity: Exploration of the complexity of aspects to religion, historically and now: scriptural texts, teachings, congregations and sites.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Describe and critique the standard "Scientific Method" taught in schools. Distinguish between "textbook" and more realistic descriptions of scientific practice. • Explain scientific practice in realistic terms, as practiced by real scientists. • Analyze key facets to the nature of science: understand and explain methodologies like induction, deduction, hypothetico-deductive reasoning, and serendipitous discovery. • Consider the interplay between science and religion in historical cases: explain how religious reactions to scientific ideas encouraged the development of hypothetico-deductive reasoning. 	<ul style="list-style-type: none"> • Moore, Chapters 1-2 • "Turning the Pages," British Library online • Visit to a religious site 	<ul style="list-style-type: none"> • Journal 2: Reflection on visit to religious site

*Readings and assignments are due before the start of class on the date indicated.

Date	Topic and Description	Reading Due*	Assignment Due*
1/27	<p>Week 4: Scientific Method? Unpacking the meaning of the “scientific method” historically and today.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Summarize the theory of natural selection: describe the role of environmental pressures, advantageous characteristics, inheritance, and differential survival rates. • Identify and judge the evidence upon which natural selection rests: this includes direct observations and analogous reasoning. • Describe the historical developments (intellectual, social, and economic) associated with Darwin’s achievement: explain how Darwin’s achievement was influenced by industrialization, evolutionary thinking, imperialism, and population growth. • Identify the sequence of events and individuals involved in the development of 19th century evolutionary thought: beginning with natural theologians and ending with agnostic defenders of evolution. 	<ul style="list-style-type: none"> • Storey & Carter • McComas • Gingerich. 	<ul style="list-style-type: none"> • Position Paper Stage 1
2/3	<p>Week 5: Evolution: Consideration of the historical context and scientific content of Darwin’s theory of natural selection.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Identify the key actors and sequence of events associated with the Scopes “Monkey” Trial. • Describe the issues at stake in the science curriculum controversies of 20th century America. • Analyze questions of school policy concerning religion in schools. • Develop a personal judgment on the question of the teaching of evolution and creationism in schools. 	<ul style="list-style-type: none"> • Moore, Chapter 3 • Darwin, Chapter 4 • Visit to a science site • Dictionary entry for "evolution" 	<ul style="list-style-type: none"> • Journal 3: Reflection on visit to science site

*Readings and assignments are due before the start of class on the date indicated.

Date	Topic and Description	Reading Due*	Assignment Due*
2/10	<p>Week 6: The Scopes Trial: An analysis of the trial and its historical context; ethical issues attending the Establishment Clause</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Define creationism, Creation Science and Intelligent Design: explain how these approaches to explaining the origin and development of life are interrelated. Identify the sources of the beliefs. • Identify the key beliefs of proponents of creationism. • Judge the scientific and religious nature of the creationists' arguments. • Identify the ethical issues at stake in the debate concerning school policies on the nature of the science curriculum. 	<ul style="list-style-type: none"> • Moore, Chapter 6 • Darden 	<ul style="list-style-type: none"> • Position Paper Stage 2
2/17	<p>Week 7: Creation Science and Intelligent Design: Post-Scopes developments in the evolution/creationism debates</p> <p>Week 7 Learning Outcomes:</p> <ul style="list-style-type: none"> • Identify and describe the two primary types of stem cells. • Describe the character and function of stem cells in human biology. • Describe the techniques used for extracting stem cells and cultivating stem cell lines. • Identify the key policy questions concerning stem cell research. 	<ul style="list-style-type: none"> • Moore, Chapter 7 • Johnson 	<ul style="list-style-type: none"> • Journal 4: Mid-quarter Reflection

*Readings and assignments are due before the start of class on the date indicated.

Date	Topic and Description	Reading Due*	Assignment Due*
2/24	<p>Week 8: Stem Cells: Science and Policy: Broad-scope look at the science and biotechnology involved in stem-cell research and the key science policy issues involved.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Identify the key ethical questions arising from stem cell research. • Identify and describe the predominant ethical positions taken in the stem cell debates. • Develop one's own position within the debate by appealing to scientific, religious, and historical arguments. 	<ul style="list-style-type: none"> • Hayes, "Stem Cells and Public Policy," pp. 1-22 • Obama, "Removing Barriers" • Online* DNALC tutorial on stem cell lines • Univ. of Utah's "Click and Clone" online* 	<ul style="list-style-type: none"> • Position Paper Stage 3
3/3	<p>Week 9: Stem Cells: Ethics: An overview of the main ethical positions in the debates.</p> <p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Develop further one's understanding of the interrelation between science and religion. • Identify strategies for continued learning in this field. • Identify further issues which involve science and religion. 	<ul style="list-style-type: none"> • Hayes, "Stem Cells and Public Policy," p. 23 to end. 	<ul style="list-style-type: none"> • Journal 5: Topical
3/10	<p>Week 10: Confronting Future Issues: Apply analytical skills developed throughout course to new cases. <i>Case-Study Presentations.</i></p> <p>Week 10 Learning Outcomes:</p> <ul style="list-style-type: none"> • Apply critical thinking skills in analyzing a case-study in science and religion. • Make a judgment on a case based on scientific, religious, and historical arguments. • Effectively communicate one's analysis in a presentation format. 	<ul style="list-style-type: none"> • Moore, Chapter 8 • Van Biema 	<ul style="list-style-type: none"> • Case-Study Analyses
3/17	<p>Finals Day: <i>Case-Study Presentations.</i></p>	<p>No reading due.</p>	<ul style="list-style-type: none"> • Journal 6: Self-assessment