

**UNIVERSITY OF ABERDEEN  
SCHOOL OF DIVINITY AND RELIGIOUS STUDIES**

**DR3549  
SCIENCE AND RELIGION**

**I. COURSE CO-ORDINATOR**

Dr. Ian A. McFarland, KCF1  
Office telephone: 272629  
Email: i.a.mcfarland@abdn.ac.uk  
Office hours: Wednesdays, 2:00-4:30 pm, or by appointment

Lectures will also be presented by:

Dr. Martin A. Mills, KCS2  
Office telephone: 272622  
Email: m.a.mills@abdn.ac.uk

**II. LEARNING OUTCOMES**

**A. Knowledge and Understanding**

1. some awareness of the range of contemporary views, both Christian and non-Christian, on the relationship between religion and science, with special attention to the question of the degree to which language is used in religious and scientific speech
2. some awareness of the differences and similarities between the methods and presuppositions of theology and the natural sciences
3. some awareness of contemporary scientific theories about the origin and evolution of the cosmos in general and life on earth in particular
4. some awareness of Christian understanding of creation in relation to Scripture, tradition and modern science

**B. Discipline-specific Skills**

1. to develop the ability to reflect critically on the strengths and weaknesses of different approaches to the natural sciences taken by people who claim religious affiliation
2. to engage the theological implications of at least two particular scientific theories with integrity
3. to acquire a measure of intellectual flexibility through engagement with different approaches to the topic of science and religion
4. to gain a familiarity with the ways in which scientists and believers conceive of truth
5. to acquire precision in thinking through the formulation of a coherent theological position of one's own
6. to acquire some confidence in addressing questions vigorously debated both within the church and the wider society

**C. Transferable Skills**

1. to be able to communicate effectively both orally and in writing
2. to be able to gather, analyse and assess material from both primary and secondary literature
3. to be able to work collaboratively with another on a project
4. to be able to use IT for research and for keeping apprised of developments within the course
5. to be able to undertake an independent research project on a set topic
6. to develop discipline in the organisation of one's time

**III. ASSESSMENT (WITH REFERENCE TO CORRESPONDING LEARNING OUTCOMES)**

**A. Class Preparation and Attendance**

1. Students are strongly advised to familiarise themselves with at least one popular account of the history of science (see recommended reading suggestions in section V.3 below).  
**CORRESPONDING LEARNING OUTCOME: A1, A2, A3, B4**

2. Students are encouraged to acquire a reference work on modern science (e.g., *The Oxford Concise Scientific Dictionary*). N.b. that two such works, are available for consultation in the Divinity Library. **CORRESPONDING LEARNING OUTCOME: A1**
3. Students will also be expected to consult the course website regularly in order to keep apprised of any changes in the syllabus or class schedule, as well as to make use of the learning resources available there. **CORRESPONDING LEARNING OUTCOME: C4**
- \*\* Please note that class certificates will be refused to students who fail to attend at least 75% of class meetings without a medical or other approved excuse. Details of penalties for non-attendance, as well as late submission of work can be found in the document, Student Attendance, Performance and Assessment, which is available in the departmental office.

### B. Seminars

4. Students are expected to have read assigned texts prior to the seminar in which they are to be discussed and to participate actively in seminar discussions. **CORRESPONDING LEARNING OUTCOME: A1, A2, A3, A4, B1, B4, C6**
7. In Section 1 of the course, each student will be expected to post a short (no more than 150 words) response to a thesis posted on the website bulletin board. While these responses will not be marked, they will be reviewed by the Course Co-ordinator and serve as the basis for seminar discussion (making it advisable for students to bring copies of their responses with them to the seminar session). **CORRESPONDING LEARNING OUTCOMES: A1, A2, A3, B1, B3, B5, B6, C1, C2**
8. In the Section 3 of the course, every student will be responsible for taking part in a debate on the relationship between contemporary scientific theory and some aspect of the Christian doctrine of creation, adopting one of the positions (conflict, independence, dialogue or integration) discussed in Section 1 of the course. This presentation will count 10% toward the final mark.  
**CORRESPONDING LEARNING OUTCOMES: A1, A2, A3, A4, B1, B3, B5, B6, C1, C2, C3, C6**

### C. Essay

Students are required to prepare one essay of 3500 words on one of the assigned topics listed in section VIII below. The recommended readings there listed are all on 3-day loan in the QML, though students should feel free to make use of any other materials they find useful. All the materials listed. The essay is due in the Divinity Office (KCG11) on *Monday, 15 April at 4:00 pm* and will count 30% toward the final mark. *Please note that all essays must be submitted with a completed essay self-evaluation form, which may be downloaded from the course website*). Essays submitted without this form will be returned unread and treated as late submissions. **CORRESPONDING LEARNING OUTCOMES: A1, A2, A3, B1, B2, B3, B4, B5, B6, C1, C2, C4, C5**

### D. Examination

There will be a three-hour final examination, which will count 60% toward the final mark (*n.b.*, however, that departmental regulations stipulate no student will be awarded a passing mark for a course who fails to achieve a CAS mark of 8 on the final examination). The examination will be comprised of three sections, one based on each of the three sections of the course. There will be some choice of questions within each section, though students will be required to answer at least one question from each section. Students will be permitted to take one A4 sheet of notes with them into the examination hall. **CORRESPONDING LEARNING OUTCOMES: A1, A2, A3, A4, B1, B3, B4, B6, C1, C2**

## IV. COURSE STRUCTURE

The course is divided into three thematic sections. For each section there will be two class meetings each week, each two hours in length. Within each section, the first weekly class meeting will be in lecture format, while the second will be a seminar based on a close reading of one of the assigned texts.

## V. COURSE TEXTS

### 1. Essential texts available for purchase from Blackwells (High Street, Old Aberdeen)

Barbour, Ian. *When Science Meets Religion: Enemies, Strangers or Partners?* London: SPCK, 2000.  
Gould, Stephen Jay. *Rocks of Ages: Science and Religion in the Fullness of Life*. New York: Ballantine, 1999.

## 2. Other required reading

- Barbour, I. *Myths, Models and Paradigms: The Nature of Scientific and Religious Language*. London: SCM, 1974, ch.6, pp. 92-118.
- Capra, F. *The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism*. London: Wildwood House, 1975, chs. 10, 11 and Epilogue.
- Dennett, Daniel. *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. London: Penguin, 1995, chs. 1 & 3.
- Hefner, Philip. *The Human Factor: Evolution, Culture and Religion*. Minneapolis: Augsburg Fortress, 1993, chs. 1 & 7.
- Horton, R. "African Traditional Thought and Western Science," in Horton, R. *Patterns of Thought in Africa and the West: Essays on Magic, Religion and Science*. Cambridge: CUP, 1993, pp. 197-258.
- Jung, C. J. "Psychological Commentary," in Evans-Wentz *The Tibetan Book of the Dead*
- Kelsey, David. "The Doctrine of Creation from Nothing," in *Evolution and Creation*, ed. Eman McMullin. Notre Dame: University of Notre Dame, 1985, pp. 176-196.
- Lopez, D. "The Book," in *Prisoners of Shangri-la: Tibetan Buddhism and the West*. Chicago: University of Chicago Press, 1998.
- Luhrmann, T. *Persuasions of the Witch's Craft: Ritual, Magic and Witchcraft in Present-Day England*. Oxford: Blackwell, 1989, ch.1
- Tambiah, S. J. *Magic, Science, Religion and the Scope of Rationality*. Cambridge: CUP, 1990, ch. 3
- Thurman, R. *The Tibetan Book of the Dead*, pp. 13-50.
- Torrance, T. F. *Theological Science*. London: Oxford University Press, 1969, pp. 116-131, 281-312.
- Updike, John. *Roger's Version*. London: André Deutsch, 1986, pp. 10-25, 72-84, 197-212.

The material by Dennett, Hefner, Kelsey, Torrance and Updike will be distributed as photocopied handouts in class; the remainder of the material listed is available through the Heavy Demand section of the QML. Please note that students at Honours level are assessed for the costs of photocopying on a per course basis. The Course Co-ordinator will keep a tally of photocopying costs incurred in the distribution of course materials. Students are asked to pay the assessed fees to the Departmental Office (KCG11C) by the last day of classes.

## 3. Recommended reading

- Bronowski, Jacob. *The Ascent of Man*. London: BBC, 1973.
- Fergusson, David A. S. *The Cosmos and the Creator: An Introduction to the Theology of Creation*. London: SPCK, 1998.
- Ferris, Timothy. *The Whole Shebang: A State of the Universe(s) Report*. London: Weidenfeld, 1997.

Copies of the Fergusson text are available at Blackwells. The other two texts can be found in the QML Heavy Demand section.

## VI. WEB PAGES

This course has its own website, which can be accessed at:

<[http://www.abdn.ac.uk:8900/SCRIPT/science/scripts/serve\\_home](http://www.abdn.ac.uk:8900/SCRIPT/science/scripts/serve_home)>

The web page contains the most current form of the course outline, lecture notes, a glossary of key terms, and links to other web page containing material relevant to the course. Please note especially that embedded in the course web page (via the "Links" button) are links to two other relevant sites on the topic of religion and science, each of which is a source of further links to information on this topic:

The Center for Theology and the Natural Sciences <[www.ctns.org](http://www.ctns.org)>

The Templeton Foundation <[www.templeton.org](http://www.templeton.org)>

Students are responsible for (and thus be prepared to be examined on) all information posted on the website by the Course Co-ordinator (n.b., this does *not* include material found on other websites linked to the course websites, unless such material has explicitly been assigned).

## VII. CLASS SCHEDULE

### Week 1 (28/1-1/2): Introduction

Lecture: Defining Terms, Competencies and Relationships  
 Seminar: discussion of selections from John Updike's, *Roger's Version*

**SECTION 1 Four Interpretations of the Relationship between Science and Religion**

**Week 2 (4-8/2): Conflict**

Lecture: Ever Since Darwin?  
 Seminar: discussion of Daniel Dennett, *Darwin's Dangerous Idea*, chs. 1 & 3

**Week 3 (11-15/2): Independence**

Lecture: The Kantian Compromise  
 Seminar: discussion of Stephen Jay Gould's *Rocks of Ages*, ch. 2

**Week 4 (18-22/2): Integration**

Lecture: The Quest for Unified Knowledge  
 Seminar: discussion of Hefner's *The Human Facto*, chs. 1, 7-8

**Week 5 (25/2-1/3): Dialogue**

Lecture: Levels of Commensurability  
 Seminar: discussion of T. F. Torrance's *Theological Science*, pp. 116-131, 281-312

**SECTION 2 Different Faiths -Different Frameworks**

**Week 6 (4-8/3): Magic, Witchcraft and Science I**

Seminar: I. Barbour, *Myths, Models and Paradigms*, ch.6, pp. 92-118 (esp. 98-102, on the falsifiability of theories)  
 Seminar: Horton, R. "African Traditional Thought and Western Science", Part One. In Horton, R. *Patterns of Thought in Africa and the West*, 197-258 and *Africa*, Vol. 37 (1967), no.1 (Classmark: per 300 Afr)

**Week 7 (11-15/3): Magic, Witchcraft and Science II**

Seminar: Horton, R. "African Traditional Thought and Western Science", Part Two. In Horton, R. *Patterns of Thought in Africa and the West*, 197-258 and *Africa*, Vol. 37 (1967), no. 2.  
 Seminar: T. Luhrmann, *Persuasions of the Witch's Craft*, ch.1

**Week 8 (18-22/3): Eastern Mysticism and Western Science**

Seminar: F. Capra, *The Tao of Physics*, chs. 10, 11 and Epilogue (comments could use Barbour, I. *When Science Meets Religion*, pp. 84-6)  
 Seminar: EITHER C. J. Jung "Psychological Commentary," in Evanz-Wentz *The Tibetan Book of the Dead* OR D. Lopez, "The Book," in *Prisoners of Shangri-la*. OR Thurman, R. *The Tibetan Book of the Dead*, pp. 13-50

**SECTION 3 Case Study: The Christian Doctrine of Creation**

**Week 9 (15-19/4): The Doctrine of Creation and the Bible**

Lecture: Creation in the Old and New Testaments  
 Seminar: debate and discussion of Kelsey, "The Doctrine of Creation from Nothing"

**Week 10 (22-26/4): Creation and Science I: The Big Bang Theory**

Lecture: The Big Bang Theory and Contemporary Cosmology  
 Seminar: debate and discussion on the issues raised in Barbour, ch. 2

**Week 11 (29/4-3/5): Creation and Science II: The Theory of Evolution by Natural Selection**

Lecture: Darwinism and Neo-Darwinism  
 Seminar: debate and discussion on the issues raised in Barbour, ch. 4

**Week 12 (6-10/5): Creation and Science III: Divine Action in Nature**

Lecture: The Logic of Divine Action

Seminar: debate and discussion on the issues raised in Barbour, ch. 6

### VIII. ESSAY TOPICS AND RECOMMENDED READING

Essays topics must be chosen from the following:

- I. Explore the interaction of theology and modern science EITHER with respect to the problem of divine action OR with respect to the beginning and end of the world.
  - Barbour, Ian G. *Issues in Science and Religion*.
  - . *Religion in an Age of Science*.
  - Bowker, John. *Is God a Virus?*
  - Clayton, Philp. *God and Contemporary Science*.
  - Davies, Paul. *God and the New Physics*.
  - . *The Mind of God*.
  - Dawkins, Richard. *The Blind Watchmaker*.
  - Drees, Willem B. *Beyond the Big Bang: Quantum Cosmologies and God*.
  - Dyson, Freeman. *Infinite in All Directions*.
  - Ferguson, Kitty. *The Fire in the Equations*.
  - McGrath, A. *Science and Religion: An Introduction*.
  - Peacocke, Arthur. *Creation and the World of Science*.
  - . *God and Science: A Quest for Christian Credibility*.
  - Polkinghorne, John. *Reason and Reality*.
  - . *Science and Christian Belief*.
  - Russell, Robert J., Nancey Murphy and Arthur R. Peacocke, eds., *Chaos and Complexity: Scientific Perspectives on Divine Action*.
  - Russell, Robert J., William R. Stoeger, S.J. and Francisco J. Ayala, eds., *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*.
  - Tamner, Kathryn. *God and Creation in Christian Theology*.
  - . *Jesus. Humanity and the Trinity*, ch. 4
  - Tipler, Frank. *The Physics of Immortality*. London: Macmillan, 1995.
  - Tracy, Thomas F., ed. *The God Who Acts: Philosophical and Theological Explorations*.
  - Van Huuysteen, W. *Duet or Duel: Theology and Science in a Postmodern World*.
  - Ward, Keith. *God, Chance and Necessity*.
  - Worthing, Mark W. *God, Creation and Contemporary Physics*
  
- II. Evaluate the validity of recent ecological emphases in the Christian theology of creation.
  - Deane-Drummond, Celia. *A Handbook in Theology and Ecology*.
  - Hall, Douglas John. *Imaging God: Dominion as Stewardship*
  - Lewis, A. *Theatre of the Gospel*.
  - McFague, S. *The Body of God: An Ecological Theology*
  - . *Life Abundant*.
  - Migliore, D. *Faith Seeking Understanding*.
  - Moltmann, J. *God in Creation*.
  - Nash, James. *Loving Nature: Ecological Integrity and Christian Responsibility*.
  - Ruether, Rosemary R. *Gaia and God: An Eco-feminist Theology of Earth Healing*
  - Santmire, Paul. *The Travail of Nature*.
  - Page, Ruth. *God and the Web of Creation*.
  
- III. Critically examine the assertion that certain religious or magical traditions are intrinsically 'scientific'.
  - Capra, F. *The Tao of Physics*.
  - Horton, R. "African Traditional Thought and Western Science," in Horton, R. *Patterns of Thought in Africa and the West, 197-258* and *Africa*, Vol. 37 (1967), nos. 1-2.
  - Jung, C. J. "Psychological Commentary", in Evans-Wentz *The Tibetan Book of the Dead*.
  - Lopez, "The Book," in *Prisoners of Shangri-la*.
  - Luhrmann, T. *Persuasions of a Witch's Craft*.
  - Tambiah, S.J. *Magic, Science, Religion and the Scope of Rationality*.
  - Thurman, R. *The Tibetan Book of the Dead*, Ch.2.

- IV. Evaluate the God-world relationship in process theology.
- Brown, D. et al., eds. *Process Philosophy and Christian Thought*.  
 Cobb, John B. and D. Griffin. *Process Theology*.  
 Cousins, E. H. *Process Theology: Basic Writings*.  
 Hartshorne, C. *The Logic of Perfection*.  
 --. *Man's Vision of God*.  
 Ogden, S. *The Reality of God and Other Essays*.  
 Pailin, D. *God and the Processes of Reality*.  
 Palmer, Clare. *Environmental Ethics and Process Thinking*.  
 Surin, K. "Process Theology," in D. Ford, ed., *The Modern Theologians*, vol. 2, ch. 5.  
 Whitehead, A. N. *Process and Reality*.

#### IX. SUPPLEMENTARY COURSE BIBLIOGRAPHY

The following books are suggested as supplemental to the titles listed above, and are recommended for those who wish to do further reading in a particular area covered in the course:

- Anderson, Bernard. *Creation in the Old Testament*. Philadelphia: Fortress, 1984.  
 Barbour, Ian G. *Religion and Science: Historical and Contemporary Issues*. London: SCM, 1998.  
 Barth, Karl. *Church Dogmatics*, I/1. Edinburgh: T & T Clark, 1974. §§1 & 7.  
 Brooke, John Headley. *Science and Religion*. Cambridge: CUP, 1991.  
 Brueggemann, Walter. *Genesis*. Atlanta: John Knox, 1982.  
 Childs, Brevard. *Biblical Theology of the Old and New Testaments*. London: SCM, 1992.  
 Craig, William L. *Theism, Atheism and Big Bang Cosmology*. Oxford: OUP, 1983.  
 Crawford, R. C. *The God/Man/World/Triangle: A Dialogue between Science and Religion* London: Macmillan, 2000.  
 Dawkins, Richard. *The Selfish Gene*. Oxford: OUP, 1976.  
 Frye, Roland, ed. *Is God a Creationist?* New York: Scribner, 1983.  
 Gibson, John. *Genesis*. Edinburgh: T & T Clark, 1981.  
 Gilkey, Langdon. *Religion and the Scientific Future: Reflections on Myth, Science, and Theology*. New York: Harper & Row, 1970.  
 Godfrey, Laurie, ed. *Scientists Confront Creationism*. New York: W. W. Norton, 1984.  
 Gould, Stephen Jay. *Full House [British ed., Life's Grandeur]: The Spread of Excellence from Plato to Darwin*. London: Vintage, 1992.  
 --. *Wonderful Life: The Burgess Shale and the Nature of History*. London: Penguin, 1991.  
 Gunton, Colin. *The Triune Creator: A Historical and Systematic Study*. Edinburgh: University of Edinburgh, 1998.  
 Hawking, Stephen. *A Brief History of Time*. London: Bantam, 1988.  
 Hefner, Philip. *The Human Factor: Evolution, Culture and Religion*. Minneapolis: Augsburg Fortress, 1993.  
 Kuhn, Thomas S. *The Structure of Scientific Revolutions*. 2nd ed. Chicago: University of Chicago Press, 1970.  
 Lakatos, Imre. *The Methodology of Scientific Research Programmes*. Cambridge: CUP, 1978.  
 Lucas, John. *The Future: An Essay on God, Temporality and Truth*. Oxford: OUP, 1989.  
 Matthews, Clifford and R. A. Varhese, eds. *Cosmic Beginnings and Human Ends*. Chicago: University of Chicago Press, 1995.  
 May, Gerhard. *Creation Out of Nothing*. Edinburgh: T & T Clark, 1984.  
 McGrath, Alister E. *The Foundations of Dialogue in Science and Religion*. Oxford: Blackwell, 1998.  
 --. *T. F. Torrance: An Intellectual Biography*. Edinburgh: T & T Clark, 1999 (especially chs. 8-9)  
 Moltmann, Jürgen. *God in Creation*. London: SCM, 1985.  
 Monod, Jacques. *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology*. London: Collins, 1972.  
 O'Shaughnessy, Thomas J. *Creation and the Teaching of the Qu'ran*. Rome: Pontifical Biblical Institute, 1985.  
 Polkinghorne, John. *Chaos, Quarks and Christianity: Questions to Science and Religion*. London: Triangle, 1994.  
 --. *Science and Providence: God's Interaction with the World*. London: SPCK, 1989.

- Price, Daniel J. *Karl Barth's Anthropology in Light of Modern Thought*. Grand Rapids: Eerdmans, 2002.
- Samuelson, Norbert. *Judaism and the Doctrine of Creation*. Cambridge: CUP, 1994.
- Sorabji, Richard. *Time, Creation and the Continuum: Theories in Antiquity and the Early Middle Ages*. London: Duckworth, 1983.
- Southgate, Christopher, ed. *God, Humanity and the Cosmos*. Edinburgh: T & T Clark, 1999.
- Stannard, Russell. *Doing Away with God? Creation and the Big Bang*. London: Faber & Faber, 1993.
- . *Science and Wonders*. London: Faber & Faber, 1996.
- Torrance, T. F. *Reality and Scientific Theology*. Edinburgh: Scottish Academic Press, 1985.
- . *Theological Science*. London: Oxford University Press, 1969.
- . *The Trinitarian Faith*. Edinburgh: T & T Clark, 1995.
- Watts, Fraser, ed. *Science Meets Faith : Theology & Science in Conversation*. London: SPCK, 1998.
- Welker, Michael. *Creation and Reality*. Minneapolis: Augsburg Fortress, 1999.
- Westermann, Claus. *Genesis: An Introduction*. Minneapolis: Augsburg Fortress, 1992.