

**Faraday Institute
Programme
on
Science and Religion
Semester 2**

INTRODUCTION

The Faraday Institute for Science and Religion is an educational charity with a Christian ethos based in Cambridge, UK [www.faraday-institute.org]. As a member of the Cambridge Theological Federation, the Institute is affiliated to the University of Cambridge. Its physical location is within the brand-new Woolf Building which is on the Westminster College campus.

The aims of the Institute are “to advance education in the field of science and religion by carrying out research in all aspects of that subject, publishing the useful results in academic journals and books and improving the public understanding of issues in the field of science and religion by disseminating research results more widely beyond the academic community and through lectures, courses and the publication of other educational resources”.

This programme is aimed at providing an enrichment through immersion in the contemporary intellectual dialogue between science and religion, facilitated by the professional staff of The Faraday Institute and Cambridge University faculty.

SEMESTER DATES: Mid-January 2021 – late-May 2021

THE PROGRAMME

The programme will last for 4 months – mid-January to late-May (15 weeks of teaching). The programme will offer a tailored educational experience delivered by The Faraday Institute and will comprise the module ‘Contemporary Issues in Science and Religion’.

The *programme aim* is to enhance and enrich the students’ total learning experience and personal development through engagement with the science and religion dialogue in order to

- Sharpen their critical intellectual enquiry;
- Engage them in tackling intellectual issues over which there may be divergent views;
- Enhance their skills in guided self-directed study;
- Through critical self-reflection to develop a greater understanding of others whilst at the same time developing a view of their own;
- Enrich their intercultural understanding and experience of global citizenship through being part of the Cambridge University community;
- Develop their skills in communication and collaboration.

Mode of delivery

Because the group size will be small (2-3 students) most of the teaching and learning will take place via seminars and tutorials rather than formal lectures. This means that the level of teaching and interaction will be intense, but on the other hand there will be a high level of private study. In practice this will have two important outcomes:

1. Students will benefit from more direct engagement with their tutors;
2. Students will develop a high level of independent learning skills – through their guided supervisions.

In addition there will be site visits/ field trips for experiential learning and the placing of taught topics into a broader cultural context.

Assessment

Students will be assessed by their engagement in seminar presentations and tutorials, reflective journals and through written essays. There are no examinations. Private study sessions will include reading set books and journal articles but also accessing the extensive video archive of Faraday lectures where the topic for consideration is taught in depth. Students will also have access to the Faraday Institute Library, the Woolf Institute Library (where The Faraday Institute is located), and to the vast resources provided by the Cambridge University Library.

A *tutorial* will normally be a small group teaching session which is tutor-led and based around some prior reading. Some tutorials will be individual and used to help students prepare for their presentations.

A *seminar* is also a small group teaching session which is tutor-led but involves a student presentation and subsequent tutor-led student discussion.

In addition to the above, once every week in term time, on average, there are Faraday Public Lectures, Faraday Research seminars and Faraday staff research talks, which students will be

expected to attend. The Public Lectures and Research Seminars are given by well-known speakers in the science-religion field.

Credits

The course credits are calculated according to the UK system (1 credit = 10 hours of learning). The module engages the student in 600 hours of learning (approximately 40 hours/week) and so is rated at 60 UK credits. For these purposes learning includes direct tutor contact (teaching) private study and assessment. UK credits can readily be converted into US credits as required.

Level

The course is taught at UK level 6. That is the final year of a UK undergraduate bachelors programme. Students are accepted who have a GPA of 3.7 or above.

Calendar

A provisional calendar is appended below. It should be noted that Cambridge University teaching terms are eight weeks long and some of the teaching on this programme would be conducted outside the Cambridge teaching terms.

w/c Monday	Programme	Cambridge term
04-Jan-21	<i>Arrive/Orientation</i>	
11-Jan-21	<i>Induction</i>	
18-Jan-21	Teaching week 1	Term week 1
25-Jan-21	Teaching week 2	Term week 2
01-Feb-21	Teaching week 3	Term week 3
08-Feb-21	Teaching week 4	Term week 4
15-Feb-21	Teaching week 5	Term week 5
22-Feb-21	Teaching week 6	Term week 6
01-Mar-21	Teaching week 7	Term week 7
08-Mar-21	Teaching week 8	Term week 8
15-Mar-21	Teaching week 9	
22-Mar-21	Teaching week 10	
29-Mar-21	Teaching week 11	
05-Apr-21	Easter Break	
12-Apr-21	Easter Break	
19-Apr-21	Teaching week 12	
26-Apr-21	Teaching week 13	Term week 1
03-May-21	Teaching week 14	Term week 2
10-May-21	Teaching week 15	Term week 3
17-May-21	<i>Review</i>	Term week 4
24-May-21	<i>Depart</i>	Term week 5

Contemporary Issues in Science and Religion

CONTEMPORARY ISSUES IN SCIENCE AND RELIGION (CISR)

Module description

This module explores the field of Science and Religion in a number of specific themed areas. The ‘topics’ developed in this module are designed to be illustrative of the breadth of the field, but are chosen to enable the student to engage in greater depth in some specific areas.

The module will be delivered as five sub-modules (CISR-1 to -5) and each sub-module will be separately assessed. The five sub modules will cover the themes – Creation, evolution and biblical interpretation (CISR-1), Physics and Cosmology (CISR-2), Faith and the Human brain (CISR-3), What does it mean to be Human (CISR-4), and Environmental issues – a Christian perspective (CISR-5).

Teaching, Learning and Assessment

Teaching will be in small groups. Each week will begin with an introductory one-hour lecture/tutorial in which the topic will be introduced. Reading will be set. There will be a follow-up tutorial later in the week. Towards the end of the week there will be a three-hour student-led, tutor guided seminar in which the reading will be discussed. During the 8 weeks that the semester overlaps with the Cambridge University term, some University lectures will also be included in the program. To assist with personal study, students will be also directed to the Faraday video archive of lectures and seminars given over the past 12 years. Students will also have access to the Faraday Science and Religion library and to the huge Cambridge University library.

Assessment tasks are described below and will be submitted every three/four weeks, at the end of each sub-module.

Learning Outcomes

(a) Knowledge

On the completion of this module, students will be able to

1. Understand in some depth the Christian doctrine of creation in the context of both modern science and modern biblical studies
2. Appreciate the arguments for the fine tuning of the Universe from modern cosmology.
3. Explain the reductionist arguments of neuroscience
4. Show an appreciation of the challenge of Artificial Intelligence to the concept of what it means to be human.
5. Demonstrate a good understanding of the Christian perspective on the natural environment

(b) Skills

On the completion of this module students will be able to

1. critically evaluate contemporary arguments in favour of creationism, intelligent design, neuroscientific reductionism and the human as a machine.
2. reflect upon their own learning in this field
3. articulate the results of their reading and express their own thoughts in the forum of a seminar

Indicative Reading

Some weekly themes/ topics will be based on The Faraday Papers, a series of twenty 4000-word Papers, now in book form, will be provided to students. Authors of Faraday Papers will be involved in teaching these themes. This books list is indicative and many other books will be available on relevant themes.

- Alexander, D.R. 2014. Creation or Evolution – Do We Have to Choose? Monarch (2nd Ed).
- Hayhoe, K. and Farley, A., 2009. A climate for change: global warming facts for faith based decisions. Faithwords, USA.
- Holder, R., 2013. Big Bang, Big God: A Universe designed for life. Lion.
- Hulme, M., 2009. Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity, Cambridge University Press. 393pp.
- McGrath, A., E., 2010. Science and Religion and New Introduction (2nd Ed). Wiley Blackwell.
- McGrath, A., E., 2011. Darwinism and the Divine. Evolutionary thought and natural theology. Wiley-Blackwell.
- Moo, D.J. and Moo, J.A., 2018. Creation Care: A biblical theology of the natural world. Zondervan, USA.
- Spencer, N. and White, R., 2007. Christianity, Climate Change and Sustainable living. SPCK, UK.
- Walton, J., H., 2009. The lost world of Genesis One. Ancient cosmologies and the origins debate. IVP Academic.
- Wilkinson, D., 2013. Science, religion and the search for extra-terrestrial intelligence. Oxford University Press.
- Richard Middleton, 2005, The Liberating Image: The Imago Dei in Genesis 1. Brazos Press.

Module outline

CISR-1: Creation, Evolution and biblical interpretation

Week 1. Charles Darwin and natural selection.

Summary of Darwin's main findings. History of the impact of the ideas in 19th and early 20th century. The tree of life.

Visit Cambridge University Library (Darwin papers) and Christs College Cambridge.

Neo-Darwinism – Richard Dawkins

Modern palaeontology. Discovery of DNA and genomics. Paley and refutation of arguments for design.

Week 2. The meaning of creation in Christian Theology

Creation ex nihilo. Creation as an event, as a process.

Week 3. Interpreting Genesis in the 21st Century.

Human origins. Creationist movements. Intelligent design. Modern biblical studies and ways to read Genesis. God's action in the evolutionary process.

Activity	Study hours
Faraday seminar	6
Tutorial x 6	6
Seminar x 3	9
Field visit (one day)	8
Private study – video archive	20
Private study/ reading	31
Assessment – Book review	20
Assessment – seminar presentation and prep	20
Total	120

Assessment

Assessment Type	Brief Details	Weighting	Alignment with learning outcomes
Book Review (1500 words)	Students will submit a review of a contemporary book on the theme of 'Creation, Evolution and biblical interpretation' such as Denis Alexander – Creation and Evolution, do we have to choose?	50%	(a)-1 (b)-1
Seminar presentation	Students will make a presentation at weekly seminars	50%	(b)-3
Total		100%	

CISR-2: Physics and Cosmology

Week 4. A brief history of time.

The Big Bang and the history of the Universe. Stellar evolution and the origin of the elements. Early planetary history and the early history of the earth. *Lab or radiotelescope visit*. Is the Universe Designed? The fine tuning of the Universe - physical constants and initial conditions. Alternatives to design. Multiverses and their problems.

Week 5. The Anthropic Principle and the Science and Religion Debate

Why is our planet 'just right' for the emergence of life? Can fine tuning be extended from cosmology to the origin of life on Earth? Explanations of the principle and its link to ideas of fine tuning; weak and strong versions.

Week 6. Are we alone in the Universe?

Evidences for extrasolar planets. Life on other planets. Probability arguments and Drakes equation. Theological consequences of extra-terrestrial life.

Activity	Study hours
Faraday seminar	6
Tutorial x 6	6
Seminar x 3	9
Field visit (one day)	8
Private study – video archive	20
Private study/ reading	31
Assessment – Reflective Journal	20
Assessment – seminar presentation and prep	20
Total	120

Assessment

Assessment Type	Brief Details	Weighting	Alignment with learning outcomes
Reflective Journal (2000 words)	Students will submit a reflective journal for the three weeks of this submodule on their reading and personal thoughts on their place in the Universe	50%	(a)-2 (b)-2
Seminar presentation	Students will make a presentation at weekly seminars	50%	(b)-3
Total		100%	

CISR-3. Faith and the human brain

Week 7. Are we more than a pack of neurons?

Reductionism and materialism of modern neuroscience. Cognitive neuroscience and artificial intelligence. The mind-brain dualism. Dual aspect monism – consciousness, free will. Brain and soul.

Week 8. Is the brain hard-wired for faith?

Areas of the brain and their relationship to personality. Differences in brain wiring and hindrances to faith. Understanding the human mind and emotions. Areas of the brain which are ‘faith sensitive’? Is there a neurological expression of religious activity?

Week 9. The psychology of faith

Faith as a coping mechanism. Hearing the voice of God. Mystical experiences during seizures. Near death experiences.

Activity	Study hours
Faraday seminar	2
Tutorial x 6	6
Seminar x 3	9
Private study – video archive	20
Private study/ reading	43
Assessment – Essay	20
Assessment – seminar presentation and prep	20
Total	120

Assessment

Assessment Type	Brief Details	Weighting	Alignment with learning outcomes
Essay (1500 words)	Students will submit an essay on the theme of reductionism in modern neuroscience	50%	(a)-3 (b)-1
Seminar presentation	Students will make a presentation at weekly seminars	50%	(b)-3
Total		100%	

CISR-4. What does it mean to be Human?

Week 10. The meaning of the term ‘created in the image of God’

Ways of understanding the term – substantive, functional, relational. Old and New Testament views and extra-biblical views. Implications for transhumanism

Week 11. Artificial intelligence and the future meaning of human identity.

Review of rise in artificial intelligence. Implications of ‘made in the image of God’ for transhumanism. Ethical issues in Artificial Intelligence (AI)/robotics

The limits of AI; potential harm from AI. Risks from AI – threat to humankind, decrease in demand for human labour, devaluation of humanity. AI and weapons. AI and morality. *Visit to AI lab.*

Week 12. Ethical Issues in Genetic Modification

Discovery of DNA and the possibilities of genetic modification. Relevant technologies. Genetic modification of plants and animals. Gene editing and the genetic modification of humans

Activity	Study hours
Faraday seminar	6
Tutorial x 6	6
Seminar x 3	9
Private study – video archive	20
Private study/ reading	41
Field visit (one day)	8
Assessment – Essay	20
Assessment – seminar presentation and prep	20
Total	120

Assessment

Assessment Type	Brief Details	Weighting	Alignment with learning outcomes
Essay (1500 words)	Students will submit a short essay on the theme of Genetic modification	50%	(a)-4 (b)-1
Seminar presentation	Students will make a short seminar presentation to the Faraday team on a topic of interest from the whole programme	50%	(b)-3
Total		100%	

CISR-5. Environmental issues – a Christian perspective

Week 13. What do we mean by the environment? How much are humans part of the environment. The Anthropocene. The Creation Ethic – a Christian understanding of the need for environmental care. The rise of the Christian environmental movement and a discussion of the major players. Contrasting Christian theologies of the Environment. The biblical foundation of Christian values. The Genesis creation stories, environmental ethics in the Old Testament prophets and in the New Testament. *Site visit to environmental charity.*

Week 14. Global climate change – the evidence; A review of scientific evidence for rising carbon dioxide levels over human history. The implications; Weather vs Climate. Storms-hurricanes-tornados. Drought vs flooding. Mitigation policies; Global policy initiatives – Paris 2015. Local policy initiatives. Societal responses; Climate deniers – the basis for their ideas – scientific and social.

Week 15. Natural disasters – a Christian theological understanding of and response to earthquakes, volcanic eruptions, floods and drought; Site visit to disaster response organisation. The sustainable management of natural resources.

Activity	Study hours
Faraday seminar	4
Tutorial x 6	6
Seminar x 3	9
Private study – video archive	20
Private study/ reading	43
Field visit (one day)	8
Assessment – Poster	20
Assessment – seminar presentation and prep	20
Total	120

Assessment

Assessment Type	Brief Details	Weighting	Alignment with learning outcomes
Poster presentation	Students will prepare individual posters of a case study of a geographical region where environmental mitigation or remediation strategies are currently being used	50%	(a)-5 (b)-2
Seminar presentation	Students will make a short seminar presentation to the Faraday team on a topic of interest from the whole programme	50%	(b)-3
Total		100%	