

ACADEMIC SESSION 2018-19

HS1001 THE SCIENTIFIC REVOLUTION AND THE ORIGINS OF MODERN
SCIENCE

15 CREDITS: 11 WEEKS

PLEASE NOTE CAREFULLY:

The full set of school regulations and procedures is contained in the Undergraduate Student Handbook which is available online at your MyAberdeen Organisation page. Students are expected to familiarise themselves not only with the contents of this leaflet but also with the contents of the Handbook. Therefore, ignorance of the contents of the Handbook will not excuse the breach of any School regulation or procedure.

You must familiarise yourself with this important information at the earliest opportunity.

COURSE CO-ORDINATOR/COURSE TEAM

Overall responsibility for the course lies with the course co-ordinator, Dr Ben Marsden, who may be found in Room 204, Crombie Annexe (second floor of the History Department building), or contacted by phone on 01224 272637 or by e-mail at b.marsden@abdn.ac.uk. You can meet with him by e-mail appointment. Any recommendations, observations or complaints about the running of the course should be addressed to him, either directly or by way of your class representatives. Please feel free to contact any of the course team. From time to time we may need to contact you. **We often use email** to pass on important information and it is your responsibility to check it regularly. *We will only use your University email for class announcements, so if you have another address, set up a link to it from your University account.*

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Discipline Administration

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TIMETABLE

For time and place of classes, please see [MyAberdeen](#)

Please note:

Lecture times: there are two lectures each week, weeks 1 to 11 inclusive.

Tutorials: students must sign up electronically for one one-hour tutorial in weeks 3 to 11. There will be a reading week partway through the semester in which no tutorial will take place (week 8). If you have difficulty signing up, please contact the History Department Secretaries (contact details above) or the course coordinator. Attendance at tutorials is mandatory and will be monitored.

Students can view their university timetable at

<http://www.abdn.ac.uk/infohub/study/timetables-550.php>

COURSE DESCRIPTION

The Scientific Revolution is the name given to the radical transformation of Western associated with Copernicus, Galileo, Harvey and Newton between 1500 and 1700. What were the 'origins of modern science'? This course explores the lives and work of these and other key figures in the history of science. It asks what problems they were responding to and how they reacted to social, political, philosophical and religious forces of their times. The course introduces students to familiar and unfamiliar sciences (from alchemy to astronomy), assesses how scientific practitioners disseminated their ideas, and investigates why new groups arose claiming that science could create useful technologies. It asks what difference telescopes, microscopes and other new machines made to scientific practice. Were science and religion in conflict? How did scientists decide that more could be learnt by doing experiments instead of looking over ancient books? What, then, were the 'origins of modern science'?

INTENDED AIMS AND LEARNING OUTCOMES

Students are intended:

- To acquire knowledge of topics in the history of science through reading and analysis of historical literature and primary texts;
- To explore historiographic questions intrinsic to the study of the history of science and medicine;
- To articulate ideas clearly and systematically in written form and oral discussion;
- To develop the capacity for historical reasoning about the history of science.

This course offers an introduction to the history of science:

- You have the opportunity to study key topics in the history of science from antiquity to the seventeenth century in intellectual, social and cultural context. There is a particular emphasis on the Scientific Revolution of 1500-1700. These topics include styles of knowledge making (what we might call 'science') in the Greek, Hellenic, Islamic and late Renaissance worlds; the 'discovery' by Harvey that the blood circulates in the body; the establishment of scientific institutions, like the Royal Society of London (which is still going strong); the investigations of iconic figures like Copernicus, Galileo and Newton; and the role of women in science.
- By adopting a chronological approach, the course encourages you to consider continuity *and* change in science: what traditions did men (and women) of science draw upon - even as they made radical innovations?
- By using the approaches of cultural history, the course asks you to examine science in relation to its wider culture: how can we understand Galileo's interactions with the Catholic Church?

By the end of this course, you should be able:

- To demonstrate an awareness of relevant introductory scholarship in the history of science (e.g. course text, lecture material, additional readings);
- To show critical skills in assessing historical sources (in particular, to understand what counts as a *good* source in this field);
- To engage with the key themes and issues raised by the course (i.e. to show the ability to discuss these issues with factual support and a degree of independence in argument);
- To assess the interconnections between science, its ambient culture, and existing traditions;
- To show enhanced confidence and independence in the skills required for the composition of assessed essays; and the presentation of verbal argument (e.g. in tutorials).

LECTURE/TUTORIAL PROGRAMME

This table gives the week, lecture, title, contributor initials and date

1.1 Introduction ROC + BM 10/9

1.2 Greco-Roman medicine WGN 14/9

2.1 Ancient science 1 BM 17/9

2.2 Library resources EG 21/9

3.1 Ancient science 2 BM 24/9

3.2 Science and Classical Islam BM 28/9

4.1 Renaissance BM 1/10

4.2 Paracelsus and alchemy BM 5/10

5.1 Harvey and blood circulation ROC 8/10

5.2 Plague 1 WGN 12/10

6.1 Plague 2 WGN 15/10

6.2 Astronomy BM 19/10

7.1 Descartes BM 22/10

7.2 Instruments JD 26/10

8.1 Museums JD 29/10

8.2 Galileo ROC 2/11

9.1 Institutions ROC 5/11

9.2 Newton BM 9/11

10.1 Magicians and wise women WGN 12/11

10.2 Women in science ROC 16/11

11.1 Science and religion ROC 19/11

11.2 Was there a Scientific Revolution? BM 23/11

TUTORIAL PROGRAMME

Further information on the tutorial programme will be provided on the MyAberdeen site and by your tutor. Please remember that **attendance at tutorials will be monitored and is an essential part of the course**

READING LIST

- The list below indicates 'essential course texts' (buy one of these, e.g. John Henry's); and some general further reading.
- On the MyAberdeen site for the course, you will find a) brief lecture summaries with b) Core Readings and c) Further readings for each topic.
- You can find most of the recommended books in the History & Philosophy of Science section, University Library, classmark Sc.
- You are not expected to read *all* the material listed below and on the MyAberdeen site.
- You *are* advised to read one Core Reading for each lecture, and you *must* read all material assigned for tutorials. As this is a 15-credit course, the average student should spend a total of approximately 150 hours on it. Leaving 30 hours for preparing for and taking the exam, this works out at about 10 hours per week.
- It is *essential* that you consult material from supplementary reading lists given with the lecture summaries when it comes to writing essays. A key criterion for essay marking is the range of sources drawn on.
- Historical interpretations are not set in stone: for the most interesting recent ideas, refer to recent books.
- Many relevant academic journals (e.g. *History of Science*, *Isis*) can be found online. There is also the very useful *Isis* cumulative bibliography. Google 'Isis cumulative bibliography' or 'Isiscb' to find this database, then use the search box.
- If you think Google is the answer to all your information-retrieval needs, search more cleverly by using the 'Google Scholar' engine: it leads to 'scholarly' resources of the type you need.
- Even better, follow some of the advice given by our Library staff in the lecture on library resources.

Essential course texts:

There is no single book covering all the material discussed in the course. However, strongly recommended are:

- * Henry, John, *The Scientific Revolution and the origins of modern science*. This book is available in several editions and you must use the **second** edition or later (with additional chapter on the Renaissance).
- * Dear, Peter, *Revolutionizing the sciences: European knowledge and its ambitions 1500-1700* (2001)
- * Principe, Lawrence M., *The Scientific Revolution: a very short introduction* (2011)

Blackwell's bookshop (High Street, Old Aberdeen) is offering discounts on all three books when bought in person at their shop. If you buy Henry's and Dear's books together as a 'bundle', the cost will be £40, representing a saving of £7.98 on the retail price of these two books. The Principe book is available for the discounted price of £4.99, saving £3 on the retail price.

HISTORY OF SCIENCE readings:

There is a huge literature on the Scientific Revolution and related topics. The following guide lists introductory works.

- Applebaum, Wilbur (ed.), *Encyclopedia of the scientific revolution: from Copernicus to Newton* (2000)
- Burns, William E., *The scientific revolution: an encyclopaedia* (2001)
- Cohen, I. B., *The birth of a new physics* (1985)
- Dear, Peter (ed.), *The scientific enterprise in early modern Europe* (1996)
- Debus, A. G., *Man and nature in the Renaissance* (1978)
- Goodman, David & Russell, Colin A. (eds.), *The rise of scientific Europe 1500-1800* (1991) (Open University text)
- Hellyer, Marcus, *The scientific revolution: the essential readings* (2003)
- Jacob, James R., *The scientific revolution: aspirations and achievements, 1500-1700* (1998)
- Kearney, Hugh, *Science and change 1500-1700* (1971) (dated but great illustrations)
- Lindberg, David C., *The beginnings of Western Science* (1992) (pre: 1450 AD)
- Olby, R. et al (eds.), *Companion to the history of modern science* (1990) Ref Sc 509 Olb (Reference Collection) (thematic articles, including John Schuster on 'The scientific revolution')
- Osler, Margaret J., *Rethinking the scientific revolution* (1999)
- Oster, Malcolm (ed.), *Science in Europe, 1500-1800: A secondary sources reader* (2002)

Oster, Malcolm (ed.), *Science in Europe, 1500-1800: A primary sources reader* (2002).

Porter, Roy, *The greatest benefit to mankind: a medical history of humanity from antiquity to the present* (1997) (ideal for history of medicine topics)

Shapin, Steven, *The scientific revolution* (1996) (sophisticated and stimulating)

Westfall, R. S. *The construction of modern science. Mechanisms and mechanics* (1977) (conventional view)

ASSESSMENT

Assessment is based on:

- one 2,000-word essay at 40% of the final assessment
- one 2-hour written examination at 60%

Resit assessment: one exam of 2 hours at 100%.

For further information on COURSE ESSAYS, including essay questions, see below and on the MyAberdeen site.

To view the CGS Descriptors please go to **MyAberdeen- Organisations- Divinity, History, & Philosophy Student Information for Undergraduates**. The link to the CGS Descriptors is on the left hand menu.

PLEASE NOTE: In order to pass a course on the first attempt, a student must attain a Common Grading Scale (CGS) mark of at least E3 on each element of course assessment. Failure to do so will result in a grade of no greater than CGS E1 for the course as a whole.

If you submit your work on time, you can expect that feedback will **normally be provided within three working weeks** (excluding vacation periods) of the submission deadline.

ESSAYS

- You are required to write ONE COURSE ESSAY for this course.
- The essay should be **2000** words long including footnotes and bibliography.
- You should select one of the Essay questions which will be released on the MyAberdeen site for the course. The essay counts for 40% of the total mark for the course.
- You may choose to write on a subject of your own choice but this may **only** be done in **in consultation with the course co-ordinator**. Essays submitted

on questions not agreed by the co-ordinator will be given a mark of G3 (fail).

- Students should note that they will be penalized for work that is either too long or too short (by plus or minus 10%)
- Evidence of inadequate proof-reading will have a **negative** impact on the mark given to the essay.

Late Submission Further information regarding late submission and extensions can be found in the School of DHP Student Handbooks. It is expected that you are familiar with the regulations included there.

Scholarly Apparatus Every essay should be page numbered and have end/footnotes and a full bibliography, comprising *only* works cited. Any material consulted but not cited may, if you wish, be noted under an additional heading: 'works consulted', but you will gain more credit by citing them at the relevant place in your essay and thus being able to include them in your main bibliography. Please observe the following guidelines.

End/footnotes You must give credit where credit is due. Quotations, paraphrases, statistics, interpretations, and significant phraseology taken from books and articles must be carefully and correctly cited in footnotes or endnotes. For further information and guidance consult the *School Guidelines*. Footnotes may be placed either at the bottom of the page or at the end of the paper. You are requested to follow the guidelines in the History Department Referencing Guide (available on MyAberdeen).

Standard entry:

W. H. McNeill, *Venice: The Hinge of Europe, 1081-1797* (Chicago, 1974), p. 27.

Multi-volume work:

M. Roberts, *Gustavus Adolphus: A History of Sweden, 1611-32* (2 vols., London, 1958), ii, pp. 2-39.

Article within a book:

L. Stone, 'The English Revolution', in R. Forster and J. P. Greene (eds), *Preconditions of Revolution in Early Modern Europe* (Baltimore, 1970), p. 57.

Article in a journal:

E. W. Monter, 'Witchcraft in Geneva, 1537-1662', *Journal of Modern History*, 43 (1971), 195-7, on p. 196.

Websites Full citations should also be given when material has been accessed via the internet. As much of the following information as possible should be provided:

Author, 'Title of Article', <url location, [Course Document - | 2018-2019](http://www.>, (date and time accessed)</p></div><div data-bbox=)

For example: Andrew Ayton, 'Edward III and the English aristocracy at the beginning of the Hundred Years War',
<<http://www.deremilitari.org/resources/articles/ayton2.htm>> (12 November 2008)

You must:

- make full reference to historical context, going beyond disembodied 'ideas' and 'theories' in order to understand issues in the terms of the day.
- give full and consistent *references* to your sources (including those from the Internet).
- Include, at the end of your essay, a *bibliography*. Your bibliography should list, in a consistent manner, all the works you have referred to or from which you have taken ideas, whether or not you quote passages directly from them. You need to include works from which you have taken ideas or interpretations, and those should also be cited properly in the main text using footnotes or endnotes.

We look kindly on (i.e., award higher marks to) essays which:

- target the question.
- strive for and achieve a good narrative.
- employ a clear sign-posted argument.
- make good use of sources beyond lectures notes.
- take a critical and independent approach to these sources.
- show balance, good style and careful presentation.
- (in historical essays) avoid hackneyed formulations like 'the father of', 'laid the foundations of', 'was the first to discover what we know today' (and other species of present-centred or, technically, 'whig' history)

Here's a checklist for essay writing:

- i) Do I have a clear introduction? (Write one, summarizing key themes and issues to be addressed in the body of the essay)
- ii) Do I have a clear conclusion? (Write one)
- iii) Have I targeted the question? (Cut irrelevant material ruthlessly)
- iv) Do the points I make and the nuggets of evidence I cite follow in a logical progression? (Make sure they do)
- v) Could I reorder material to clarify my argument? (For example, starting from simple premises and moving to more complex issues)
- vi) Can I find a specific example to back up a general argument or an as-yet-unsubstantiated assertion? (Read some more)
- vii) Can I suggest a convincing general argument or pattern from specific examples I have come across in reading? (Think more)
- viii) Have I repeated myself?

- ix) Have I used phrases or terms that I do not myself understand? (Cut them - or find out about them)
- x) Have I cut out all ungrammatical material (run-on sentences, it's... etc.)?
- xi) Are my citations full and consistent? (Make them so)
- xii) Have I submitted a word count? (Do so)

LIST OF ESSAY TOPICS

Please refer to the questions given on the MyAberdeen site.

Your essay should tackle a different topic to any significant tutorial presentation. Please refer to your tutor if you are in doubt.

ASSESSMENT DEADLINES

Your course essay must be submitted by **3pm on Thursday of Week 11 of teaching, i.e. 22 November 2018.**

SUBMISSION ARRANGEMENTS

When uploading assignments, please do the following:

1. Submit a .doc or .docx and include the word count.
2. Submit by the due date, no hard copy will be required unless directly requested by the Course Coordinator through [My Aberdeen](#).
3. In advance of uploading, please save the assignment with your student ID number listed in the filename, i.e. 59999999 HS1001 Essay 1.
4. When asked to enter a title for the assignment, please enter a title identical to the name of your saved assignment, i.e. 59999999 HS1001 Essay 1.

Please note: Failure to submit by the due date (unless a prior arrangement has been made) will result in a deduction of marks. Where no submission is received, this will result in a mark of zero.

Please note: *Safeassign* text-matching software will be used. However the School of Divinity, History and Philosophy reserves the right also to submit material to *TurnitinUK* when deemed necessary.

EXAMINATION

There will be a timed examination lasting 2 hours. There will be approximately 10 questions. The questions will cover the key areas of the course.

For sample questions, you may also find it useful for look at the *historical* questions in papers for HS2002: History and Philosophy Science I.

Past exam papers can be viewed at <http://www.abdn.ac.uk/library/learning-and-teaching/for-students/exam-papers/>.

PLEASE NOTE: Candidates whose first language is not English may refer to English/native tongue dictionaries, when permitted by their Schools to do so. Electronic dictionaries are not permitted in the examination venue. Invigilators are entitled to request inspection of dictionaries prior to the examination, thumbing through them to check that there is no extra written material present.