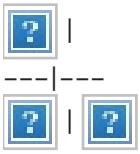

HISTORY OF SCIENCE: ORIGINS TO NEWTON

HIS 3463 (0566X) – Sum A 1999
2305 Turlington 6th (3.30 – 4.45)
Dr Robert A. Hatch

In this course we survey changes and developments in Western science (natural philosophy) from earliest times through the Scientific Revolution of the Seventeenth century. Lectures, discussions, and readings are concerned with the origin(s), transmission, and development of scientific ideas, and the emergence of new intellectual and language communities. Particular emphasis is given to changing views and conceptions of 'science, nature, and man.' There will be a **One Hour In-Class Essay Exam** in addition to a **Take-Home Last Essay.** Please note that attendance and participation are mandatory. Students may chose to write an extra-credit **Optional Essay**. Office hours for Dr Hatch are Wednesday 5.00-6.00pm and by appointment, 4123 Turlington Hall. Students are strongly encouraged to take advantage of Office Hours. Telephone: 392-0271 (24h machine); EMail: ufhatch@ufl.edu; (mailto:ufhatch@nersp.nerdc.ufl.edu;) WebSite: http://www.clas.ufl.edu/users/rhatch (http://www.clas.ufl.edu/users/rhatch)

Required Reading is taken from the following books:
{Gator Textbook, Creekside Mall – 374-4500}

Hatch, Robert A., *Study Guide for the History of Science*
{Custom Copies: 377.4221; Also available at WebSite; Reading is self-paced by topic}
Henry, John, *The Scientific Revolution & the Origins of Modern Science*
Kuhn, Thomas S., *The Copernican Revolution*
Kuhn, Thomas S., *The Structure of Scientific Revolutions*
Lindberg, David C., *The Beginnings of Western Science*
Toulmin, S. & J. Goodfield, *The Fabric of the Heavens* {Recommended}
Westfall, Richard S., *The Construction of Modern Science*

Recommended Books at the Library :

E. A. Burtt, *The Metaphysical Foundations of Modern Physical Science*.
Herbert Butterfield, *The Origins of Modern Science*
Alan Debus, *Man and Nature in the Renaissance*.
Edward Grant, *Physical Science in the Middle Ages*.
G.E.R. Lloyd, *Aristotle: The Growth and Structure of His Thought*.
Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution*.

Londa Schiebinger, *The Mind Has No Sex?: Women in the Origins of Modern Science*.
Stephen Shapin, *The Scientific Revolution*

Other recommended volumes are on Reserve at Library East

Evaluation :

All required work is announced on this syllabus. But please note. This is a demanding course, particularly as a Summer Session offering. As this syllabus indicates, the course involves substantial reading and writing. Attendance is mandatory and careful preparation and active involvement in discussion is critical. Evaluation criteria and course requirements are straightforward. Since a schedule is provided in advance, absences and arrangements for late work **must** be approved in advance. Please plan your course schedule and study commitments with care. When in doubt consult the syllabus, ask questions, and read ahead. Finally, students are invited to visit my WebSite, which contains a number of useful items regarding the content of this course (bibliography, WebLinks) as well as useful guides on writing Blue Book Exams and University level essays: http://www.clas.ufl.edu/users/rhatch (http://www.clas.ufl.edu/users/rhatch)

Evaluation & Requirements take five forms:

1. Completion and comprehension of assigned readings and lectures.
2. Attendance and participation in class lectures and discussions. Please note that attendance is mandatory; unannounced quizzes {Approximately 20%}
3. **Mid-Term Exam** : Monday: 24 May 1999 (30%) Written in-class 'Blue-Book' Essay Exam. Please see the WebSite for suggestions in preparing for this exam.
4. **Take-Home Essay** : **Nota Bene** : Due 18 June 1999 (c. 50%). Written take-home essay. This Essay exam is limited to 1000 words, the equivalent of five {5} typed pages, double spaced, typed {no binders please: kindly staple securely}. Please see the WebSite for suggestions in preparing and writing this essay. Students should retain a photocopy of their work for backup purposes. If you wish to have your essay returned, kindly supply a large envelope with the appropriate postage and address. I will arrange for a special federal agent to return your materials.
5. **Optional Term Papers** : 15-page research essay; due no later than 12.00 Noon, Friday, Week IV. The optional paper provides extra credit and can add as much as one letter to the final course grade. The paper is non compulsory; no one is penalized for not choosing this option. The term paper allow interested students to pursue a course topic in greater detail or to identify an area not treated in this general survey course of readings and lectures. Consider carefully whether you have sufficient time to do a proper job. The Optional Paper should represent a solid and rewarding effort. It is possible that your time would be better directed to the required readings. Required reading increases in quantity, subtlety, and significance as the course aims at the Last Take-Home Essay. In all cases, the topic for the Optional Term Paper must be approved by your instructor. Please consult the Study Guide and the WebSite noted above for details regarding topic selection, approval, submission

timetables, general bibliography, and suggestions about research and writing. As always, students should take advantage of Office Hours for discussion and consultation.

PART I: ANCIENT AND MEDIEVAL NATURAL PHILOSOPHY

WEEK I: 10 - 14 May

M 10 May Plotting Our Course; Science & Myth
Readings : Kuhn, Foreword; Begin Toulmin, Introduction & Chap. 1; Review Hatch, *Study Guide*. Lindberg, Chpt. 1

T 11 May More Plotting; What's Science?
Readings : Toulmin, Introduction and Chapter I. Lindberg, Chpt. 2

W 12 May Egyptian and Babylonian Science: A Sketch
Readings : Toulmin, Introduction and Chapter I. Lindberg, Chpt. 2

Th 13 May The Pre-Socratics
Readings : Toulmin, Chapter II.

F 14 May The Pre-Socratics, Continued
Readings : Continue; read ahead...

WEEK II: 17 - 21 May

M 17 May Aristotle & the Aristotelian Synthesis
Readings : Toulmin, Chapter III; Kuhn, *Copernican* , Chapter I. Continue *Study Guide* as appropriate; Lindberg, Chpt. 3

T 18 May Aristotle & the Synthesis, continued
Readings : Toulmin, Chap. IV and V; Kuhn, *Copernican* , Chap. II; Lindberg, Chpt. III.

W 19 May Claudius Ptolemy & Epicyclic Astronomy
Readings : Toulmin, Chap. VI; Kuhn, *Copernican* , Chapter III; Lindberg, Chpt. 5. Read *Study Guide* with particular care.

Th 20 May Medieval and Renaissance Astronomy & Cosmology
Readings : Kuhn, *Copernican* , Chapter IV; Lindberg, Chpts. 8 & 9.

F 21 May FILM: Music of the Spheres {Overview}
Readings : Reread Toulmin, I-V; Kuhn, I-IV; Lindberg, review Chpts. 11, 12, 14; Review all notes

---

PART II: THE SCIENTIFIC REVOLUTION

WEEK III: 24 May - 28 May

M 24 May - Monday: **MID-TERM EXAM** :
In-Class Essay: Bring Blue Exam Booklet(s)
Readings : Review and study all readings, notes, and *Study Guide*.

T 25 May – No Class

W 26 May The Scientific Revolution: An Overview
Readings : Toulmin, Chapter VI.

Th 27 May Copernicus & the Copernican Disturbance: Canons of Thought
Readings : Kuhn, *Copernican* , Chapter V (again); Begin Chapter VI; Review Lindberg, Chpts. 11 & 12.

| Copernican Perspectives (03-copern.htm) – Take a Peek!

---

28 May Copernicus, Continued
Readings : Begin J. Henry, *The Scientific Revolution*

WEEK IV: 2 – 5 June

M – Memorial Day – No Class
No Class: Memorial Day: Review & Study

T 1 June Tycho Brahe, Observer
Readings : Kuhn, Copernican, Chapter VI; Continue J. Henry

W 2 June Tycho and Kepler
Readings : Westfall, Chapter I; Continue Henry

Th 3 June Kepler and the Keplerian Revolution
Readings : Reread: Kuhn, *Copernican* , 219-225; begin Toulmin, Chapter. VIII; Kuhn, *Copernican* , Chapter VII. Continue J. Henry

F 4 June Galileo and the Galilean Revolution
Readings : Westfall, Chapter I (again); *Study Guide*.

WEEK V: 8 – 12 June

M 7 June Ismael Boulliau and the Copernican Synthesis
Readings : Begin Westfall, Chapters II and III; Finish J. Henry
Study Guide as appropriate.

T 8 June Descartes and the Cartesian Synthesis
Readings : Westfall, Chapter II; skim Chapter III;
Toulmin, Chapter IX, X; begin Kuhn, *Structure*.

W 9 June Descartes, continued
Readings : Continue Kuhn, *Structure*.

Th 10 June Isaac Newton: Man, Revolution / Synthesis / Duality
Readings : Toulmin, Chapter X; Westfall,
Chapter VII and VIII; finish Kuhn, *Structure* {important}.

F 11 June Newtonian Synthesis: The Uni-Verse
Readings : Kuhn, *Copernican* , pp. 261-265; Kuhn, *Structure* (re-read):
All readings completed. Re-Read Kuhn's Structure: Make list of questions

WEEK VI: 14 - 18 June

M 14 June The Structure of Scientific Revolutions:
Some Semblance of Synthesis?
Readings : Review all readings & Study Guide

T 15 June T.S. Kuhn: Birds, Rabbits, and Other Living Things
Readings : Study all notes, readings & Study Guide

W 16 June Discussion & Review
Readin gs: Review & Think About Issues & Implications

Th 17 June NO CLASS: Essay Preparation

F 18 June NO CLASS: **Last Take-Home Essay Due**

Need help with writing skills or other resources? Click:
X (../../02-TeachingResources/index.htm)

Opps - Almost forgot! What is Gravity? Answer (03-t-gravity.htm)

Nota Bene : LAST TAKE - HOME ESSAY DUE
Friday, 12:00 Noon, 18 June 1999 - 4131 Turlington Hall
{Main History Office - Front Desk}

NB: If you wish to have for Last Take-Home Essay returned (along with your final course grade) please supply a large (9x12) brown clasp envelope with appropriate postage and address. I will arrange for a special Federal Agent to deliver your essay.

---

rah.feb.99 ufhatch@ufl.edu (mailto:ufhatch@nersp.nerdc.ufl.edu)