Term Information

Effective Term	Autumn 2013

General Information

Course Bulletin Listing/Subject Area	Medieval & Renaissance Studies
Fiscal Unit/Academic Org	Center-Medieval & Ren Studies - D0505
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	2610
Course Title	Science and Technology in Medieval and Renaissance Culture
Transcript Abbreviation	Science Technology
Course Description	The history of science in the medieval and early modern world, including medicine, alchemy, optics, map-making, city-planning, and technology through images, texts, and material culture.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites

Exclusions

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	30.1301
Subsidy Level	General Studies Course
Intended Rank	Freshman, Sophomore, Junior

Quarters to Semesters

Quarters to Semesters	New course
Give a rationale statement explaining the purpose of the new course	The history of science deals fundamentally with the history of cognition and consciousness, and intersects with the history of philosophy. students will gain an ability to think critically about the changing role of science in history and today.
Sought concurrence from the following Fiscal Units or College	

Requirement/Elective Designation

General Education course:

Culture and Ideas

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Students will analyze primary sources related to scientific theory and practice in pre-modern Europe. They will also interpret these concepts culturally, through studying the engagement with scientific concepts in pre-modern art and literature.
- Students will consider questions both of the origins of scientific beliefs and their influence on other forms of cultural production and human action.
- Students will become more aware of the ways that conceptions of scientific “truth” construct many of the cultural codes that govern societies, both premodern and contemporary.

Content Topic List

- Medieval
- Science
- Technology
- History
- Culture
- Literature
- Art
- Medicine
- Religion
- Europe
- Optics
- Cartography
- Exploration
- Magic
- Material Culture

Attachments

- 2610 GEC and Assessment-1.docx: revised assessment methods requested 11/5/12

  (GEC Course Assessment Plan. Owner: Burgoyne,Jonathan D)

- 2610 Medieval Sci&Tech - SyllabusREV.docx: Updated GE Language as requested 1/23/13

  (Syllabus. Owner: Burgoyne,Jonathan D)

Comments

- Please see e-mail to Nick (re: updating GE language on syllabus). *(by Vankeerbergen,Bernadette Chantal on 01/23/2013 02:52 PM)*
- An AU 2012 effective date is more likely as any changes might be best handled by advising. If you disagree, please submit an appeal to me.

  Sorry I read it wrong, meant AU13 so you're good.

  Thanks,

  Gatett *(by Heysel,Garett Robert on 12/03/2012 11:31 AM)*
- I selected AU 2013. Is that not acceptable? Please advise. *(by Burgoyne,Jonathan D on 12/03/2012 09:31 AM)*
- new course, Cross-Cultural Concepts series (26xx) *(by Spitulski,Nicholas M on 06/16/2011 11:22 AM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Spitulski,Nicholas M	07/18/2011 03:35 PM	Submitted for Approval
Approved	Heller,Sarah-Grace	10/18/2011 12:22 PM	Unit Approval
Approved	Heysel,Garett Robert	10/30/2011 08:32 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	01/13/2012 05:10 PM	ASCCAO Approval
Submitted	Burgoyne,Jonathan D	10/19/2012 02:59 PM	Submitted for Approval
Approved	Burgoyne,Jonathan D	10/19/2012 03:32 PM	Unit Approval
Approved	Heysel,Garett Robert	10/23/2012 11:14 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	11/05/2012 04:49 PM	ASCCAO Approval
Submitted	Burgoyne,Jonathan D	11/27/2012 10:58 AM	Submitted for Approval
Approved	Heller,Sarah-Grace	11/27/2012 11:00 AM	Unit Approval
Revision Requested	Heysel,Garett Robert	12/02/2012 08:12 PM	College Approval
Submitted	Burgoyne,Jonathan D	12/03/2012 09:32 AM	Submitted for Approval
Approved	Heller,Sarah-Grace	12/03/2012 11:28 AM	Unit Approval
Approved	Heysel,Garett Robert	12/03/2012 11:31 AM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	12/05/2012 02:40 PM	ASCCAO Approval
Submitted	Spitulski,Nicholas M	01/03/2013 04:26 PM	Submitted for Approval
Approved	Heller,Sarah-Grace	01/03/2013 04:29 PM	Unit Approval
Approved	Heysel,Garett Robert	01/10/2013 06:03 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	01/23/2013 02:53 PM	ASCCAO Approval
Submitted	Burgoyne,Jonathan D	01/28/2013 01:43 PM	Submitted for Approval
Approved	Heller,Sarah-Grace	01/28/2013 01:46 PM	Unit Approval
Approved	Heysel,Garett Robert	02/09/2013 09:13 AM	College Approval
Pending Approval	Nolen,Dawn Jenkins,Mary Ellen Bigler Vankeerbergen,Bernadette Chantal Hogle,Danielle Nicole Hanlin,Deborah Kay	02/09/2013 09:13 AM	ASCCAO Approval

MEDREN 2610
Science and Technology in Medieval and Renaissance Culture
Prof. Karl Whittington

Course Description :
This course explores the history of science in the medieval and early modern world, including medicine, alchemy, vision and optics, map-making, city-planning, and technology through images, texts, and material culture. Emphasis will be placed both on understanding the details of scientific theories and on seeing the ways in which this material is culturally constructed. Looking at the influence of medieval and renaissance culture on scientific thought will lead to investigations of religion and theology, monasticism, university culture, and the arts.

Course Objectives. Students will:
1. be introduced to some of the main currents of medieval and early modern culture in Western Europe through the study of science and technology.
2. examine the legacy of the classical tradition of science (Plato, Aristotle, Galen, Hippocrates, etc.) in the Middle Ages and Renaissance.
3. examine the way scientific ideas were explored in art and other visual material.
4. investigate the professional context for medieval and early modern science, learning about the training and practice of doctors, teachers, monks, map-makers, architects and engineers.
5. read primary texts in translation, with the goal of appreciating the style, content and sources of scientific texts.

MRS 2610 is a GE Cultures and Ideas course and fulfills the following GE goals and expected learning outcomes:

Goals:
Students evaluate significant cultural phenomena and ideas in order to develop capacities for aesthetic and historical response and judgment; and interpretation and evaluation.
Expected Learning Outcomes:
1. Students analyze and interpret major forms of human thought, culture, and expression.
2. Students evaluate how ideas influence the character of human beliefs, the perception of reality, and the norms which guide human behavior.

Expected Learning Outcomes (ELOs) for students in Medieval and Renaissance Studies, for which this is an introductory level course:

1. Students demonstrate a broad, interdisciplinary appreciation of the history and culture of the Medieval and Renaissance world.
2. Students demonstrate skill at critical thinking through the study of diverse disciplines
3. Students demonstrate skill at utilization of primary and secondary sources.
4. Students demonstrate the capacity to express themselves and to exercise sharpened communication skills in exams, papers, and discussions.

GRADING:

Midterm 1:	20%
Midterm 2:	20%
Final:	30%
Primary Source Analysis (1)	10%
Critical Response Essay (1)	10%
Attendance and Participation	10%

Students with disabilities are urged to bring them confidentially to the attention of the instructor. If they have not already done so, they should contact the Office for Disability Services, 614-292-3307, which coordinates reasonable accommodations for students with documented disabilities.

Statement on Academic Misconduct:
"It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp)."

COURSE SCHEDULE

WEEK ONE: INTRODUCTION AND THE CLASSICAL WORLD

-Course Introduction

-Science in Ancient Greece and Rome

WEEK TWO: RECORDING AND TRANSMITTING KNOWLEDGE

-Reading, Writing and Manuscripts

-Transmission of Scientific Texts from the Islamic World
    -Reading: David Lindberg, "The Recovery and Assimilation of Greek and Islamic Science," in *The Beginnings of Western Science*, pp. 225-253

WEEK THREE: MEDICINE IN THE CLASSICAL TRADITION

-Medical Theory
    -Reading: David Lindberg, "Greek and Roman Medicine," in *The Beginnings of Western Science*, pp. 111-131

-Theories of Gender Difference
    -Reading: Vern Bullough, "Medieval Medical and Scientific Attitudes toward Women," *Viator* 4 (1972), pp. 485-501
    -Primary Source: *Aristotle and Galen on the Generation of the Embryo*

WEEK FOUR: MEDIEVAL ANATOMICAL SCIENCE

-Medieval Anatomy: Theory and Illustration
    -Reading: Karl Whittington, "The Cruciform Womb: Process, Symbol and Salvation in MS. Ashmole 399," in *Different Visions* 1 (2008), pp. 1-24

-Medieval Anatomy: Dissection
    -Reading: Katherine Park, "Chapter 1: Holy Anatomies" in *Secrets of Women: Gender, Generation and the Origins of Human Dissection*, pp. 39-76
    -Primary Source: Mondino de Luzzi on Dissection (early 14th cent.)

WEEK FIVE: ANATOMY AND THE BODY IN THE RENAISSANCE

-Renaissance Anatomy: Vesalius and Leonardo
    -Primary Source: Selections from Vesalius, *De Humani Corporis Fabrica* (1543)

-Anatomy, Public Dissection and Punishment
    -Reading: Florike Egmond, "Execution, Dissection, Pain and Infamy" in *Bodily Extremities*, pp. 92-127

WEEK SIX: ANATOMY AND ART

- Anatomy and Art: Rembrandt's *Anatomy of Dr. Tulp* and Titian's *Flaying of Marsyas*
    -Reading: excerpts from William Schupbach, *The Paradox of the Anatomy Lesson*

-MIDTERM

WEEK SEVEN - ASTRONOMY AND ASTROLOGY

-Medieval and Renaissance University Culture
    -Reading: Edward Grant, "The Medieval University" in *The Foundations of Modern Science in the Middle Ages*, pp. 33-53

-Medieval Astronomy and Astrology
    -Reading: O. Pedersen, "Astronomy," in *Science in the Middle Ages*, pp. 303-331

WEEK EIGHT: MAPS AND CARTOGRAPHY

-Medieval Maps

-Renaissance Maps and Exploration
    -Reading: Mark Monmonier, *Rhumb Lines and Map Wars: A Social History of the Mercator Projection*, pp. 1-30

WEEK NINE: VISION AND OPTICS

-Medieval Theories of Vision
    -Reading: Katherine Tachau, "Seeing as Action and Passion in the Thirteenth and Fourteenth Centuries," in *The Mind's Eye: Art and Theological Argument in the Medieval West*, pp. 336-359

-The Science of Linear Perspective
    -Reading: Erwin Panofsky, *Perspective as Symbolic Form*, pp. 27-36

WEEK TEN: ENGINEERING, SURVEYING, URBANISM

-Surveying, Architecture and Urban Planning

-Reading: excerpts from Marvin Trachtenberg, *Dominion of the Eye: Urbanism, Art and Power in Early Modern Florence*

-MIDTERM 2

WEEK ELEVEN: NATURAL SCIENCES

-Chemistry and Alchemy
-Reading: David Lindberg, "The Physics of the Sublunar Region" in *The Beginnings of Western Science*, pp. 286-295

- Medieval Natural History: Botany and Zoology
-rimary source: Excerpts from the medieval *Bestiary (Book of Beasts)*

WEEK TWELVE: EMPIRICISM AND INVENTION IN THE RENAISSANCE

-The Printing Press
-Reading: E. Eisenstein, *The Printing Press as an Agent of Change*, pp. 1-42

-Leonardo da Vinci – Empiricism, Invention and Experimentation
-Primary Source: Excerpts from Leonardo's Notebooks (examine online)

WEEK THIRTEEN: SCIENCE AND THE CHURCH

-Copernicus and Galileo
-Primary Souce: Excerpts from the Trial and Sentencing of Galileo (1633)

-Towards the Enlightenment
-Reading: Edward Grant, "How the foundations of early modern science were laid in the Middle Ages," in *The Foundations of Modern Science in the Middle Ages*, pp. 168-206

Medieval/Renaissance Studies 2610
Science and Technology in Medieval and Renaissance Culture

Rationale for GE Cultures and Ideas Category and Assessment Plan for the Course

Course Description

MEDREN 2610 is a new course proposed for the semester system. It is intended to fulfill the GE Arts and Humanities: Cultures and Ideas category. The course is intended for major credit as well as GE credit. It is likely to be of considerable interest to students majoring in History, Comparative Studies, Sociology, Anthropology, History of Art, and English, but hopefully also to students in "hard science" departments, who want to learn about both the specific theories and cultural roles of science in the pre-modern world. The course represents a contribution to the university's strategic plan "discovery themes" on Health and Wellness and Energy and Transportation, offering students insights from antiquity and pre-modern periods on which to build future research and innovation.

The course examines a number of scientific discourses from Late Antiquity to the eve of the Enlightenment. Students will first investigate the classical foundations of scientific inquiry in Greece and Rome, and the ways in which these ideas were transmitted, recorded and taught through medieval and early modern manuscripts, translation, universities, and monasteries. The course will then move into case studies of a wide range of scientific disciplines, including medicine and anatomy, chemistry and alchemy, natural history, cartography, engineering and urban planning, astronomy and astrology, and optics. In each case we will see the ways in which classical learning, medieval theory and experimentation, and religious/cultural trends merged to inform scientific inquiry.

Medieval/Renaissance Studies 2610 addresses topics similar to several other courses in the OSU curriculum, including History 2701 (History of Technology), History 3711 (Science and Society in Early Modern Europe), and Comparative Studies 2340 (Introduction to Cultures of Science and Technology). But none of these courses focuses primarily on the Middle Ages in Western Europe, a period usually understood as scientifically retrograde, but that can provide key insights into both the continuity of the classical tradition in Christian society and the way science was culturally and theologically constructed.

Students will read primary and secondary texts that both explicate the details of scientific theory and inquiry (medical treatises, engineering manuals, botanical descriptions, etc.) and reveal the broader implications of scientific thought for such issues as the construction of gender, religious beliefs, attitudes toward the classical world, the intersection of science and the law, and conceptions of the world and cosmos. Through two writing assignments students will work on their ability to critically analyze these sources; one paper will be an analysis of a primary source, and the other will be a critical evaluation of a secondary argument. Essay exams will encourage students to synthesize their observation of trends across the various case studies.

Medieval/Renaissance Studies 2612 meets the goals and learning objectives of the GE Arts and Humanities: Cultures and Ideas category in the following ways:

General Goals of the GE Arts and Humanities requirements:

-Aesthetic and historical response and judgment: *Students will consider the historical development of fundamental scientific and philosophical concepts such as the body, matter, the cosmos, and the ways in which scientific understandings of the body intersect with the history of art and the artistic representation of the human body*.

-Interpretation and evaluation: *Students will evaluate the ways in which cultural and religious factors influenced the theory and practice of various sciences.*

-Critical listening, reading, seeing, thinking and writing: *Students will read and evaluate primary and secondary sources relating to pre-modern science and technology.*

-Experiencing the arts and reflecting on that experience: *Students will examine the intersection between science and the visual and literary arts in pre-modern Europe.*

General learning objectives of the GE Arts and Humanities requirements:

-Students develop abilities to be informed observers of, or active participants in, the visual, spatial, performing, spoken, or literary arts. *Students will analyze a range of literary and visual sources relating to scientific theory and practice.*

-Students develop an understanding of the foundations of human beliefs, the nature of reality, and the norms that guide human behavior. *Students will consider the place of medieval and renaissance science and philosophy in the construction of broad historical concepts and trends in science, including broad questions about what constitutes the human.*

-Students examine and interpret how the human condition and human values are explored through works of art and humanistic writings. *Through studying the cultural conditions of scientific inquiry, students will analyze the impact of science on historical conceptions of morality and values.*

Expected Learning Outcomes for Cultures and Ideas:

-Students develop abilities to analyze, appreciate, and interpret major forms of human thought and expression. *Students will analyze primary sources related to scientific theory and practice in pre-modern Europe.*

-Students develop abilities to understand how ideas influence the character of human beliefs, the perception of reality, and the norms which guide human behavior. *Students consider questions both of the origins of scientific beliefs and their influence on other forms of cultural production and human action.*

Assessment plan for the course:
Assessment is embedded in the grading criteria for the assignments; that is, assignments will be evaluated based on the goals and objects of the course. The instructor will evaluate whether students' written work and exams indicate that they have learned to

-show clear evidence of critical thinking and judgment in their writing

-critically approach both primary and secondary sources

-gain a clear sense of the broad changes in scientific discourses and questions over a long span of time

-appreciate the ways in which the theory and practice of science and technology were influenced by a number of cultural factors

-appreciate the role of the history of science as a contemporary humanistic discipline

The instructor will assess the degree to which the main objectives of the course, as stated above, have been achieved through direct and indirect measures.

Direct measures:
Exams (Midterms 1 & 2) will include embedded questions and brief essay questions. Direct questions will cover the specific scientific concepts and history covered in readings and class discussion in order to test the students' knowledge of the specific materials covered in the exam. Exam essay questions will allow students to critically respond to the theories and histories covered in each exam, thus providing a space for students to critically organize their own thoughts on the intersections between science, art, and their own beliefs.

Primary Source Analysis and Critical Response Essays are designed to help students develop their critical thinking and writing skills. Essays will be evaluated based on focus of thesis and conclusion, critical organization of analysis, and command of primary and secondary bibliographies.

Indirect measures:
Lectures and online surveys (through Carmen) will encourage students to critically prepare for class discussions, leading to their work on exams and critical essays (Primary Source Analysis and Critical Response Essay). Typical questions and topics of discussion will encourage students to examine their own awareness

of abstract theories and ideas and the ways in which those ideas inform their understandings reality and our present human condition.

Evaluation of student achievement

In written work (Primary Source Analysis and Critical Response Essays) the instructor will focus his/her assessment on whether students gained an ability to think critically about the changing role of science in medieval and early-modern culture. Successful achievement of the learning goal will be determined by at least 80% of students earning a C or better (according the grade scale published in the syllabus) on essays graded according to a holistic rubric that covers focus, organization, critical bibliography, and the mechanics of writing.

Successful achievement of expected learning outcomes in exams will be determined by at least 80% of students earning a C or better on Midterms 1 and 2, with embedded questions and brief essays.

Participation will be evaluated based on student preparation before class (readings, discussion questions, surveys, etc.) as well as their contribution to classroom work and discussion. Students will be informed of their progress in participation, and students will be able to meet with the instructor to self-report and / or request guidance for improving their participation and preparation for class.

At the end of the quarter, students will fill out both online SEIs and narrative evaluations. The narrative evaluations will give the instructor further insight into the students' perceptions of the effectiveness of the course, including assignments, structure, material covered, and instruction. Based on both the instructor's assessment and the students' responses, appropriate changes will be made to the syllabus in future iterations of the course.