

Syllabus

UNIVERSITY OF FLORIDA

ENGINEERING THE RENAISSANCE:

AN INTRODUCTION TO EARLY MODERN INNOVATION

IDH2931 Section 1B52

GET3930 Section 04D5

MEM3931 Section 1B49

INSTRUCTOR INFORMATION:

Instructor: Dr. Will Hasty

Office: 263 Dauer

Dr. Mark Law

342 Infirmary

Office Hours[\[1\]](#):

Office hours: By Appointment

E-mail: mlaw@ufl.edu

COURSE INFORMATION:

Time & Location

Pugh Hall 120

Tuesday Period 8 (3:00 PM - 3:50 PM)

Thursday Period 8-9 (3:00 PM - 4:55 PM)

Description and Objectives:

This course will introduce students to pivotal moments in technological innovation and the physics underlying those changes in the Renaissance and the cultural history leading to and following from it. The course aims to provide students with an understanding of the ideals and practical exigencies that motivated

engineers and artists to transform their communities, through the application of scientific, economic, social, and practical knowledge. The course will introduce some of the challenges of materials, physical knowledge, construction techniques, and societal pressures that medieval and renaissance engineers faced. Students will study problems associated with such innovation. The aim of such study will be to link the problems of the past with the modern search for more and more effective solutions.

Students will gain hands-on knowledge by constructing models of some of the examples from class and will be introduced to topics like force, work, and energy. As such students will acquire the ability to work in groups to create, imagine, design, realize and recreate key engineering achievements that moved the Western world from antiquity to modernity, all rooted in an accessible exploration of key physics principles.

Students will also learn to recognize and articulate how certain developments in European economic systems, military institutions, spirituality and esthetics affected technological progress in the medieval and early modern period. We will also discuss how this case study of Renaissance physics informs modern innovations of these technologies.

Course Materials and Resources (to which others may be added as necessary):

Cathedral, Forge, and Waterwheel: Technology and Invention in the Middle Ages, Frances and Joseph Gies, Harper Perennial Press, ISBN 0-06-016590-1, 1995.

A World Lit Only by Fire, William Manchester.

Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture, Ross King.

A variety of original sources indicated in the specific daily assignments.

Other course resources, including:

[Visit to St. Peter's Basilica \(Links to an external site.\)](#)[Links to an external site..](#) ([Links to an external site.](#))[Links to an external site.](#)

[Visit to the Leaning Tower of Pisa \(Links to an external site.\)](#)[Links to an external site..](#)

[Visit to the Cathedral of Florence \(Links to an external site.\)](#)[Links to an external site..](#) ([Links to an external site.](#))[Links to an external site.](#)

[Tower of London \(Links to an external site.\)](#)[Links to an external site..](#) ([Links to an external site.](#))[Links to an external site.](#)

[Chartres Cathedral \(Links to an external site.\)](#)[Links to an external site..](#) ([Links to an external site.](#))[Links to an external site.](#)

[Windmills of Holland \(Links to an external site.\)](#)[Links to an external site..](#)

Assessment:

Individual Project Presentation (25%): Students will research and present to the class on a topic covered in the course. Students will begin presenting their projects in the second half of the semester (see slots for signing up for a presentation below).

Group Projects (25%): Students will select, organize, and present their projects in groups. Besides the three major projects, there will be other brief one-day minor projects connected to relevant readings/video material.

Participation (20%): Students must be prepared to address themselves knowledgeably to all assigned Weekly "Discussion Questions" that are linked in the syllabus below. Further, students need to demonstrate apprehension of the important points made in assigned readings by referencing and applying them in class discussions. Cross-referencing between different readings and the physical principles you are learning about is strongly encouraged.

“Cultural App” (10%): Develop a model or “cultural app” (in traditional humanistic nomenclature: “interpretative approach”) that brings together and applies your understanding of the different readings (Gies, Manchester, King, etc.) in a beautiful and compellingly functional way to cultural history. In the time-honored Renaissance tradition, our semester will conclude with a "Best Cultural App Contest." We will be talking about what is meant by "cultural app" in the first week.

Writing Assignments (20 %): 20% for 5 Writing Assignments that ask you to coalesce/combine/weave the cultural developments as discussed by Gies, Manchester, and King that you find most interesting into something beautiful and compellingly functional (traditional humanistic nomenclature: “compare and contrast”)

(To be adapted as necessary based on possible time constraints.)

Week 1

August 22: Introductions. Song of the Day: [Welcome to the Renaissance \(Something Rotten\)](#) ([Links to an external site.](#))[Links to an external site..](#) [Oneness and Hands PPT](#)

August 24: Topic: Agricultural Foundations. Video: [Physics Influence on Culture and Society-Agriculture.](#) ([Links to an external site.](#))[Links to an external site.](#) Reading assignments: [Book of](#)

[Genesis \(Links to an external site.\)Links to an external site.](#) (Creation; Noah's Ark; Nimrod's Tower; Abraham's Sacrifice of Isaac); Gies, chapter 1: "Nimrod's Tower; Noah's Arc" (pp.1-16) and chapter 2: "The Triumphs and Failures of Ancient Technologies" (pp.17-38); [Discussion Questions for Week 1.](#) Songs of the Day: [Caves of Altamira \(Steely Dan\) \(Links to an external site.\)Links to an external site.](#); [Gotta get a Grip \(Mick Jagger\) \(Links to an external site.\)Links to an external site.](#)

Week 2

August 29: Topics: Agriculture and Warfare. Video: [Physics Influence on Culture and Society-Warfare \(Links to an external site.\)Links to an external site.](#). Song of the Day: [We're Knights of the Round Table \(Monty Python\) \(Links to an external site.\)Links to an external site.](#)

August 31: Topics: Agriculture and Warfare. Reading assignments: St. Augustine, [De Doctrina Christiana \(Links to an external site.\)Links to an external site.](#) (On Christian Doctrine) (excerpts to be announced); Gies, chapter 3: "The Not-so-Dark Ages" (pp. 39-81); Manchester, chapter 1: "The Medieval Mind" (pp.1-28); [Discussion Questions for Week 2.](#) Song of the Day: [She Thinks My Tractor's Sexy \(Kenny Chesney\) \(Links to an external site.\)Links to an external site.](#)

Week 3

September 5: Topics: Agriculture and Warfare. Siege Engine Plans due. Mini-project: milling, wheat refinement, tasting. Song of the Day: [In the Mood \(Glenn Miller Orchestra\) \(Links to an external site.\)Links to an external site.](#)

September 7: Topic: Warfare. Reading assignments: Einhard, [Vita Caroli Magni \(Links to an external site.\)Links to an external site.](#) (The Life of Charlemagne); the [Lay of Hildebrand \(Links to an external site.\)Links to an external site.](#); Gies, chapter 4: "The Asian Connection" (pp. 82-104); Manchester, chapter 2: "The Shattering" (pp. 31-219); [Discussion Questions for Week 3.](#) Songs of the Day: [One Tin Soldier \(Links to an external site.\)Links to an external site.](#); [Love is a Battlefield \(Pat Benatar\) \(Links to an external site.\)Links to an external site.](#); [WRITING ASSIGNMENT 1 DUE.](#)

Week 4

September 12: Special Topic with Mini-Project - Music and Information theory. Songs of the Day: [Doe a Deer \(Sound of Music\) \(Links to an external site.\)Links to an external site.](#); [I write the Songs \(Links to an external site.\)Links to an external site.](#) (Barry Manilow)

September 14: Topic: Warfare. Reading assignments: Arthurian Romance: Marie de France, [Lay of Lanval \(Links to an external site.\)Links to an external site.](#); Chrétien de Troyes, [Erec and Enide \(Links to an external site.\)Links to an external site.](#); Gies, chapter 5: "The Technology of the Commercial Revolution" (pp.105-165); Manchester, chapter 2: "The Shattering" (pp. 31-219); discussion of medieval

artistry to be announced. [Discussion Questions for Week 4](#). Songs of the Day: [If Ever I would leave you \(Camelot\) \(Links to an external site.\)Links to an external site.](#); [Forever Man \(Eric Clapton\) \(Links to an external site.\)Links to an external site.](#); [You're beautiful \(Links to an external site.\)Links to an external site.](#)

Week 5

September 19: Special Topic: The Plague. Songs of the Day: [Black Death \(Something Rotten\); \(Links to an external site.\)Links to an external site.](#) [This is the End. \(The Doors\) \(Links to an external site.\)Links to an external site.](#)

September 21: Topic: Warfare. Today's reading assignments: Arthurian Romance: Chrétien de Troyes, [Erec and Enide \(Links to an external site.\)Links to an external site.](#). (continued); Gies, chapter 5: "The Technology of the Commercial Revolution" (pp.105-165); Manchester, chapter 2: "The Shattering" (pp. 31-219); [Discussion Questions for Week 5](#). [WRITING ASSIGNMENT 2 DUE](#).

Week 6

September 26: [Presentation of Siege Engines Project](#). Song of the Day: [Hit Me with Your Best Shot \(Pat Benatar\) \(Links to an external site.\)Links to an external site.](#)

September 28: Topics: Textiles and Sacred Spaces. Video: [Physics Influence on Culture and Society-Textiles \(Links to an external site.\)Links to an external site.](#); Reading assignments: Dante, [Vita Nuova \(Links to an external site.\)Links to an external site.](#) (excerpts to be announced); Gies, chapter 5: "The Technology of the Commercial Revolution" (pp.105-165); Manchester, chapter 2: "The Shattering" (pp. 31-219); [Discussion Questions for Week 6](#). Songs of the Day: [Tapestry \(Carole King\) \(Links to an external site.\)Links to an external site.](#); [Burning Love \(Elvis Presley \(Links to an external site.\)Links to an external site.\)](#)

Week 7

October 3: Topics: Textiles and Sacred Spaces. Video: [Physics Influence on Culture and Society-Sacred Spaces \(Links to an external site.\)Links to an external site.](#). Song of the Day: [Winchester Cathedral \(New Vaudeville Band\) \(Links to an external site.\)Links to an external site.](#)

October 5: Topics: Textiles and Sacred Spaces. Reading assignments: Jacob Burckhardt, [The Civilization of the Renaissance in Italy \(Links to an external site.\)Links to an external site.](#) (excerpts to be announced); Gies, chapter 6: "The High Middle Ages" (pp.166-236); Manchester, chapter 2: "The Shattering" (pp. 31-219). [Discussion Questions Week 7](#). [WRITING ASSIGNMENT 3 DUE](#).

Week 8

[Sign-Up List for Individual Project Presentations this Week](#)

October 10: Special Topic with Mini-Project: Weaving and the Loom, Cathedral plan due.

October 12: Topics: Textiles and Sacred Spaces. Discussion of today's reading assignments: Ross King, *Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture*; Gies, chapter 6: "The High Middle Ages" (pp.166-236); Manchester, chapter 2: "The Shattering" (pp. 31-219); [Discussion Questions Week 8](#).

Week 9

[Sign-Up List for Individual Project Presentations this Week](#)

October 17: Special Topic with Mini-Project: Mechanical Advantage – Lifting Stones to Great Heights for Construction of Castles/Cathedrals. Song of the Day: [Defying Gravity \(Wicked\)](#) ([Links to an external site.](#))[Links to an external site.](#)

October 19: Topics: Textiles and Sacred Spaces. Reading assignments: Ross King, *Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture*; Gies, chapter 6: "The High Middle Ages" (pp.166-236); Manchester, chapter 2: "The Shattering" (pp. 31-219); [Discussion Questions Week 9](#). [WRITING ASSIGNMENT 4 DUE](#).

Week 10

[Sign-Up List for Individual Project Presentations this Week](#)

October 24: [Presentation of Cathedral Project due today](#). Song of the Day: [Cathedral \(Crosby, Stills and Nash\)](#) ([Links to an external site.](#))[Links to an external site.](#)

October 26: Topics: Textiles and Sacred Spaces. Discussion of today's reading assignments: Niccolo Machiavelli, [Il Principe](#) ([Links to an external site.](#))[Links to an external site.](#) (The Prince) (excerpts to be announced); Gies, chapter 6: "The High Middle Ages" (pp.166-236); Manchester, chapter 2: "The Shattering" (pp. 31-219); [Discussion Questions Week 10](#).

Week 11

[Sign-Up List for Individual Project Presentations this Week](#)

October 31: Special Topic: King Arthur and the Grail Quest, from Thomas Malory to Monty Python. By today: inform Drs. Law and Hasty about the topic of your third group project (see November 16 below); discussion of reading and video: From Sir Thomas Malory's *Morte Darthur*: [How Arthur by the mean of Merlin gat Excalibur his sword of the Lady of the Lake](#) ([Links to an external site.](#))[Links to an external site.](#);

[The Lady of the Lake in Monty Python's Quest for the Holy Grail \(Links to an external site.\)](#)[Links to an external site.](#). Song of the Day: [O fortuna \(Links to an external site.\)](#)[Links to an external site.](#)

November 2: Topics: Textiles and Sacred Spaces. Today's reading assignments: Niccolo Machiavelli, [Il Principe \(Links to an external site.\)](#)[Links to an external site.](#) (The Prince); discussion of Video: [Who's afraid of Machiavelli? \(Links to an external site.\)](#)[Links to an external site.](#); Gies, chapter 6: "The High Middle Ages" (pp.166-236); Manchester, chapter 2: "The Shattering" (pp. 31-219); discussion of Renaissance artistry to be announced. [Discussion Questions Week 11.](#) [WRITING ASSIGNMENT 5 DUE.](#)

Week 12

[Sign-Up List for Individual Project Presentations this Week](#)

November 7: Special Topic with Mini-project: Printing and the illuminated manuscript, the Book of Kells and Gutenberg's Printing Press.

November 9: Topic: New Sacred Spaces. Today's reading assignments: Martin Luther, [Letter to the Medici Pope Leo X; Leo On the Freedom of a Christian \(Links to an external site.\)](#)[Links to an external site.](#) (excerpts to be announced); Gies, chapter 7: "Leonardo and Columbus" (pp. 237-291); Manchester, chapter 3: "One Man Alone" (pp. 221-291); discussion of Renaissance artistry to be announced. [Discussion Questions Week 12.](#) Song of the Day: [Freedom \(Links to an external site.\)](#)[Links to an external site.](#)

Week 13

[Sign-Up List for Individual Project Presentations this Week](#)

November 14: Discussion of final reading assignments: Martin Luther, [Open Letter on Translating \(Links to an external site.\)](#)[Links to an external site.](#); Gies, chapter 7: "Leonardo and Columbus" (pp. 237-291); Manchester, chapter 3: "One Man Alone" (pp. 221-291); discussion of Renaissance artistry to be announced. [Discussion Questions Week 13.](#) Song of the Day: [Calypso \(Links to an external site.\)](#)[Links to an external site.](#)

November 16: [Presentation of Third Group Project.](#) Possible Topics. Song of the day: [Blank Space \(Links to an external site.\)](#)[Links to an external site.](#)

Week 14

November 21: No class today. Online assignment: [Upload your "cultural app" based on Gies, Manchester, and Ross \(two-three pages double-spaced typescript\) to the course discussion board;](#) cast your vote for best "cultural app" by midnight November 27 by Email co-addressed to Will Hasty <hasty@ufl.edu> and Mark Law <law@ece.ufl.edu>.

November 23: Thanksgiving Holiday

Week 15

November 28: Announcement of win, place, and show in the “best cultural app” contest; Finish Individual Project Presentations. Song of the Day: [Simply the Best \(Links to an external site.\)](#)[Links to an external site.](#)

November 30: Individual Project Presentations; time permitting: Students in The MEMS-Hoggetowne Independent Study will present their projects and report on their organizational work for the Faire.

Week 16

December 5: Student Celebration.