

Course 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

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Office Hours[1]:

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**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 European late Medieval period and early Renaissance.

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;

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

Visit to St. Peter's Basilica: [http://www.vatican.va/various/basiliche/san\\_pietro/vr\\_tour/index-en.html](http://www.vatican.va/various/basiliche/san_pietro/vr_tour/index-en.html) (Links to an external site.)Links to an external site.

Visit to the Leaning Tower of Pisa: <http://www.airpano.com/360Degree-VirtualTour.php?3D=Pisa-Tuscany-Central-Italy> (Links to an external site.)Links to an external site.

Visit to the Cathedral of Florence:

[http://www.panoramicearth.com/5380/Florence/Florence\\_Cathedral](http://www.panoramicearth.com/5380/Florence/Florence_Cathedral) (Links to an external site.)Links to an external site.

Tower of London: <http://www.londononline.co.uk/towerguide/Intro/> (Links to an external site.)Links to an external site.

Chartres Cathedral: <http://gallery.sjsu.edu/chartres/home.html> (Links to an external site.)Links to an external site.

Windmills of Holland: <http://www.holland.com/global/tourism/article/dutch-windmills.htm> (Links to an external site.)Links to an external site.

### **Assessment:**

Presentation (25%): Students will research and present to the class on a topic covered in the course

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%) This will demonstrate a careful reading of and willingness to apply your understanding of the different texts in class discussions. Cross-referencing between different readings and the physical principles you are learning about is strongly encouraged.

Writings (30%): Writings for the most part will consist of questions about the reading assignment and / or about other medieval and early modern studies resources. 24% for 12 Writing Assignments based on the readings and 8% based on the “cultural app” that you develop based on Gies, Manchester, and King.

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

## **Week 1**

August 22: Introduction, Siege Engine Project Description and Constraints, Examples. Song of the Day – Welcome to the Renaissance (Something Rotten)

August 24: Discussion of today's reading assignments: [Book of Genesis](#) (excerpts to be announced); 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 of ancient and medieval artistry to be announced. Complete Writing Assignment #1. Song of the Day – Tower of Babel, Elton John (Capt Fantastic and the Brown Dirt Cowboy)

## **Week 2**

August 29: Siege Engine materials distributed, offense v. defense – castle, plate armor, siege engines, knights, pikes, and arrows (bow, longbow, crossbow). Song of the Day – We're Knights of the Round Table (Monty Python)

August 31: Lecture: Agriculture - three field system, plows, and milling; discussion of today's reading assignments: St. Augustine, [De Doctrina Christiana](#) (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 of ancient and medieval artistry to be announced. Complete Writing Assignment #2. Song of the Day – She Thinks My Tractor's Sexy (Kenny Chesney) Agricultural Video

### Week 3

September 5: Siege Engine Plans due – Mini-project - milling, wheat refinement, tasting, Song of the Day – In the Mood (Glenn Miller Orchestra)

September 7: Hasting tactics v. Crecy tactics, Discussion of today's reading assignments: Einhard, [Vita Caroli Magni](#) (The Life of Charlemagne); the [Lay of Hildebrand](#); Gies, chapter 4: "The Asian Connection" (pp. 82-104); Manchester, chapter 2: "The Shattering" (pp. 31-219); discussion of medieval artistry to be announced. Complete Writing Assignment #3. Warfare Video

### Week 4

September 12: Mini-project - music and information theory, Song of the Day – Doe a Deer (Sound of Music)

September 14: Discussion of today's reading assignments: Arthurian Romance: Marie de France, [Lay of Lanval](#); Chrétien de Troyes, [Erec and Enide](#). 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. Complete Writing Assignment #4. Song of the Day – If Ever I would leave you (Camelot)

### Week 5

September 19: The Plague! Plague Game, Odds, Manpower, Song of the Day – Black Death (Something Rotten)

September 21: Discussion of today's reading assignments: Arthurian Romance: Chrétien de Troyes, [Erec and Enide](#). (continued); 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. Complete Writing Assignment #5.

## Week 6

September 26: Presentation of Siege Engines Project. Song of the Day – Hit Me with Your Best Shot (Pat Benatar)

September 28: Finish project presentations; Lecture: Textiles as text, wealth creation; discussion of today's reading assignments: Dante, [Vita Nuova](#) (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 of Renaissance artistry to be announced. Complete Writing Assignment #6. Bayeaux Tapestry Song of the Day – Tapestry (Carole King) Textiles Video

## Week 7

October 3: Cathedral project assignment, materials distributed. Mini project – drop spindle Song of the Day – Winchester Cathedral

October 5: Discussion of today's reading assignments: Jacob Burckhardt, [The Civilization of the Renaissance in Italy](#) (excerpts to be announced); 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. Complete Writing Assignment #7.

## Week 8

October 10: Mini-project weaving and the loom, Cathedral plan due

October 12: 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 of Renaissance artistry to be announced. Complete Writing Assignment #8.

## Week 9

October 17: Mini project, mechanical advantage – lifting stones to great height for construction of castles / cathedrals Song of the Day – Defying Gravity (Wicked)

October 19: 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 of Renaissance artistry to be announced. Complete Writing Assignment #9.

## Week 10

October 24: Presentation of Cathedral Project due today. Song of the Day Cathedral (Crosby, Stills and Nash)

October 26: Discussion of today's reading assignments: Niccolo Machiavelli, [Il Principe](#) (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 of Renaissance artistry to be announced. Complete Writing Assignment #10.

## Week 12

October 31: Follow-up discussions; group work; 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](#); [The Lady of the Lake in Monty Python's Quest for the Holy Grail](#).

November 2: Discussion of today's reading assignments: Niccolo Machiavelli, [Il Principe](#) (The Prince); discussion of Video: [Who's afraid of Machiavelli?](#); 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. Complete Writing Assignment #11.

## Week 13

November 7: Gutenberg Press, Mini-project, printing and the illuminated manuscript. The Book of Kells

November 9: Discussion of today's reading assignments: Martin Luther, [Letter to the Medici Pope Leo X](#); [Leo On the Freedom of a Christian](#) (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. Complete Writing Assignment #12.

## Week 14

November 14: Discussion of final reading assignments: Martin Luther, [Open Letter on Translating](#); 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.

November 16: Presentation of Third Group Project. Possible Topics: Making thread with drop spindle; weaving a garment or a tapestry; printing with "block prints" on some kind of surface employing some kind of device/mechanics of your creation; music, math, and underpinnings of communication theory; power - How do you get a 500lb stone up a 40-foot wall?

### **Week 15**

November 21: Contest: Invent and upload a “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.

November 23: Thanksgiving Holiday

### **Week 16**

November 28: Announcement of win, place, and show in the “best cultural app” contest; student Final Presentations.

November 30: Student Final Presentations.

### **Week 17**

December 5: Student Celebration.