

UNIVERSITY OF FLORIDA
ENGINEERING THE RENAISSANCE:
AN INTRODUCTION TO EARLY MODERN INNOVATION
IDH2931 Section 19GB
ITT3930 Section 0430
MEM3931 Section 19GH

INSTRUCTOR INFORMATION:

Instructor: Dr. Mary Watt
Office: 2014 Turlington Hall

Dr. Mark Law

Office Hours¹: Wed. 12:30- 1:30 pm
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COURSE INFORMATION:

Time & Location

Anderson Hall 0021
Tuesday Period 8 - 9 (3:00 PM - 4:55 PM)
Thursday Period 9 (4:05 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 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.

Special attention will be paid to bridge building, water and wind power, castle and cathedral construction. At the same time, students will study problems associated with such innovation, for example, corrosion and degradation. 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

¹ Please note: These office hours are subject to change from time to time – check instructor’s website for updates. The instructor will be available during office hours for consultation regarding assignments and questions raised during the lessons or by the assigned readings. Students are advised to have questions prepared ahead of time for the instructor so that office hour time may be used efficiently. Office hours are not to be used by students as a means of finding out what he or she missed during an absence. In the event that a student misses a lesson, the student should refer first to the syllabus and then consult with other students enrolled in the class. If there remain outstanding questions, then and only then should the student seek the instructor’s advice during office hours. Office hours are not intended as private tutoring sessions.

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:

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 (excerpts);

Pillars of the Earth, Ken Follett (excerpts)

The Agony and the Ecstasy, Irving Stone

Brunelleschi's Dome, Ross King.

Davinci's Notebooks: http://www.bl.uk/manuscripts/Viewer.aspx?ref=arundel_ms_263_f001r

The Yearling, Marjorie Kinnan Rawlings (excerpts)

Visit to St. Peter's Basilica: http://www.vatican.va/various/basiliche/san_pietro/vr_tour/index-en.html

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

Visit to the Cathedral of

Florence: http://www.panoramicearth.com/5380/Florence/Florence_Cathedral

Tower of London: <http://www.londononline.co.uk/towerguide/Intro/>

Chartres Cathedral: <http://gallery.sjsu.edu/chartres/home.html>

Windmills of Holland: <http://www.holland.com/global/tourism/article/dutch-windmills.htm>

Assessment:

Presentation (30%): Students will research and present to the class on a topic covered in the course

Group Project: (25%)

Participation: (20%)

Writings (25%): Writings for the most part will be consist of questions about the reading assignment and / or about other medieval and early modern studies resources.

Class Outline:

Date	Topic	Readings	Activity	Assessment
Tues. Aug. 23	Introduction to course	Gies: Chap. 1 Nimrod's tower, Noah's ark	Listen to: Welcome to the Renaissance Take a look at the Tower of Babel https://www.google.com/culturalinstitute/beta/asset/bAGKodJfvfAhYQ?utm_source=google&utm_medium=kp&hl=en	Participation

		<p>Read excerpts from Genesis</p> <p>Manchester: Chap. 1 The medieval Mind</p>		
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UNIT 1 AGRICULTURE

Date	Topic	Readings	Activity	Assessment
Thur. Aug. 25	A World lit by Fire	Gies: Chap. 2 Agricultural Engineering : Flail, Harvesters	Read a few pages out of the Luttrell Psalter: (19, 20, 21, 22, 23, 24) http://www.bl.uk/onlinegallery/ttp/luttrell/accessible/introduction.html	Participation
Tues. Aug. 30	Out of the Darkness	Gies: Chap. 6: The Plow and Harness		Participation
Thur. Sept. 1	Out of the Darkness	Gies: Chap. 6 Estate Management and The Black Death:	Look at: Brueghel's Triumph of Death http://www.wikiart.org/en/pieter-bruegel-the-elder/the-triumph-of-death-1562-1 Read: Boccaccio's Decameron Introduction to Day 1: http://www.gutenberg.org/files/23700/23700-h/23700-h.htm#Day_the_First Listen to: The Doors, The End https://www.youtube.com/watch?v=ClrvSJwwJUE	Participation
Tues. Sept. 6	Beyond the Sunset		Look at Breughel's Haymaking http://www.wga.hu/support/viewer/z.html	Participation
Thur. Sept. 8	Project Day		Meet with your groups start planning your projects	Questions on Reading (5%)

UNIT 2 TEXTILES

Date	Topic	Readings	Activity	Assessments
Tuesday, Sept. 13	A World Lit by Fire	Manchester: Chap. 2 – The shattering – Savonarola, Borgias, superstition, travel, Pillars of the Earth	Spin like you're medieval: https://www.youtube.com/watch?v=205NAurMOU Read a page or two out of the Luttrell Psalter http://www.bl.uk/onlinegallery/ttp/luttrell/accessible/pages19and20.html#content	Participation
Thursday, Sept. 15	Project Day			
Tuesday, Sept. 20	Out of Darkness	Gies: Chap. 3 Textiles: silk and wool, spinning and looms Gies: Chapter 6 Cloth, Paper and Banking: Spinning Wheel	Build your own Bayeux Tapestry http://www.bayeuxtapestry.org.uk/interactive/BayeuxCreate.htm and then learn how to dye it! https://bayeux.wordpress.com/2008/05/11/medieval-dyes-and-dyeing/ Look at a Roman edition of Boccaccio's "De Casibus Virorum Illustrium" showing Lady Fortune spinning her wheel. (1467) https://commons.wikimedia.org/wiki/File:ForutuneWheel.jpg	
Thursday, Sept. 22	Project Day			
Tuesday, Sept. 27	Beyond the Sunset	Read: Fabric and Dress in Bronzino's Portrait of Eleanor of Toledo and Son Giovanni https://www.jstor.org/stable/1482735?seq=1#page_scan_tab_contents	Examine Eleonora of Toledo's clothing https://www.google.com/culturalinstitute/beta/asset/portrait-of-eleonora-di-toledo-with-her-son-giovanni/QAEccCsLDtbB4A https://www.khanacademy.org/humanities/renaissance-reformation/mannerism1/v/bronzino-portrait-of-eleonora-di-toledo-with-her-son-giovanni-1544-1545	
Thursday, Sept.	Project Day			Questions on Reading (5%)

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UNIT 3 POWER

Date	Topic	Reading	Activity	Assessment
Tues. Sept. . 27	A World Lit by Fire	The Yearling Gies: Chap. 2: Harnessing the wind and water: The Mill	Visit the mills at Barbegal http://www.romanaqueducts.info/aquasite/arlesb/index.html http://ascelibrary.org/doi/10.1061/%28ASCE%29IR.1943-4774.0000359 http://www.waterhistory.org/histories/barbegal/	Participation
Thur. Sept. . 29	Project Day			
Tues. Oct. 4	Out of Darkness	Gies: Chap. 5 Open fields and Water power Mills, windmills, watermills Gies: Chap. 6 Metallurgy: The water powered blast Furnace	Windmills of Holland: http://www.holland.com/global/tourism/article/dutch-windmills.htm Look at Breughel's Haymaking (Detail) http://www.wga.hu/support/viewer/z.html Consider horsepower in the Middle Ages: (pages 25, 26) http://www.bl.uk/onlinegallery/tp/luttrell/accessible/introduction.html	Participation
Thur. Oct. 6	Project Day			
Tues. Oct. 11	Beyond the Sunset			Participation

Thur . Oct. 13	Project Day			Questions on Reading (5%)
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UNIT 4 SACRED STRUCTURES

Date	Topic	Reading	Activity	Assessment
Tues . Oct. 18	A World Lit by Fire	Gies: Chap. 2 Aqueducts, baths and basilicas	Visit to the Colosseum: http://www.airpano.ru/files/Italy-Rome-Colosseum/2-2 Visit to the Pantheon: http://www.panoramicearth.com/310/Rome/Pantheon Visit the Basilica of Constantine in Trier http://ekkt.ekir.de/trier/index.php?id=2493 http://ekkt.ekir.de/trier/index.php?id=2490 Visit the Original St. Peter's Basilica https://churchpop.com/2015/08/03/the-lost-1200-year-old-wonder-a-tour-of-the-old-st-peters-basilica/ Visit Santa Sabina, Rome http://www.sacred-destinations.com/italy/rome-santa-sabina	Participati on
Thurs. Oct. 20	Project Day			
Tues . Oct. 25	Out of Darkness	Gies: Chap.3 Churches Gies: Chap. 5 Cathedrals: Durham, Canterbury Pillars of the Earth	Visit to the Leaning Tower of Pisa: http://www.airpano.com/360Degree-VirtualTour.php?3D=Pisa-Tuscany-Central-Italy Take a virtual Tour of Canterbury Cathedral Cathedral: http://gallery.sjsu.edu/chartres/home.html	Participati on
Thurs. Oct. 27	Project Day			
Tues . Nov. 1	Beyond the Sunset	Gies: Chap.7 Brunelleschi	Visit to St. Peter's Basilica: http://www.vatican.va/various/basiliche/san_pietro/vr_tour/index-en.html	Participati on

		<p>King: Brunelleschi's Dome</p> <p>The Agony and the Ecstasy</p> <p>Manchester: Chap. 3 One man alone</p>	<p>Visit to the Cathedral of Florence: http://www.panoramicearth.com/5380/Florence/Florence_Cathedral</p>	
Thursday Nov. 3	Project Day			

UNIT 5 WARFARE AND EXPLORATION

Date	Topic	Reading	Activity	Assessment
Tuesday Nov. 8	A World Lit by Fire	<p>Gies: Chap. 2 Roads and Bridges</p> <p>Gies: Chap. 2 Military Engineering: Catapults</p>	<p>Take a trip on a Roman Galley: https://www.youtube.com/watch?v=5e1cmprH6BY</p> <p>Read a few pages of the Luttrell psalter: (pages 9,10, 27 http://www.bl.uk/onlinegallery/ttp/luttrell/accessible/introduction.html</p>	Participation
Thursday Nov. 10	Project Day			
Tuesday Nov. 15	Out of Darkness	<p>Gies: Chap. 5 Brothers of the Bridge</p> <p>Gies: Chap.5 Ships</p>	<p>Build your own Norman Warship: http://www.bayeuxtapestry.org.uk/activities/bayeuxtapestry-ship.pdf</p> <p>Visit to the Tower of London: http://www.londononline.co.uk/towerguide/Intro/</p> <p>Listen to some sailing songs! Calypso: https://www.youtube.com/watch?v=D2qf1nKhub4</p>	Questions on Reading (5%)

		<p>Gies Chap.3 Warfare: Armor, Castles, swords</p> <p>Gies: Chap. 5 Castles, Trebuchet and Crossbow</p> <p>Gies: Chap. 6 “A Wonderfu l Clock”</p> <p>Gies: Chap. 6 Navigatio n: The Compass Matures</p>	<p>Sloop John B. https://www.youtube.com/watch?v=o_LdgKIQ5Uo</p>	
Thu r. Nov . 17	Project Day			
Tue s. Nov . 22	Beyon d the Sunset	<p>Manchest er: Chap. 3 One man alone</p> <p>Gies: Chap. 6 Cannons</p> <p>Gies: Chapter 6 Handguns</p> <p>Gies: Chapter 7 Guns and National States</p>	<p>Davinci’s Notebooks: http://www.bl.uk/manuscripts/Viewer.aspx?ref=arundel_ms_263_f001r</p> <p>Listen to some rockets songs: https://www.youtube.com/watch?v=RnLpXes4txY</p>	

		Gies: Chapter 7 The Ocean Ship Gies: Chapter 7 1500 and After “Western Civilizatio n”		
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UNIT 6 STUDENT PRESENTATION OF PROJECTS

Date	Topic	Reading	Activity	Assessment
Thursday, Nov. 24			Groups 1, 2	
Tuesday, Nov. 29			Groups 3, 4, 5, 6	
Thursday, Dec. 1			Groups 7, 8	
Tuesday, Dec 6.	Conclusions			

August 22, 2016