

**EENS 6340/4340****The Earth****Fall Semester 2012**

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Office Hours MWF 1:00 - 3:00 PM

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**I. COURSE GOALS & OBJECTIVES**

This course is designed to give the student a fundamental understanding of the Earth, its formation, structure, composition, age, and evolution to its present state. Because much of this information can only be derived from observations we can make at the surface of the Earth, we look at how these observations are made and how they constrain our models of the Earth.

**II. TEXTBOOKS**

The primary text for the course is *The Inaccessible Earth: An Integrated Approach to Geophysics and Geochemistry* by Brown and Mussett. This book can be purchased in the Departmental Office or from [Amazon.com](http://Amazon.com). Additional readings and supplementary material will be supplied as handouts in class as needed.

**III. COURSE GRADING**

Your grade in this course will be determined on a point basis with the distribution of points as follows:

Homework	30%
First Midterm Exam	20%
Second Midterm Exam	20%
Final Exam	30%

**IV. WEB PAGE**

Some course material and announcements from the instructor can be found at <http://www.tulane.edu/~sanelson/eens634/>. Check the page often as contents will change frequently

<b>V. TENTATIVE SCHEDULE OF LECTURES &amp; LABS</b>		
<b>Date</b>	<b>Topic</b>	<b>Reading</b>
<b>Sept. 4</b>	Gravity and the Shape of the Earth, Isostasy and Gravity Anomalies <b>Gravity Homework Assigned</b>	p. 25-30
<b>Sept. 6</b>	Seismology - Elastic Waves	p. 11-16
<b>Sept. 11</b>	Seismology - The Structure of the Earth's Interior <b>Gravity Homework Due</b> <b>Seismology Homework Assigned</b>	p. 16-19

<b>Sept. 13</b>	Free Oscillations of the Earth Density Distribution in the Earth	p. 20 - 42
<b>Sept. 18</b>	Density Distribution in the Earth	p. 25-42
<b>Sept. 20</b>	Isotopes and the Age of the Earth <b>Seismology Homework Due</b> <b>Density Distribution Homework Assigned</b>	p. 213-215
<b>Sept. 25</b>	<b>MIDTERM EXAM 1</b>	
<b>Sept. 27</b>	Isotopes and the Age of the Earth <b>Density Distribution Homework Due</b> <b>Isotopes Homework Assigned</b>	p. 213-215
<b>Oct. 2</b>	Formation of the Solar System	p. 43-57
<b>Oct. 4</b>	Meteorites, Nucleosynthesis, and Stellar Evolution	p. 57-72
<b>Oct. 9</b>	Accretion and Differentiation of the Earth <b>Isotopes Homework Due</b> <b>Accretion Homework Assigned</b>	p. 73-93
<b>Oct. 11</b>	<b>Fall Break</b>	
<b>Oct. 16</b>	Accretion and Differentiation of the Earth	p. 73-93
<b>Oct. 18</b>	The Earth's Core	p. 94-107
<b>Oct. 23</b>	The Earth's Magnetic Field <b>Accretion Homework Due</b>	p. 628-636
<b>Oct. 25</b>	The Earth's Magnetic Field <b>Magnetism Homework Assigned</b>	p. 628-636
<b>Oct. 30</b>	<b>MIDTERM EXAM II</b>	
<b>Nov. 1</b>	The Structure and Composition of the Earth's Mantle	p. 108-133
<b>Nov. 6</b>	Evolution of the Earth's Mantle	
<b>Nov. 8</b>	Evolution of the Earth's Mantle <b>Magnetism Homework Due</b>	
<b>Nov. 13</b>	Heat Flow <b>Thermodynamic Homework Assigned</b>	
<b>Nov. 15</b>	Heat Flow	p. 143-150
<b>Nov. 20</b>	Origin of the Earth's Crust <b>Thermodynamic Homework Due</b> <b>Heat Flow Homework Assigned</b>	p. 160-204
<b>Nov. 22</b>	<b>HOLIDAY - THANKSGIVING</b>	
<b>Nov. 27</b>	Plate Tectonics - History of the Theory	
<b>Nov. 29</b>	Plate Tectonics - Theory <b>Heat Flow Homework Due</b> <b>Plate Tectonics Homework Assigned</b>	
<b>Dec. 4</b>	Plate Tectonics - The driving mechanisms	

<b>Dec. 6</b>	Evolution of the Earth's Atmosphere and Oceans	
<b>Dec. 13</b>	<b>Final Examination 8:00 AM to 12:00 PM</b>	
Click <a href="#">here</a> for a PDF version of the syllabus		
<a href="#">Return to EENS 6340 Home Page</a>		