

| DATE    | TOPIC TO BE PRESENTED  | READING   |
|---------|--|---|
| Jan. 7  | Intro to Earth System Science  | Chp. 1  |
| Jan. 9  | The Anthropocene   |   |
| Jan. 11 | How the Earth Works: Systems, Interactions & Feedbacks                           | Chp. 2 (p.82-84; 330-332)   |
| Jan. 14 | How the Earth Works: ( <i>continued</i> ) & Earth's Energy Balance               |   |
| Jan. 16 | How the Earth Works: Earth's Energy Balance ( <i>continued</i> )                 |   |
| Jan. 18 | <b>NO CLASS</b>  |   |
| Jan. 21 | <b>MARTIN LUTHER KING, JR. DAY — UNIVERSITY HOLIDAY</b>                          |   |
| Jan. 23 | Geosphere: Building the early Earth  | Chp. 4 (p.85-90; 93-94; 101)  |
| Jan. 25 | Geosphere: Plate Tectonics & Birth of Ocean Basins                               | Chp. 5  |
| Jan. 28 | Geosphere: Plate Tectonics & Birth of Ocean Basins ( <i>continued</i> )          |   |
| Jan. 30 | Geosphere: Making Mountains  |   |
| Feb. 1  | <b>MIDTERM #1 — IN CLASS</b>   |   |
| Feb. 4  | Geosphere: Volcanism & the Making of Earth's Atmosphere                          | Chp. 6 (p.161-162; 168-170; 177-179); Chp. 11 (p. 322-327); Chp. 13 (403-404)         |
| Feb. 6  | Geosphere: Volcanism ( <i>continued</i> ) & Weathering & Sequestration of Carbon | Chp. 3 (59, 71, 74-76); Chp. 7 (p. 185-198); Chpt. 11 (324-325); Chp. 13 (p. 408-409) |
| Feb. 8  | The Pedosphere: Soils, Agriculture & Climate Change                              | Chp. 15 (p. 468—472); Chp. 17 (p. 533-534); Chpt. 19 (578-579)                        |
| Feb. 11 | The Pedosphere: ( <i>continued</i> )   |   |
| Feb. 13 | The Atmosphere: Composition, Structure, Circulation, & Clouds                    | Chp. 11 (325-343)   |
| Feb. 15 | The Atmosphere: ( <i>continued</i> )   | Chp. 12 (350-361; 364-365; 373-375)   |
| Feb. 18 | <b>PRESIDENTS' DAY— UNIVERSITY HOLIDAY</b>                                       |   |
| Feb. 20 | The Atmosphere: Climate & Weather  |   |
| Feb. 22 | The Cryosphere: Snow & Ice & Climate   | Chp. 9 (258-267; 275-281)   |
| Feb. 25 | The Hydrosphere: The Hydrologic Cycle  | Chp. 8 (224-228); Chp. 11 (335-337, 340)  |
| Feb. 27 | The Hydrosphere: The Oceans & Freshwater Systems                                 | Chp. 10 (288-301; 311-314); Chp. 12 (360-364)   |
| March 1 | The Hydrosphere: ( <i>continued</i> )  |   |
| March 4 | <b>MIDTERM #2 — IN CLASS</b>   |   |

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| March 6  | The Biosphere: History of Life on Earth                     | Chp. 14 (418-434); Chp. 15 (450-468); Chp. 16 (optional) |
| March 8  | The Biosphere: Cycles of Life                               |  |
| March 11 | The Biosphere: ( <i>continued</i> )                         |  |
| March 13 | Anthropocene Revisited                                      | Chp. 13, 19  |
| March 15 | Anthropocene Revisited ( <i>continued</i> )                 |  |
| March 21 | <b>FINAL EXAM THURSDAY, MARCH 21 (10:30 AM TO 12:30 PM)</b> |  |

**Earth System Science** is an inherently interdisciplinary field guided by the holistic view that the Earth behaves as a single, interconnected system comprised of physical, chemical, biological and human components. Earth System Science is a modern approach to understanding such swiftly developing issues as climate change, ecosystem stress, and resource depletion. GE credit: SE, SL

**Course Objectives:** 1) To get students to see the Earth as an integrated system where the geosphere, hydrosphere, atmosphere, biosphere, and anthroposphere interact to make Earth habitable.  
 2) To develop an awareness of the impact of human activities on the Earth system and to evaluate potential solutions.  
 3) To become a proactive, scientifically literate citizen of Earth. Understanding how the Earth works from a 'systems' perspective will give you the appropriate background to make informed opinions about global environmental issues through the rest of your life.

### No course pre-requisites

**PROFESSOR:** Professor Isabel P. Montañez - email address: [ipmontanez@ucdavis.edu](mailto:ipmontanez@ucdavis.edu)  
 Room 3117 Earth and Physical Sciences (EPS) Bldg (at intersection of California & La Rue, next to Arboretum).

**OFFICE HOURS:** Wednesday (2:15 to 4pm) & Thursday (3:30 to 5 pm)

### COURSE TEXT:

**PRIMARY TEXT:** *The Blue Planet: An Introduction to Earth System Science*, 3<sup>rd</sup> Edition, by Skinner (2011): John Wiley & Sons, Inc  
 -this is a very good reference text and I encourage you to purchase it (new or used) or rent it from the Bookstore  
 – it is a good compliment to the lecture notes uploaded to the class website.

- **One copy** of the book is on 'Reserve' in Shield Library
- UCD Bookstore: New (~\$176), Used (\$132),  
 New Rental (\$105.60); Used Rental (\$61.60)
- Amazon: New (~\$119.98), Rental (~\$23.31)

**On the Course Canvas Site** - you'll find pdf versions of lecture notes, exam study guides, and links to interesting and relevant webpages. Look for these in the early evening of the night before the class in which a new topic is introduced. I'll give you a 'heads-up' in class.

You'll want to take your own notes in class and supplement the lecture pdfs with readings from the textbook.

**GRADING:**

Midterm 1 = 25%

Midterm 2 = 25%

In-class discussions & exercises (take place during ~30 to 40% of class meetings) = 10%

Final exam - Thursday, March 21 (10:30 to 12:30) = 40% (comprehensive)

Exams will consist of multiple choice, true-false, and short answer questions.

Material on exams will be mostly from the lecture and from in-class discussions & group exercises. A few questions may come from the textbook.

NO EARLY EXAMS OR MAKEUP EXAMS without a formal written medical or team excuse.

The final exam date and time is set by the university and cannot be negotiated.

No extra credit assignments.