EARTH 540 Course Schedule

Printable Schedule

As the schedule may change, please be sure to check it often! If you have a question about when something is due, ask your instructors!

Below you will find a summary of the learning activities for this course and the associated time frames. This course is 12 weeks in length, beginning with an orientation week.

Course Orientation	
Date	May 14, 2018
Activities	• Personalize your Canvas space • Add an address for your Canvas e-mail • Login to this Web site • Introduce yourself and meet the rest of the class! • Take the Course Information Quiz • Feel free to start Lesson 1 at any time. It's a good one to get a head start on. • This lesson is due prior to the start of the next lesson

Unit I: Creating the Seas: Ocean Basins and Water

Lesson 1: The Water Planet: Earth and the Goldilocks Principle	
Date	Start by: May 21
Lesson	• Venus, Earth and Mars—Earth is just right • Ocean origins: inner rumblings or cosmic slam? • Coevolution of oceans and life
Activities	• Note that Lesson 1 is extensive. Get an early start • Weekly discussion, Calculations • Activity 1 is due May 28 • This lesson is due prior to the start of the next lesson

Lesson 2: Living on an Island: Origin of Ocean Basins and Sea Floor Morphology

Date	Start by: June 4
Lesson	• Hot spots and volcanic arc edifices: building islands and an island change. • Motion under the ocean: plate tectonics and the changing face of Earth • Earthquakes & tsunami! • Continental margins
Activities	• Note that Lesson 2 is extensive. Get an early start • Weekly discussion, Calculations • Activity 1 is due June 11 • This lesson is due prior to the start of the next lesson

Lesson 3: From Rock to Salt

Date	Start by: June 18
Lesson	• Ice, water, and vapor • Salt as the commodity and the age of the oceans • Latent heat and heat capacity • Water as the universal solvent • Why the sea is bitter • It's all about cycles: from vapor to rain to snow to rivers and the ocean. • Geochemical residence time
Activities	• Problem sets, Weekly discussion • End-of-unit quiz (open June 25 - 27)

Unit II: A Global Balancing Act: Ocean-Atmosphere-Continent Interactions

Lesson 4: The Global Thermostat. The Ocean-Atmosphere-Climate Connection

Date	Start by: June 25
Lesson	• Solar energy, pressure and wind belts • Redistributing Earth's heat, wind and currents • Coriolis: the Earth turns and momentum is conserved! • Ekman transport—the spiral path • Unceasing motion and ocean gyres

	• Sailing the Seven Seas and how to get from here to there in a boat
Activities	• Problem sets, Weekly discussion

Lesson 5: The Sea is Rising, the Sea is Rising

Date	Start by: July 2
Lesson	• Buying beach property? How long do you plan to keep it? • Surf's up! Waves from deep to shallow and top to bottom • Currents and sand transport. The beaches are moving • Reflection and dissipation: The seasonal beach • The sea also rises: the future coastline of Eastern North America • Global warming: implications for glacial melting and sea level
Activities	• Problem sets, Weekly discussion

Lesson 6: Tides Turning and the Planetary Connection

Date	Start by: July 9
Lesson	• Fishing the tide from the Bay of Fundy to Mont Saint Michelle • A matter of gravity, orbit and rotation: Earth's attraction to the sun and moon • Time and tides: tide charts and their interpretation • Dynamic theory and the amphidromic system • Back to the Bay of Fundy: energy from tides?
Activities	• End-of-unit quiz (open July 16-18)

Unit III: Life Goes On

Lesson 7: Environmental Issues: Coral Reefs Imperiled, The Dead Zone and Hypoxia

Date	Start by: July 16
Lesson	• Estuaries and coastal zones as protein resources • The Chesapeake Bay estuary then and now

	• When rivers run too fertile: should I fertilize the lawn? • Exceeding the limits of tolerance • Eutrophication and hypoxia • Red tides and harmful algal blooms (HABs) • When action is taken there is some good news
Activities	• Problem sets, Weekly discussion

Lesson 8: The Secret Lives of Fishes and the Great Meal Deal

DATE	Start by: July 30
LESSON	• Will we be dining on Jellyfish tonight? • What can we learn from pirates? • The oceanic food chain—what does it take to make a Tuna? • Photosynthetic recipes: Fertilizer from the deep feeds surface crops • Breathing, predation, salt and slime: a fishes' life • How efficient can we be with fishing? • Moving down the foodchain, moving up ocean's end
ACTIVITIES	• Reading, Weekly discussion • End-of-unit quiz; (Open August 6-8) • Lesson 8 due on August 8

Lesson 9: Capstone Project

DATE	Start by: July 30
ACTIVITIES	• Project due August 3