

## QUIZ I - STUDY GUIDE 2009

The quiz will cover everything through **Lecture 7** (Biogeochemical cycles) including redox, primary productivity, and the thermodynamics of life. The questions will be primarily short answer, which can be responded to with a few sentences, a sketch with a description, or a brief calculation. We could also ask you to interpret a graph/data or give you a discussion question.

Use Problem Set 1, the Study Questions, the Lecture Notes, and the Lecture Handouts as a top priority for studying. Make sure you are familiar with the articles that have been assigned.

**You are responsible for the following readings:**

### TEXTBOOK (Smith and Smith)

- Lecture 1: Chapter 1
- Lecture 3: pg. 43, pg. 84-88, pg. 673-674
- Lectures 5 and 6: pg. 42-50, pg. 91-92, pg. 478-490, pg. 632-640, pg. 512-514, pg. 666-667
- Lecture 7: pg. 514-523, pg. 525-527

**HANDOUTS and ARTICLES:** These all contain important material. This list is not all-inclusive but highlights some of the most important readings.

- The Biosphere, Vernadskii 1926
- Ecology: The Basic Concept, Remmert 1980
- When Did Photosynthesis Emerge on Earth, Des Marais 2000
- Rethinking Earth's Early Atmosphere, Chyba 2005
- Redox Handout
- Photosynthesis Handout
- Life at the Sea Floor, Jannasch 1995
- Microbiology and Application of the Anaerobic Ammonium Oxidation Process, Jetten 2001
- Eating the Sun, Morton 2007
- What limits Phytoplankton Growth, Chisholm 1992
- The Ocean's Invisible Forest, Falkowski 2002
- Transformation of the Nitrogen Cycle, Galloway 2008
- Global Hydrological Cycles and World Water Resources, Oki 2006

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1.018J / 7.30J Ecology I: The Earth  
Fall 2009

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