

Sustainability: An Environmental Science Perspective

Syllabus for SMC First Class

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This is an introductory science course whose goal is to provide students with the information and tools they need to understand the natural processes of the environment and the causes of our current sustainability crises. Earth is still our only home, and “home” is a good metaphor for the relationship between humanity and Earth. We must monitor the health of our home, and spend time and money to keep it in repair so that it can continue to provide services such as shelter, sanitation, food and clean water. We must also take care of all of our home’s inhabitants. In this class, students will gain a firm scientific foundation in environmental science, as well as the ways in which our society has developed unsustainably. We will also discuss practical strategies for developing solutions for the future, such as restoration, preservation and sustainable management of natural resources. We will use some examples of these solutions that are being used on the Saint Michael’s campus as part of the efforts of our [Center for the Environment](#). We will also review many of the ways in which our students can be involved in those efforts.

The text for the course is an online resource called *Healing Earth* which is a production of the Loyola University (Chicago) International Jesuit Ecology Project. It integrates scientific knowledge of our environmental crises with social problems, and encourages reflection and an ethical approach to action for a sustainable future. The creators of *Healing Earth* believe this approach is vital for our students as they learn about the natural world, as well as the profound environmental challenges we face now and in the years ahead. Readings are supplemented with a variety of scientific articles, videos and case studies. Students will also be expected to carry out a few scientific projects in their local community.

Grading and Expectations: Students will contribute to online discussions and several face-to-face Zoom discussions, based upon the text reading and assigned articles and videos. There will be a few short video “lectures” that will be used to explain and expand upon relevant scientific content. There are several small assignments, including field work in the students’ local community. In addition to short online quizzes on the topical units of the course, and brief written reports on scientific projects, students will undertake a case study of their local community, from a sustainability perspective. Students are expected to complete assignments in a timely manner, and to participate regularly in the Discussion Board and Zoom sessions (we will probably have 3-4 of these).

20% Discussion Postings in response to online prompts for each unit

20% Community Sustainability Assessment

20% Quizzes

30% Assignments – field-based research activities

10% Participation/Contribution

Schedule

Online text: [Healing Earth](#)

Unit 1: Introduction to Environmental Science and Sustainability	Sustainability Footprints Moral and Ethical Dimensions of Sustainability
Unit 2: Biodiversity	Value of Biodiversity Terrestrial and Aquatic Diversity Threats to Biodiversity – local and global

Unit 3: Natural Resources	Matter and the Earth Biogeochemical Cycles Preservation, Conservation, Restoration Local and Global Strategies and Successes
Unit 4: Energy	Consequences of Non-renewable Energy Renewable Energy and Energy Efficiency Future
Unit 5: Water	Sources, Uses, Consequences of Exploitation Ethical and Spiritual Perspectives
Unit 6: Food and Agriculture	Agriculture: History and Impacts Sustainable Agriculture Feeding the World
Unit 7: Climate Change	Climate Science and Impacts of Global Climate Change A Call to Action