International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

Diploma Programme

Environmental systems and societies subject outline

First examinations 2010

This document explains the major features of the course, and outlines the syllabus and assessment requirements.

More detailed information about the course can be obtained by referring to the guide for this subject, which is available on the subject page of the IB online curriculum centre (OCC) website (http://occ.ibo.org) and can also be purchased from the IB store (http://store.ibo.org).

Nature of the subject

As a transdisciplinary subject, environmental systems and societies is designed to combine the techniques and knowledge associated with group 4 (the experimental sciences) with those associated with group 3 (individuals and societies). By choosing to study a transdisciplinary course such as this as part of their diploma, students are able to satisfy the requirements for both groups 3 and 4 of the hexagon, thus allowing them to choose another subject from any hexagon group (including another group 3 or 4 subject). Transdisciplinary subjects therefore introduce more flexibility into the IB Diploma Programme. The environmental systems and societies course is offered at SL only.

The prime intent of this course is to provide students with a coherent perspective of the interrelationships between environmental systems and societies; one that enables them to adopt an informed personal response to the wide range of pressing environmental issues that they will inevitably come to face. Students' attention can be constantly drawn to their own relationship with their environment and the significance of choices and decisions that they make in their own lives. It is intended that students develop a sound understanding of the interrelationships between environmental systems and societies, rather than a purely journalistic appreciation of environmental issues. The teaching approach therefore needs to be conducive to students evaluating the scientific, ethical and socio-political aspects of issues.

Prior learning

Students will be able to study this course successfully with no specific previous knowledge of science or geography. However, as the course aims to foster an international perspective, awareness of local and global environmental concerns and an understanding of the scientific method, a course that shares these aims would be good preparation.

Mathematical requirements

All Diploma Programme environmental systems and societies students should be able to:

- perform the basic arithmetic functions: addition, subtraction, multiplication and division
- use simple descriptive statistics: mean, median, mode, range, frequency, percentages, ratios, approximations and reciprocals
- use standard notation (for example, 3.6×10^6)
- use direct and inverse proportion
- interpret frequency data in the form of bar charts, column graphs and histograms, and interpret pie charts
- understand the significance of the standard deviation of a set of data
- plot and sketch graphs (with suitable scales and axes)
- interpret graphs, including the significance of gradients, changes in gradients, intercepts and areas
- demonstrate sufficient knowledge of probability (for example, in assessing risks in environmental impact).

Links to the Middle Years Programme

Students who have undertaken the IB Middle Years Programme (MYP) sciences, humanities and mathematics courses will be well prepared for environmental systems and societies. Holistic learning and intercultural awareness (fundamental concepts to the MYP) are particularly important to the transdisciplinary and global nature of the subject. The areas of interaction, in particular *homo faber* and environment, provide an excellent foundation to the study of human activity and its effects on the quality of people's lives both locally and globally. The MYP humanities course also emphasizes time, place and space, change, systems and global awareness—all fundamental concepts in environmental systems and societies. This course, however, also focuses on the natural environment, including its organic and inorganic components, its processes and feedback mechanisms, and how these interact with human behaviour. The MYP framework for sciences provides the basis on which all of this knowledge can be built.

The approach chosen for the environmental systems and societies internal assessment draws upon skills developed in the practical and investigative elements of the MYP sciences and humanities courses.

Aims

Environmental systems and societies aims

The systems approach provides the core methodology of this course. It is amplified by other sources, such as economic, historical, cultural, socio-political and scientific, to provide a holistic perspective on environmental issues.

The aims of the **environmental systems and societies** course are to:

1. promote understanding of environmental processes at a variety of scales, from local to global
2. provide a body of knowledge, methodologies and skills that can be used in the analysis of environmental issues at local and global levels
3. enable students to apply the knowledge, methodologies and skills gained
4. promote critical awareness of a diversity of cultural perspectives
5. recognize the extent to which technology plays a role in both causing and solving environmental problems
6. appreciate the value of local as well as international collaboration in resolving environmental problems
7. appreciate that environmental issues may be controversial, and may provoke a variety of responses
8. appreciate that human society is both directly and indirectly linked to the environment at a number of levels and at a variety of scales.

Assessment objectives

The objectives reflect those parts of the aims that will be assessed. It is the intention of the **environmental systems and societies** course that students should achieve the following objectives.

1. Demonstrate an understanding of information, terminology, concepts, methodologies and skills with regard to environmental issues.
2. Apply and use information, terminology, concepts, methodologies and skills with regard to environmental issues.
3. Synthesize, analyse and evaluate research questions, hypotheses, methods and scientific explanations with regard to environmental issues.
4. Using a holistic approach, make reasoned and balanced judgments using appropriate economic, historical, cultural, socio-political and scientific sources.
5. Articulate and justify a personal viewpoint on environmental issues with reasoned argument while appreciating alternative viewpoints, including the perceptions of different cultures.
6. Demonstrate the personal skills of cooperation and responsibility appropriate for effective investigation and problem solving.
7. Select and demonstrate the appropriate practical and research skills necessary to carry out investigations with due regard to precision.

For a list of command terms for objectives 1–5, see the “Glossary of command terms” section in the appendices.

Syllabus outline

Syllabus component	Teaching hours
Topic 1: Systems and models	**5**
Topic 2: The ecosystem	**31**
2.1 Structure	4
2.2 Measuring abiotic components of the system	1
2.3 Measuring biotic components of the system	4
2.4 Biomes	3
2.5 Function	7
2.6 Changes	7
2.7 Measuring changes in the system	5
Topic 3: Human population, carrying capacity and resource use	**39**
3.1 Population dynamics	5
3.2 Resources—natural capital	8
3.3 Energy resources	4
3.4 The soil system	4
3.5 Food resources	6
3.6 Water resources	3
3.7 Limits to growth	2.5
3.8 Environmental demands of human populations	6.5
Topic 4: Conservation and biodiversity	**15**
4.1 Biodiversity in ecosystems	3
4.2 Evaluating biodiversity and vulnerability	6
4.3 Conservation of biodiversity	6

Syllabus component	Teaching hours
Topic 5: Pollution management	**18**
5.1 Nature of pollution	1
5.2 Detection and monitoring of pollution	3
5.3 Approaches to pollution management	2
5.4 Eutrophication	3
5.5 Solid domestic waste	2
5.6 Depletion of stratospheric ozone	3
5.7 Urban air pollution	2
5.8 Acid deposition	2
Topic 6: The issue of global warming	**6**
Topic 7: Environmental value systems	**6**
Total teaching hours	**120**

Assessment outline

First examinations 2010

Assessment component	Weighting
External assessment (written papers, 3 hours) **Paper 1—1 hour** 45 marks	**80%** **30%**
Paper 2—2 hours 65 marks	**50%**
Internal assessment—30 hours 42 marks	**20%**

Note: The environmental systems and societies course is only offered at SL. There is no HL option available.