

## **IESO Syllabus and Exam Specifications**

### **IESO Curriculum**

The examinations at the IESO will require students to have a broad-based knowledge of environmental science and a deep understanding of the interrelationship between humans and the natural world. This includes knowledge of the Earth's natural systems, ecological processes, and the interactions of different species, especially humans, with those systems and processes.

The concepts for the multiple-choice examinations for the IESO will be based on the content tested on the AP Environmental Science examination, so resources appropriate for review for the APES multiple-choice examination will also be helpful for the IESO exam. Review books for the APES examination are widely available in local bookstores or on Amazon.com, and information on past APES examinations can be found on the College Board website. There are also numerous video series on YouTube to assist with content review, in addition to a series of videos and other preparation materials on Khan Academy. Links to some of these resources will be included below.

The written examination will consist of 5 to 8 sets of short-answer questions that will assess concepts similar to those on the multiple-choice examination. As per the exam description on the IESO website, these questions will require answers no longer than a paragraph in order to receive full credit. Some of these questions will involve analysis and interpretation of data, while others may involve mathematical calculations. Tutorials for the type of calculation questions students might see on the written examination can also be found on YouTube. Examples of the types of questions students may see on the written exam may be found on the College Board website, on the Written Examination (WRT) from past International Geography Olympiad exams, or on past Written or Cartographic examinations from the IAC US Geography Championships.

The fieldwork exercise will consist of two parts. Part 1 will involve separate stations of data collection and observations on a local beach. Instructions for each station and the tasks to be performed will be given as students arrive at that station on the day of the fieldwork. Part 2 will be a written examination that will involve use of the data collected to address environmental problems related to beach ecosystems. Some of these questions will involve analysis and interpretation of data, while others may involve mathematical calculations. Examples of the types of tasks and questions students may see on the fieldwork exercise may be found on the College Board website, on the Fieldwork Examination (FEW) from past International Geography Olympiad exams, or on past Written or Cartographic examinations from the IAC US Geography Championships.

### **IESO Exam Specifications**

Please note: the Battery Exam, the Written Exam, and the Fieldwork Exercise will have different versions based on age divisions (High School, Middle School, and Elementary School). These versions may be of a different length, have slightly modified questions or content, or may have different problem types based on age level. The subject-specific multiple-choice exams (Climate Change, Meteorology, and Oceanography) will have only one version that will be administered to all participants.

ALL multiple-choice examinations will be scored on the standard IAC scoring system - +2 points for a correct answer, 0 points if a question is left blank, and -1 point for an incorrect answer.

### **The Battery Exam**

**Format** – multiple choice; mix of individual and set-based questions, some questions will be stimulus-based

**Questions** – variable based on division (see below)

**Time** – 60 minutes

**Divisions** – High School (200 questions); Middle School (200 questions); Elementary School (150 questions)

**Content tested** – all aspects of Environmental Science

### **Climate Change Exam**

**Format** – multiple choice; mix of individual and set-based questions, some questions will be stimulus-based

**Questions** – 65 multiple choice

**Time** – 30 minutes

**Divisions** – all participants will take the same version of the exam

**Content tested** – causes and consequences of climate change, including aspects such as environmental impacts, public policy, and technologies that both cause and mitigate climate change

### **Meteorology Exam**

**Format** – multiple choice; mix of individual and set-based questions, some questions will be stimulus-based

**Questions** – 65 multiple choice

**Time** – 30 minutes

**Divisions** – all participants will take the same version of the exam

**Content tested** – all aspects of meteorology, including weather patterns, climate change, severe weather, precipitation, frontal systems, winds, the ENSO, forecasting, climate types, and the geographic distribution of weather

### **Oceanography Exam**

**Format** – multiple choice; mix of individual and set-based questions, some questions will be stimulus-based

**Questions** – 65 multiple choice

**Time** – 30 minutes

**Divisions** – all participants will take the same version of the exam

**Content tested** – all aspects of oceanography, including ocean exploration, currents, marine biology, ocean floor topography, human impacts on ocean environments, temperature, ocean impacts on weather and climate

### **Written Exam**

**Format** – short-answer questions with responses ranging from a word or number to a paragraph; calculation questions may be included

**Questions** – variable based on division (see below)

**Time** – 75 minutes

**Divisions** – High School (8 short-answer questions with multiple parts); Middle School (6 short-answer questions with multiple parts); Elementary School (5 short-answer questions with multiple parts)

**Content tested** – all aspects of Environmental Science; data analysis and interpretation and mathematical calculations may be assessed

### **Fieldwork Exercise**

**Format** –

Part 1 – data collection, observation, and measurement on a local beach

Part 2 – short-answer questions with responses ranging from a word or number to a paragraph; calculation, graphing, or mapping questions may be included

**Questions and tasks** – variable based on division (see below)

**Time** –

Part 1 – 3 hours

Part 2 – 75 minutes

**Divisions** – High School (4 data collection stations; 4 short-answer question sets); Middle School (4 data collection stations; 3 short-answer question sets); Elementary School (3 data collection stations; 2 short-answer question sets)

**Content tested** - all aspects of Environmental Science; data analysis and interpretation and mathematical calculations may be assessed

### **IESO Study and Preparation Resources –**

The list below contains numerous resources that may help students with the content and skills necessary to be successful on the IESO examinations and fieldwork. Please note that these resources are intended for academically advanced high school students and may need to be adapted for use by middle and elementary age students. Resources marked with \*\* are very advanced and should be used with discretion.

Sample written and fieldwork examination questions and responses will be posted on the IESO website by mid-December.

#### Environmental Science Content Resources

1. [Khan Academy Environmental Science course page](#)
2. [APES vs. Everybody by Jordan Dischinger-Smedes](#) (YouTube video series)
3. [College Board AP Environmental Science homepage](#)
- \*\*4. [College Board AP Environmental Science Course and Exam Description](#) (PDF Document)

#### Environmental Science Math Reviews

1. [How to Write the Math FRQ on the AP Environmental Science Exam](#) (YouTube video)
- \*\*2. [Kristi Schertz Math Review](#) (YouTube video series)

#### Sample Exam Questions

1. [College Board AP Environmental Science FRQs from previous years](#)
2. [Past iGeo exams](#)
3. [IAC US Geography Championships past exams \(VJV Division\)](#)