

IB Environmental Systems and Society (ESS) SL Year 1:

Teacher(s)	IB ESS PLC	Subject group and course	Environmental Systems and Society (ESS)		
Course part and topic	Year 1 Unit 5 (Textbook Subtopic 2.5) Investigating Ecosystems- Practical Work IA Proposal and Design	SL or HL/Year 1 or 2	SL; Year 1	Dates	5/5-5/25
Unit description and texts		DP assessment(s) for unit			
<p>In this unit students will be</p> <p>Statement of Inquiry: Scientists investigate living systems through field work, computational, and statistical methods.</p> <p>Phenomenon: The outdoor nature observatory has a diversity of plants and animals and a distribution of biomass through ecological gradients.</p>		<ul style="list-style-type: none"> ● Formative: <ul style="list-style-type: none"> ○ Outdoor Practicals <ul style="list-style-type: none"> ▪ Quadrat Study ▪ Transect Study ▪ Motile organism study ● Summative: <ul style="list-style-type: none"> ○ Subtopic Quizzes (1) ○ Outdoor Investigation (ACFOR scale map) 			

INQUIRY: establishing the purpose of the unit

Transfer goals

List here one to three big, overarching, long-term goals for this unit. Transfer goals are the major goals that ask students to “transfer” or apply their knowledge, skills, and concepts at the end of the unit under new/different circumstances, and on their own without scaffolding from the teacher.

SWBAT: Estimate biomass based on a quadrat sample of an ecosystem.
Estimate biodiversity based on an ACFOR scale.
Identify and measure indicator species of motile organisms.

ACTION: teaching and learning through inquiry

Content/skills/concepts—essential understandings	Learning process
<p><u>Students will know the following content:</u> Quadrat random sampling math ACFOR scale Lincoln index math Simpson’s Diversity Index</p> <p><u>Students will develop the following skills:</u></p> <ul style="list-style-type: none"> • How to use quadrats to take random samples. • How to apply an ACFOR scale to plant biodiversity. • How to apply Lincoln index to motile organisms (students will not trap and mark organisms) • How to apply Simpson’s Diversity index to plant biodiversity data <p><u>Students will grasp the following concepts:</u></p>	<p>Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.</p> <p>Learning experiences and strategies/planning for self-supporting learning:</p> <p>Cornell reading notes</p> <p>Opening discussion</p> <p>Small group/pair work</p> <p>PowerPoint lecture/notes</p> <p>Skills Activities</p> <p>(Worksheets, Schoology assignments etc. systems diagrams, statistics, formulas, practice)</p> <p>Outdoor practical</p>

- Mathematical thinking can be applied to ecosystems in order to describe ecosystems quantitatively.

investigations

Details: Students will read assigned pages of the text at home through the schoology LMS. Class time will be dedicated to discussions, skills, investigations, and assessments.

Other/s:

Accommodations:

- SWD/504 – Accommodations Provided
- ELL – Reading & Vocabulary Support
- Intervention Support
- Extensions – Go Further enrichment materials:
 - o Documentary Reports
 - o Assignments
 - o Audio Programs

Formative assessment: Reading quiz, in class skills practice, mini-case studies based on current events readings, sub-topic quizzes, lab practicals

Summative assessment: Summative Case-study assessments will mirror criteria described by the IB program. Unit test will mirror the IB exam students will take at the end of the year.

Differentiation:

- ***Mixed-ability group assignments***
- ***Scaffold group work – assigned roles***
- ***Scaffold learning/Extend learning***
- ***Video option for readings***

Details: Growth will be monitored using formative assessments by instructor and self-assessed using provided bulls-eye rubric. Remediation/ extension will be conducted through homework activities and investigations conducted in class.

Approaches to learning (ATL)

Check the boxes for any explicit approaches to learning connections made during the unit. For more information on ATL, please see [the guide](#).

Thinking

Social

Communication

Self-management

Details:

The ATL for this unit is understanding. In Topic 2 of ESS students have to assimilate a broad variety of new ideas and present qualitative and quantitative data in ways that will be novel to them. The unit focuses on students' ability to assimilate and communicate new kinds of data in new ways.

Language and learning <i>Check the boxes for any explicit language and learning connections made during the unit. For more information on the IB's approach to language and learning, please see the guide.</i>	TOK connections <i>Check the boxes for any explicit TOK connections made during the unit</i>	CAS connections <i>Check the boxes for any explicit CAS connections. If you check any of the boxes, provide a brief note in the "details" section explaining how students engaged in CAS for this unit.</i>
<p>Activating background knowledge</p> <p>Scaffolding for new learning</p> <p>Acquisition of new learning through practice</p> <p>Demonstrating proficiency</p> <p>Details: This unit applies vocabulary acquired through previous courses. Proficiency will be assessed through formative and summative assessments.</p>	<p>Personal and shared knowledge Ways of knowing Areas of knowledge The knowledge Framework</p> <p>Details: Students will focus on the methodology (Systems and models) for the course.</p>	<p>Creativity</p> <p>Activity</p> <p>Service</p> <p>Details: Students will begin to engage in genuine ecology field work as they sample the nature area in quadrats for biomass estimations and with transects for diversity measurements.</p>
Resources <i>List and attach (if applicable) any resources used in this unit</i>		
<ul style="list-style-type: none"> ● Oxford Environmental Systems and Societies ISBN 978-0-19-833256-5 ● Biozone Environmental Science Student Workbook ISBN 978-1-927173-55-8 ● Hodder Education Environmental Systems and Societies Study and Revision Guide ISBN 978-1-471-89973-7 ● IB ESS Schoology Group ● IB ESS Schoology Past Schoology Course 		

Reflection—considering the planning, process and impact of the inquiry

What worked well <i>List the portions of the unit (content, assessment, planning) that were successful</i>	What didn't work well <i>List the portions of the unit (content, assessment, planning) that were not as successful as hoped</i>	Notes/changes/suggestions: <i>List any notes, suggestions, or considerations for the future teaching of this unit</i>
<p>Quadrat random sampling</p>	<p>Insect pooters are difficult to construct -- need to pre plan buying in pooters</p>	<p>GPS compasses are notoriously unreliable -- provide students with magnetic compasses to complete their transects</p>