



Biodiversity Undergraduate Course Information Guide

Course Number: CCS 332, 4 credits, 10 Weeks

Cross listed Course Number: SW 332, 2 or 4 credits, 10 Weeks

Cross listed Course Number: SNC 225, 4 credits, 10 Weeks

Delivery Formats: Online Async

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Course Description

The science of Biodiversity is the study of life on earth, both past and present. It involves the exploration and measurement of the amount of genetic, species, and ecological variation on earth and is emerging as one humanity's most important and urgent endeavors. Scientific efforts to study earth's biodiversity have intensified because of our growing appreciation of the role human population growth and urbanization play in accelerating the extinction of plant and animal species. This course introduces students to the nature of science and the central issues concerning life on earth including: the current state of biodiversity, valuing life's variations, human dependence on biological diversity, the origin and extinction of species, mass extinction, critical habitats at risk, and policies and approaches to conserve biodiversity.

Learning Outcomes

If in a SCPS competence program, (BAIFA, BAC, BAGB, BAECE), this course addresses the following requirements:

Competence	Competence Statement / Criteria
S2A	Can describe, differentiate, and explain form, function, and variation within biological systems.
S2C	Can describe, categorize, and explain development or change within physical or biological systems.
S3D	Can use scientific knowledge to understand varying perspectives on a policy issue.

S4	Can describe and explain connections among diverse aspects of nature.
S5	Can explain and evaluate the nature and process of science.

Learning Outcomes for SNC 223: Liberal Studies Program - Scientific Inquiry: Science as a Way of Knowing Domain

1. Students will understand the scientific worldview. As a result of their learning in this course, students will be able to:

- Identify the types of questions that can and cannot be answered by science, and recognize the strengths and limitations of science in answering questions about the natural world.
- Critically evaluate the assumptions that underlie scientific investigations.
- Substantiate the claim that scientific knowledge is durable but can evolve with new evidence and perspectives.

2. Students will understand the nature and process of science. As a result of their learning in this course, students will be able to:

- Connect evidence to the predictions made by theories and hypotheses, and then assess the extent to which the presented evidence supports or refutes a scientific claim.
- Evaluate the role of creativity, curiosity, skepticism, open-mindedness and diligence of individuals in scientific discovery and innovation.
- Recognize the uncertainty inherent in the scientific approach and evaluate scientists' efforts to minimize and understand its effect through experimental design, data collection, data analysis and interpretation.
- Evaluate the role of communication, collaboration, diversity and peer review in promoting scientific progress and the quality of scientific evidence and ideas, and ensuring compliance with ethical standards.
- Determine the extent to which science both influences and is influenced by the societies and cultures in which it operates.
- Apply scientific approaches to problem solving and decision-making in their own lives, and evaluate how scientific knowledge informs policies, regulations, and personal decisions.

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Learning Strategies and Resources

Some learning activities, assignments and deadlines will vary depending on the delivery format of the course and may differ slightly from what is presented in this document.

The Biodiversity course is subdivided into ten (10) modules. For each of the modules, you will be introduced to new concepts and examples through readings and/or internet links. You will be responsible for regular participation in class discussions highlighting issues from the readings and course materials. Laboratory exercises or virtual fieldtrips building on the principles of biodiversity learned that week will take place in alternating modules. You will undertake a self-directed fieldtrip to a biodiversity resource and will also write a research paper on a biodiversity topic of your choice, consistent with the structure of a scientific journal.

Required Readings

Books and learning materials are available at the DePaul bookstore, at <http://depaul-loop.bncollege.com>, or through alternative sources.

Gaston, K. J., & Spicer, J. I. (2004) Biodiversity: An introduction. Oxford: Blackwell Science. Paperback: 208 pages, Publisher: Wiley-Blackwell; 2nd Edition biodiversity (11 Dec. 2003) Language: English
ISBN-10: 1405118571
ISBN-13: 978-1405118576

Online Virtual Lab Resources:

Simulations

Virtual Biology Lab : <http://virtualbiologylab.org/>

Using Biofilms to Estimate biodiversity
https://www.mdseagrant.org/interactive_lessons/biofilm/

Lizard Evolution Virtual Lab <http://www.hhmi.org/biointeractive/lizard-evolution-virtual-lab>

Data Sets

Tree of Life <http://tolweb.org/tree/>

Building a Cladogram SimpleClade: <http://guilfordgeo.com/simpleclade/>

Marine Biodiversity <http://nsdl.oercommons.org/courses/obis-special-edition/view>

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Learning Deliverables

Students will be assessed through a variety of approaches in Biodiversity including online discussions, lab reports, a research paper, virtual fieldtrip reports, and a self-directed fieldtrip report.

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Assessment of Student Learning

Grading Practices

A The instructor judged the student to have accomplished the stated objectives of the course in an EXCELLENT manner.

B The instructor judged the student to have accomplished the stated objectives of the course in a VERY GOOD manner.

C The instructor judged the student to have accomplished the stated objectives of the course in a SATISFACTORY manner.

D The instructor judged the student to have accomplished the stated objectives of the course in a POOR manner.

F The instructor judged the student NOT to have accomplished the stated objectives of the course.

IN Temporary grade indicating that, following a request by the Student, the Assistant Dean for Student Affairs and the Instructor have given permission for the student to receive an incomplete grade.

Distribution of Grade Points

Discussions (10 x 20 points)	20%
Lab Reports	25%
Research Paper (Topics and References)	2.5%
Research Paper (Final)	20%
Virtual Fieldtrip Reports	12.5%
Self-directed Field Trip Report	20%

Grading Scale

A = 93 to 100	A- = 90 to 92	B+ = 87 to 89
B = 84 to 86	B- = 80 to 83	C+ = 77 to 79
C = 74 to 76	C- = 69 to 73	D+ = 65 to 68
D = 60 to 64	F = 59 or below	INC

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Course Schedule

Week and Module Title	Readings	Assignments
Week 1, Module 1: Nature of Science	Supplemental: http://undsci.berkeley.edu/teaching/misconceptions.php	VFT 1 Virtual Biology Lab Estimating Stream Biodiversity http://virtualbiologylab.org/biodiversity-ecology/ Research Paper Start
Week 2, Module 2: Introduction to the Science of Biodiversity	(Chapter 1) What is Biodiversity Supplemental: Building a Cladogram https://www.youtube.com/watch?v=ouZ9zEkxGWg Why is Biodiversity Important? Short Videos: https://www.youtube.com/watch?v=GK_vRtHJZu4 https://www.youtube.com/watch?v=7tgNamjTRkk	

<p>Week 3, Module 3: The Origin and Evolution of Life</p>	<p>Supplemental: Evolution 101 http://evolution.berkeley.edu/evolutionary/article/evo_01</p> <p>Origin of Life NOVA video http://www.pbs.org/wgbh/nova/evolution/origins-life.html</p>	<p>VFT2 Lizard Evolution Virtual Lab http://www.hhmi.org/biointeractive/lizard-evolution-virtual-lab</p> <p>Just the first two modules. Download the worksheet as a guide to the first two modules.</p> <p>Research Hypothesis and Initial References Due</p>
<p>Week 4, Module 4: Biodiversity: The Fossil and Contemporary Record</p>	<p>(Chapter 2) Biodiversity Through Time</p> <p>From the Cambrian Explosion to the Great Dying</p>	<p>LAB-2 Evolution: The Origination and Extinction of Biodiversity</p> <p>Self-Directed Fieldtrip Start</p>
<p>Week 5, Module 5: Extinction and Mass Extinction</p>	<p>Supplemental: Mass Extinction (K-T Example) https://www.youtube.com/watch?v=tRPu5u_Pizk</p>	<p>VFT3 WGBH</p> <p>Video (Firm). (2001). Evolution. #2 & #3 on Extinction</p> <p>https://www.youtube.com/watch?v=L5DaOlpXtmQ</p> <p>https://www.youtube.com/watch?v=Y4Py6pB8FMI</p>
<p>Week 6, Module 6: Mapping, Estimating and Evaluating Biodiversity: Habitats and Ecosystems</p>	<p>VFT3 WGBH Video (Firm). (2001). Evolution. 3 on Extinction</p> <p>https://www.youtube.com/watch?v=L5DaOlpXtmQ</p> <p>https://www.youtube.com/watch?v=Y4Py6pB8FMI</p>	<p>VFT3 WGBH Video (Firm). (2001). Evolution. #2 & #3 on Extinction</p> <p>https://www.youtube.com/watch?v=L5DaOlpXtmQ</p>
<p>Week 7, Module 7: Valuing Biodiversity</p>	<p>(Chapter 4) Does Biodiversity Matter?</p> <p>watch?v=iTW05vFILXY</p> <p>Hedonic Pricing Method https://www.youtube.com/</p>	<p>VFT4 Using Biofilms to Estimate biodiversity</p> <p>Evaluate: 1) Virtual Samples and 2) Biodiversity at Depth</p> <p>https://www.mdseagrant.org/in</p>

	<p>watch?v=LkXVCQam5kw</p> <p>Linking Ecology and Economics for Ecosystem Management</p> <p>Supplemental:</p> <p>Environmental Economics https://www.youtube.com/watch?v=dHn_bNfbIIA</p> <p>Valuation of Ecosystem Services: Classes of Values https://www.youtube.com/watch?v=q8AZHtF2f50</p> <p>Market Based Valuation Method https://www.youtube.com/watch?v=M0ZdV5WU5K4</p> <p>Contingent Valuation https://www.youtube.com/watch?v=__xzmIG4L8s</p> <p>Travel Cost Method https://www.youtube.com/watch?v=AjcQpzIBu1I</p> <p>Avoided Cost Method https://www.youtube.com/watch?v=hOX6WrR79Ao</p> <p>Replacement Cost Method https://www.youtube.com/watch?v=iTW05vFILXY</p> <p>Hedonic Pricing Method https://www.youtube.com/watch?v=LkXVCQam5kw</p>	<p>teractive_lessons/biofilm/index.html</p>
<p>Week 8, Module 8: Human Impacts: Threats to Biodiversity</p>	<p>(Chapter 5) Human Impacts</p> <p>Great Barrier Reef https://www.youtube.com/watch?v=aGGBGcjdjXA</p>	<p>LAB-4 Biomes and Habitats: Conserving Biodiversity</p>

<p>Week 9, Module 9: Global Perspectives of Biodiversity: Culture & Economy</p>	<p>Supplemental: Meet the Ranchers Who Claim the Brazilian Amazon is Theirs to Burn https://www.youtube.com/watch?v=TcJUSMiKQyY</p>	<p>VFT5 Conservation Ecology (pick 2 simulations) http://virtualbiologylab.org/conservation-ecology/ Self-directed Field tip Due</p>
<p>Week 10, Module 10: Conserving and Sustaining Biodiversity</p>	<p>(Chapter 6) Maintaining Biodiversity Supplemental: Australia's biodiversity: Indigenous perspectives https://www.youtube.com/watch?v=_vL9WZ9xYUg Ecological Restoration https://www.youtube.com/watch?v=VNwQ6cRMTKI Restoration: https://www.youtube.com/watch?v=V_a0ySp4g2E</p>	<p>LAB-5 Valuing Biodiversity: Biodiversity and Geopolitics: Sustainable growth and Biodiversity Treaty Exercise Research Paper Due</p>

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Course Policies

For access to all SCPS and DePaul University academic policies, refer to the following links:

[SCPS Student Resources Website](#)

[DePaul Student Handbook](#)

The [D2L Course Website](#) for this course.

Course Syllabus

The official syllabus for this course that includes course dates, instructor information and quarter specific details will be provided by the course instructor by the start of the course and available on the course D2L website.

Course Registration

To find out when this course will be offered next, you can go to the [SCPS Registration website](#) for details on how to register for the course.

For information on how this course can apply to your program, contact your academic advisor.

School of Continuing and Professional Studies

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