



## Biodiversity Undergraduate Course Information Guide

**Course Number: CCS 332, 2 or 4 credits, 10 Weeks**  
**Cross listed Course Number: SNC 225, 4 credits, 10 Weeks**  
**Delivery Formats: Online Async**

<a href="#"><u>Learning Outcomes</u></a>	<a href="#"><u>Learning Strategies and Resources</u></a>	<a href="#"><u>Learning Deliverables</u></a>
<a href="#"><u>Assessment/Grading</u></a>	<a href="#"><u>Course Schedule</u></a>	<a href="#"><u>Policies</u></a>

### 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

After completing this course, you will be able to:

- Describe, differentiate, and explain form, function, and variation within biological systems.
- Describe, categorize, and explain development or change within physical or biological systems.
- Use scientific knowledge to understand varying perspectives on a policy issue.
- Describe and explain connections among diverse aspects of nature.
- 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.

[\*\*Back to Top\*\*](#)

## **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/](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>

## **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.

[Back to Top](#)

## **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**

<b>Graded Assignments</b>	<b>Percentage of Final Grade</b>
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

[Back to Top](#)

## Course Schedule

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

<p>Week 3, Module 3: The Origin and Evolution of Life</p>	<p>Supplemental: Evolution 101 <a href="http://evolution.berkeley.edu/evolution/article/evo_01">http://evolution.berkeley.edu/evolution/article/evo_01</a>  Origin of Life NOVA video <a href="http://www.pbs.org/wgbh/nova/evolution/origins-life.html">http://www.pbs.org/wgbh/nova/evolution/origins-life.html</a></p>	<p>VFT2 Lizard Evolution Virtual Lab <a href="http://www.hbm.org/biointeractive/lizard-evolution-virtual-lab">http://www.hbm.org/biointeractive/lizard-evolution-virtual-lab</a></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  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) <a href="https://www.youtube.com/watch?v=tRPu5u_Pizk">https://www.youtube.com/watch?v=tRPu5u_Pizk</a></p>	<p>VFT3 WGBH</p> <p>Video (Firm). (2001). Evolution. #2 &amp; #3 on Extinction</p> <p><a href="https://www.youtube.com/watch?v=L5DaOlpxtmQ">https://www.youtube.com/watch?v=L5DaOlpxtmQ</a></p> <p><a href="https://www.youtube.com/watch?v=Y4Py6pB8FMI">https://www.youtube.com/watch?v=Y4Py6pB8FMI</a></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><a href="https://www.youtube.com/watch?v=L5DaOlpxtmQ">https://www.youtube.com/watch?v=L5DaOlpxtmQ</a></p> <p><a href="https://www.youtube.com/watch?v=Y4Py6pB8FMI">https://www.youtube.com/watch?v=Y4Py6pB8FMI</a></p>	<p>VFT3 WGBH Video (Firm). (2001). Evolution.</p> <p>#2 &amp; #3 on Extinction</p> <p><a href="https://www.youtube.com/watch?v=L5DaOlpxtmQ">https://www.youtube.com/watch?v=L5DaOlpxtmQ</a></p>
<p>Week 7, Module 7: Valuing Biodiversity</p>	<p>(Chapter 4) Does Biodiversity Matter?  <a href="https://www.youtube.com/watch?v=iTW05vFILXY">watch?v=iTW05vFILXY</a>  Hedonic Pricing</p>	<p>VFT4 Using Biofilms to Estimate biodiversity</p> <p>Evaluate: 1) Virtual Samples and 2) Biodiversity at Depth</p>

	<p>Method <a href="https://www.youtube.com/watch?v=LkXVCQam5kw">https://www.youtube.com/watch?v=LkXVCQam5kw</a></p> <p>Linking Ecology and Economics for Ecosystem Management</p> <p>Supplemental:</p> <p>Environmental Economics  <a href="https://www.youtube.com/watch?v=dHn_bNfbIIA">https://www.youtube.com/watch?v=dHn_bNfbIIA</a></p> <p>Valuation of Ecosystem Services:      Classes of Values  <a href="https://www.youtube.com/watch?v=q8AZHtF2f50">https://www.youtube.com/watch?v=q8AZHtF2f50</a></p> <p>Market Based Valuation Method  <a href="https://www.youtube.com/watch?v=M0ZdV5WU5K4">https://www.youtube.com/watch?v=M0ZdV5WU5K4</a></p> <p>Contingent Valuation  <a href="https://www.youtube.com/watch?v=_xzmIG4L8s">https://www.youtube.com/watch?v=_xzmIG4L8s</a></p> <p>Travel Cost      Method <a href="https://www.youtube.com/watch?v=AjcQpzIBu1I">https://www.youtube.com/watch?v=AjcQpzIBu1I</a></p> <p>Avoided Cost      Method <a href="https://www.youtube.com/watch?v=hOX6WrR79Ao">https://www.youtube.com/watch?v=hOX6WrR79Ao</a></p> <p>Replacement Cost      Method <a href="https://www.youtube.com/watch?v=iTW05vFILXY">https://www.youtube.com/watch?v=iTW05vFILXY</a></p> <p>Hedonic Pricing      Method <a href="https://www.youtube.com/watch?v=LkXVCQam5kw">https://www.youtube.com/watch?v=LkXVCQam5kw</a></p>	<p><a href="https://www.mdseagrant.org/interactive_lessons/biofilm/index.html">https://www.mdseagrant.org/interactive_lessons/biofilm/index.html</a></p>
<p>Week 8,      Module 8:      Human      Impacts:      Threats to      Biodiversity</p>	<p>(Chapter 5) Human Impacts</p> <p>Great Barrier      Reef <a href="https://www.youtube.com/watch?v=aGGBGcjdjXA">https://www.youtube.com/watch?v=aGGBGcjdjXA</a></p>	<p>LAB-4 Biomes and Habitats:      Conserving Biodiversity</p>

Week 9, Module 9: Global Perspectives of Biodiversity: Culture & Economy	Supplemental:  Meet the Ranchers Who Claim the Brazilian Amazon is Theirs to Burn  <a href="https://www.youtube.com/watch?v=TcJUSMiKQyY">https://www.youtube.com/watch?v=TcJUSMiKQyY</a>	VFT5  Conservation Ecology (pick 2 simulations) <a href="http://virtualbiologylab.org/conservation-ecology/">http://virtualbiologylab.org/conservation-ecology/</a>  Self-directed Field tip Due
Week 10, Module 10: Conserving and Sustaining Biodiversity	(Chapter 6) Maintaining Biodiversity  Supplemental:  Australia's biodiversity:  Indigenous perspectives <a href="https://www.youtube.com/watch?v=_vL9WZ9xYUg">https://www.youtube.com/watch?v=_vL9WZ9xYUg</a>  Ecological Restoration <a href="https://www.youtube.com/watch?v=VNwQ6cRMTKI">https://www.youtube.com/watch?v=VNwQ6cRMTKI</a>  Restoration: <a href="https://www.youtube.com/watch?v=V_a0ysp4g2E">https://www.youtube.com/watch?v=V_a0ysp4g2E</a>	LAB-5 Valuing Biodiversity: Biodiversity and Geopolitics: Sustainable growth and Biodiversity Treaty Exercise  Research Paper Due

[Back to Top](#)

## 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.

## Credit for Prior Learning

Students whose home college is SCPS that have not transferred more than 99 credit hours from community college or exam credit, and have not reached 132 credit hours toward graduation may qualify for prior learning credit. If you have prior knowledge you think may be equivalent to the learning outcomes of a SCPS course, you can contact the

Office of Prior Learning Assessment at [scpspla@depaul.edu](mailto:scpspla@depaul.edu) or the [PLA website](#) for information on how to submit a proposal to use Prior Learning Assessment (PLA) credit for a nominal fee in lieu of regular tuition as an alternative to completing a 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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[Back to Top](#)