
TOPICS: BIODIVERSITY in Fall 2020 (SC1091)

Course Code	SC1091	Professor(s)	Manuel Caballer Gutierrez
Prerequisites	None	Office Number	C202
Class Schedule	F: 14:30-16:05 in PL-3 T: 09:00-10:35 in PL-3	Office Hours	By appointment
Credits	4	Email	mcaballergutierrez@au p.edu
Semester	Fall 2020	Office Tel. Ext.	614

Course Description

The Earth is changing. It has been constantly changing since before the origin of Life, but at the present it seems to be changing much faster than ever before. So fast that hundreds, probably thousands, of species become extinct every year because their habitats are being dramatically altered. So fast that teenagers all over the planet are organizing "strikes 4 Climate". So fast, that even politicians are starting to think about doing something about it.

Exponential technological development during the last century, together with the concentration of the world's human population in these artificial environments that we call cities, have led us to believe that we are independent from the environment. However, in the context of global change, the general public is "re-discovering" that the human species actually depends on the proper functioning of ecosystems and on the services they provide. Our survival depends on biodiversity and its conservation.

The term biodiversity (or biological diversity) is commonly used in newspapers, in political debates, and even in social media. But, what is it? The extent and complexity of the study of biodiversity makes necessary an interdisciplinary approach that mixes biological, political, social and economic sciences. Nevertheless, at the present there seems to be a general consensus about the great value of biodiversity, and its conservation has become a global priority. Those with a solid background in this field and the skills to identify strategies to preserve diversity from new perspectives are professionals in demand.

This broad course will provide an overview of biological diversity and will place it in an evolutionary and ecological context. The course will also focus on the conservation and management of biodiversity, from social, economic, and political perspectives. During the semester, we will answer questions such as: Why is biodiversity important? How do species evolve or become extinct? Is the human being responsible for the loss of biodiversity? Can we assign an economic value to the services provided by biodiversity?

This course emphasizes science literacy and critical thinking through the study of biological diversity. Students will be guided by a text book for some lectures, but not for all, given that to date, any published book covers all the topics.

Course Learning Outcomes

General Education

GLACC:

This course can be used to fulfill the *Experimental Reasoning Course with Lab* (coded CCS) requirement and as such has the following learning outcomes (Learning Outcomes for GLACC components are defined on the [AUP GLACC Website](#)):

Course Outline

Classes	Date	Subject	Unit
January 13th, All courses begin			
1	Mon 13 Jan	<i>Syllabus presentation</i>	Intro to the course
2	Thu 16 Jan	Biodiversity: what is it? General concepts	Unit 1: Biological d
January 19th, Last day to DROP/ADD course online			
3	Mon 20 Jan	History of evolutionary thinking	Unit 1: Biological d
Lab 1	Mon 20 Jan	Scientific method – hypothesis	
4	Thu 23 Jan	Theory of evolution	
Lab 1	Thu 23 Jan	Scientific method – hypothesis	
5	Mon 27 Jan	Genetic diversity	
6	Thu 30 Jan	Speciation	
Labs 2-3	Sat 1 Feb	Visit to MNHN: evolution	
7	Mon 3 Feb	Speciation	
Lab 4	Mon 3 Feb	Imbreeding	
8	Thu 6 Feb	Diversity of species. The magnitude of biodiversity	

Lab 4	Thu 6 Feb	Imbreeding	
9	Mon 10 Feb	The tree of Life 1	
10	Thu 13 Feb	The tree of Life 2	
Labs 5-6	Sat 15 Feb	Visit to the Aquarium: species diversity	
February 17-28 Spring break (no classes)			
11	Mon 2 Mar	Ecosystems diversity	Unit 1: Biological d
Lab 7	Mon 2 Mar	Microscopy: different kinds of cells and tissues	
12	Thu 5 Mar	How biodiversity is measured: surveys, collections, taxonomy and systematics, new technologies to accelerate the catalogue of Life (from digitization to artificial intelligence)	
Lab 7	Thu 5 Mar	Microscopy: different kinds of cells and tissues	
13	Mon 9 Mar	Midterm	
Lab 8	Mon 9 Mar	Biodiversity sampling	
14	Thu 12 Mar	How biodiversity is measured: biodiversity indexes to metagenomics	
Lab 8	Thu 12 Mar	Biodiversity sampling	
March 13th, Mid-semester grades due			
15	Mon 16 Mar	Biodiversity gradients	Unit 2: Biodiversity
Lab 9	Mon 16 Mar	Biodiversity indexes calculation	
March 17th Faculty retreat (no classes)			
16	Thu 19 Mar	Biodiversity distribution	Unit 2: Biodiversity
Lab 9	Thu 19 Mar	Biodiversity indexes calculation	
Labs 10-11	Sat 21 Mar	Visit to the zoo: species ID using AI (app)-ecosystems recognition-phylogenetic relationships among species from different ecosystems	
17	Mon 23 Mar	Ecology	
18	Thu 26 Mar	Great extinctions and climate change	
March 27th, Last day to withdraw from a course/Last day to choose CR/NC grading option			
19	Mon 30 Mar	Biodiversity Services	Unit 2: Biodiversity
20	Thu 2 Apr	The economic value of biological diversity	Unit 3: Biodiversity Economy
Lab 12	Thu 2 Apr	Calculate the economic value of biodiversity's services	
21	Mon 6 Apr	Global economy and biodiversity	
Lab 12	Mon 6 Apr	Calculate the economic value of biodiversity's services	
22	Thu 9 Apr	Rachel Carson (Silent spring). Greenpeace and other NGOs	Unit 4: Biodiversity movements
April 13th, Easter Monday (no classes)			
23	Thu 16 Apr	Modern social symbols of biodiversity: Greta Thunberg against the panda	Unit 4: Biodiversity movements
24	Mon 20 Apr	Legislation as a tool for conservation	Unit 5: Biodiversity Politics
Lab 13	Mon 20 Apr	Study case: decision-making on an environmental study case	

		(biodiversity+economy+society+politics)
25	Thu 23 Apr	Decision-making
Lab 13	Thu 23 Apr	Study case: decision-making on an environmental study case (biodiversity+economy+society+politics)
26	Mon 27 Apr	Questions before final exam
April 28th, last day of classes		
April 29th - May 3rd - 11th, reading days (May 1st, Holiday)		
27	Thu 7 May	Final exam (08:30)
Tue May 12th, Degree candidates grades due		
Tue May 19th, All grades due		

- The schedule is subject to change and will be revisited as the course progresses.
- There might be other members of the Department of Computer Science Math and Environmental Science invited as guests' professors.
- Saturday visits to the Paris the Aquarium and to the National Natural History Museum in Paris (Ménagerie) are scheduled in the syllabus, make sure you are available in these dates. These visits will count as double labs for attendance and evaluation.

Textbooks

This course doesn't have any textbook.

Attendance Policy

[Specific attendance policy:](#)

Any student that fails 4 labs or more fails the course (for whatever reason).

Quizzes cannot be retaken for any reason. If you don't do the quiz you have a 0 (1 quiz every week). But the lowest grade won't count towards your final average.

[Attendance policy:](#)

Students studying at The American University of Paris are expected to attend ALL scheduled classes, and in case of absence, should contact their professors to explain the situation. It is the student's responsibility to be aware of any specific attendance policy that a faculty member

might have set in the course syllabus. The French Department, for example, has its own attendance policy, and students are responsible for compliance. Academic Affairs will excuse an absence for students' participation in study trips related to their courses.

Covid-19 temporary amendments:

Students studying at The American University of Paris are STILL EXPECTED TO ATTEND ALL scheduled classes. Due to the Covid-19 pandemic, students will have the option of attending classes remotely when special circumstances apply. For example, when students are placed under quarantine by the French authorities or by their doctor, or when students present symptoms of Covid-19 and are directed, by their doctor or the AUP Health Office, to remain home. It is still the student's responsibility to be aware of any specific attendance policy that their professor might have set in the course syllabus. In particular, Students attending remotely from distant Time Zones should check with their professors about the specific attendance policy for remote learners.

[Attendance at all exams is mandatory.](#)

In all cases of missed course meetings, the responsibility for communication with the professor, and for arranging to make up missed work, rests solely with the student.

Whether an absence is excused or not is ALWAYS up to the discretion of the professor or the department. Unexcused absences can result in a low or failing participation grade. In the case of excessive absences, it is up to the professor or the department to decide if the student will receive an "F" for the course. An instructor may also recommend that a student withdraw if absences have made it impossible to continue in the course at a satisfactory level.

Students must be mindful of this policy when making their travel arrangements, and *especially during the Drop/Add and Exam Periods.*

[ENGLISH LANGUAGE PROFICIENCY STATEMENT:](#) As an Anglophone university, The American University of Paris is strongly committed to effective English language mastery at the undergraduate level. Most courses require scholarly research and formal written and oral presentations in English, and AUP students are expected to strive to achieve excellence in these domains as part of their course work. To that end, professors include English proficiency among the criteria in student evaluation, often referring students to the university Writing Lab where they may obtain help on specific academic assignments. Proficiency in English is monitored at various points throughout the student's academic career, most notably during the admissions and advising processes, while the student is completing general education requirements, and during the accomplishment of degree program courses and senior theses.

Grading Policy

Item	Num.	Duration	Evaluation	Perc
Class quizzes	10	20 minutes	Percentage of right answers	20 %
Midterm	1	2 hours	Percentage of right answers	25 %
Final written	1	3 hours	Percentage of right answers	30 %
Presentation	1	10 minutes	Theme chosen and performance	5 %
Lab reports	13	N/A	Average of top 11 scores	20 %

- At the end of each class the students will have the opportunity to write the questions they want to have in the quizzes. These questions will need to cover the most of the lecture. All students will have the opportunity to send questions to the professor by mail until the end of the day.
- During the course, in class time, every student must show a Power Point presentation (10 minutes), about any theme related to oceanography of his/her interest. Any theme is acceptable if the student is able to find a link to oceanography.
- Presentations for the synchronous remote students will happen during class time. Asynchronous remote students will present during one of the afternoon classes on Fridays.
- After some lectures, the professor will raise a question or provide a link to a relevant and

current news related to the past or next lecture. During the next class there will be a brief discussion about this new or about the question raised, and the professor will give 1 extra point in the next quiz to the students depending on their contribution to the discussion (i.e.: Yes, no, I agree, etc. are not contributions leading to get extra points). Students bringing additional related news and showing knowledge on the theme will be rewarded.

- Students not enrolled in the labs will be evaluated based in a proportional redistribution of the other items.

Other
