

# NS 216 – Life on Earth

Course Syllabus, Spring 2022

Mondays 11:40 am – 1:30 pm (Hybrid)

Tuesdays 1:40 pm – 2:30 pm (Hybrid)

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<b>Office hours:</b>	by apt.			

## Course Description:

This course is designed for all students interested in the macromolecular aspects of life on Earth. First half of the course will cover the evolutionary processes and the history of life. Second half of the course will cover various physiological aspects of life. A basic level understanding of biology, molecular biology and chemistry is a highly suggested prerequisite.

## Textbook:

Life: The Science of Biology (11<sup>th</sup> ed.) / Sadava, Hillis, Heller, Hacker 2016

## Evaluation:

One midterm exam (38%), one final exam (38%), six homework assignments (24%)

## How to do well in NS216 class (i.e. I want to get an A in the class)

### Advice from previous undergrad students...

1. **Come to class, come to class on time, pay attention in class** instead of texting on your cell phone or shopping on your computer
2. **Come to office hours if you need help**, but first you must identify the areas you need help with, this is why you need to start assignments early so you can identify where you need the help
3. **Read the textbook for the assigned sections** on the class schedule handed out on the first day of class **before** you come to that class
4. Spend 9 hours a week on reading the textbook or studying the class notes and learn the class material on your own, **lectures are not enough to thoroughly understand the class material**
5. **This is not high school** where if you are smart then you do not need to study and you will do fine on the exam, **everyone needs to study to do well in this course**
6. **Study with your friends before the exam**, try to find motivated students like yourself to study with, **if you can teach the class concepts to another student then you really know the class material**
7. **If you are not happy with your exam score or overall grade then work habits needs to change long-term** and likely the habits that need to change are in relation to one of the points mentioned above, **your grade will not magically improve on its own if no adjustments are made**

## Class Schedule

Week	Lecture	Date	Readings	Lecture Topic
1	1	28-Feb	Ch 1: Studying Life Ch 6: Cell Membranes Ch 25: The History of Life on Earth	The History of Life on Earth, From one cell to many
	2	1-Mar	Ch 31: Animal Origins and the Evolution of Body Plans Ch 32: Protostome Animals	Blood and Guts, Pumps and Pipes I
2	3	7-Mar	Ch 51: Nutrition, Digestion, and Absorption Ch 47: The Mammalian Nervous System: Structure and Higher Function Ch 48: Musculoskeletal Systems	The Challenge of Regulation, Support, and Movement
	4	8-Mar	Ch 42: Immunology: Animal Defense Systems Ch 43: Animal Reproduction	The Challenge of Reproduction
3	5	14-Mar	Ch 52: Salt and Water Balance and Nitrogen Excretion	Introduction to Evolution, What Is It and What Is It Good For?
	6	15-Mar	Ch 53: Animal Behavior	The Four Forces of Evolution
4	7	21-Mar	Ch 54: Ecology and the Distribution of Life	Natural Selection, Sexual Selection
	8	22-Mar	Ch 55: Population Ecology Ch 56: Species Interaction and Coevolution Ch 33: Deuterostome Animals	The Origin of Species, Speciation
5	9	28-Mar	Ch 34: The Plant Body	Introduction to Energy and Matter, Why are plants green? From radiant to chemical energy
	10	29-Mar	Ch 35: Transport in Plants	Coupling of energy and matter: generation of organic carbon
6	11	4-Apr	Ch 27: The Origin and Diversification of Eukaryotes Ch 38: Reproduction in Flowering Plants	Why is water so important for plants?, Decoupling of energy and matter: oxidation of organic carbon
	12	5-Apr	Ch 57: Community Ecology Ch 58: Ecosystems and Global Ecology	Fossil fuels: ecosystem services and global warming
7	13	11-Apr	Ch 44: Animal Development Ch 45: Neurons and Nervous Systems	How natural selection shapes behaviors, Learning, Memory, and Aging
	14	12-Apr	Study	Pre-Midterm Review
8	15	18-Apr	Ch 52: Salt and Water Balance and Nitrogen Excretion	Proximate vs. Ultimate Explanations For Behaviors
	16	19-Apr		MIDTERM
9	17	25-Apr		Post-Midterm Review
	18	26-Apr	Ch 46: Sensory Systems Ch 40: Physiology, Homeostasis, and Temperature Regulation	Mechanisms of Behavior
10	19	2-May	Holiday break	
	20	3-May	Holiday break	
11	21	9-May	Ch 56: Species Interaction and Coevolution	Evolution of Social Behavior, Introduction to Living Together
	22	10-May	Ch 56: Species Interaction and Coevolution	Newt and Snake Arms Race
12	23	16-May	Ch 28: Plants without Seeds: From Water to Land Ch 37: Regulation of Plant Growth	Co-evolution and Pollination I and II
	24	17-May	Ch 56: Species Interaction and Coevolution Ch 54: Ecology and the Distribution of Life	Keystone Species and the missing trees
13	25	23-May	Ch 41: Animal Hormones Ch 42: Immunology: Animal Defense Systems	Parasites and Ecology: Lyme Disease
	26	24-May	Ch 26: Bacteria and Archaea: The Prokaryotic Domains	Introduction to Climate Change, Climate Change, Ocean Acidification and Coral Reefs
14	27	30-May	Ch 55: Population Ecology	Ballast Water and invasive species
	28	31-May	Ch 36: Plant Nutrition	Potential Effects of Climate Change on Soil Biodiversity and Function, Sustainability and Sustainable Agriculture
15	29	6-Jun	Ch 59: Conservation Biology (skip)	Can't We Just Evolve Our Way Out of This Mess? (Skip)
	30	7-Jun	Study time for Final Exam	
		TBD	Final Exam	

## Course Policies

### Academic Integrity Policy -- **YOU MUST READ AND FOLLOW**

**Each student will be evaluated only for her/his own work.** Students are encouraged to work and study together; however, what you put down on your problem sets, lab reports, and exam papers should be your own work in your own words. Be aware that you will not be helping your friends by allowing them to copy. Do not allow your friends to make use of your problem sets or, lab reports and exams, allowing them to copy will not help them in the long run. Such behavior, as all forms of cheating, is unfair and disrespectful to yourself, to all the students in the class, to your instructors and teaching assistants, and to the University. A student involved in cheating has misused the trust extended to him or her. If discovered, **such behavior will have DISCIPLINARY consequences for all parties involved.**

**Violations of academic integrity will result in zero grades for that worksheet or exam, both for those who cheat and those who allow and help them cheat.** In all such situations we will ask you to have a face-to-face meeting with the instructor. We have mutual trust and respect for each other as individuals while sharing a collaborative learning experience. This is very valuable for all of us, and having to lose this trust and respect would be very regrettable.

**Grading:** If the first decimal place is 5 and larger, then the number will be rounded up to the next integer (e.g., 67.5 → 68). Failing to take **one** of the exams without a medical excuse will result in failing the course. The letter grade ranges are provided in the table below.

Letter Grade	Criteria for Earning Grade
A	100 – 90 %
A -	89 – 85 %
B +	84 – 80 %
B	79 – 75 %
B -	74 – 70 %
C +	69 – 65 %
C	64 - 60 %
C -	59 – 55 %
D +	54 - 50 %
F	Less than 49 %

**Cell/Mobile phone policy:** Cellular phones that ring during lecture are extremely disruptive to a productive learning environment—distracting both the professor and the other students. Individuals that allow their phones to ring during class may be asked to leave. This also covers constant texting and vibrating phones. Please do not text during my class. I don't text with anyone during any part of the class and I ask you to also refrain for the 160 minutes of class, even during group work or discussions. Honestly, I find it insulting and rude. Any communication via an electronic device during an exam or quiz will be considered cheating. There is no problem if you would like to use them during the breaks in class. **However, if your phone becomes a distraction then I reserve the right to confiscate your phone and return it back at the end of the lecture.**

**Exams:** Exams are closed-book and will be taken in-class (no longer than 50 minutes), and no outside sources of information are allowed, unless provided by the instructor. In the event that you take an exam at a time that differs from other students, no communication of any kind regarding the exam is permitted. Although all tests (including final) will be non-cumulative in details, you are expected to have a broader understanding of Life on Earth by the end of the semester. Make-up exams will be given only in extreme circumstances. Only notes from the Health Center and/or signed note from a medical doctor or President of the University may count as an excuse for missing an exam. Make-up exams will tend to be more difficult to discourage the behavior of missing the original exam time.

**Disability Accommodations:** If you need disability-related accommodations (extra time, etc.) for this course, please contact Ş. Ceren Başak Araz at the Disable Students Support Unit Center of Individual and Academic Development (CIAD) address:

Orhanlı, Tuzla, 34956, Istanbul, Turkey

e-mail: [specialneeds@sabanciuniv.edu](mailto:specialneeds@sabanciuniv.edu)

telephone: +90 216 483 9448

website: <http://ciad.sabanciuniv.edu/en/disabled-students-services>

Accommodations with an approved letter will be arranged on a case by case basis.

**E-MAIL:** Check for messages on SUcourse about the course frequently. E-mail is also the best way to make an appointment with the instructor. I will send e-mails to your Sabancı e-mail, be sure to check it.

**Online education disclaimers:**

For proctored exams, your webcam and microphone should be on during the exam. In the case of non-compliance with this and other declared exam procedures, your exam will be void. Make sure to check that your webcam and microphone function properly before the exam.

You must attend the synchronous Zoom lectures, recitations, etc. and real-time online exams with your SU email account.

**Other important points:**

- Attendance at all lectures and prompt arrival is expected.

- If you are involved in off-campus activities (e.g. dance, theater, sports, music) that asks you to leave town, please provide me with a list of your scheduled games or events at the START of the semester, as well as the phone number of the coach/supervisor, and I will make a reasonable effort to accommodate your needs.

- Back-up your work!! Save often and save multiple versions! Good scientists have many copies of their data and writing, one of which is a "hard copy"; a version you can hold in your hand (e.g. paper). Another good habit is to e-mail yourself a copy of your work. Papers, etc handed in late due to computer failure are assessed the same penalty as those turned in late for other reasons. I also recommend downloading google drive. This is a free service that automatically backs up your smaller documents to the cloud as you save them.

Finally, please don't hesitate to contact me for clarification on any course policy-related questions.

**Important Course Dates:**

**6 online homework Assignments** – throughout the semester (10 pts each)

**Midterm Exam** (100 pts) (in class) – April 19<sup>th</sup>, 2022

**Final Exam** (100) (finals week) – TBD

**Total class points: 260 pts**

**Student Learning Objectives:**

By the end of this course you should be able to:

1. To gain an appreciation for the diversity of life created via evolution.
2. Identify the evolutionary relationships between different life forms on Earth.
3. Describe the physiological basis of life in different life forms.