

Augustana College

Biological Principles · BIOL101 Academic Year 2017-2018 (Fall)

Course schedule and locations

MWF. Hanson 109. 11:30 to 12:45

Lab 01: Tu Hanson 323. 12:30 pm to 2:20 pm

Lab 02: Tu Hanson 323. 2:30 pm to 4:20 pm

Instructor

Dr. Rafael Medina

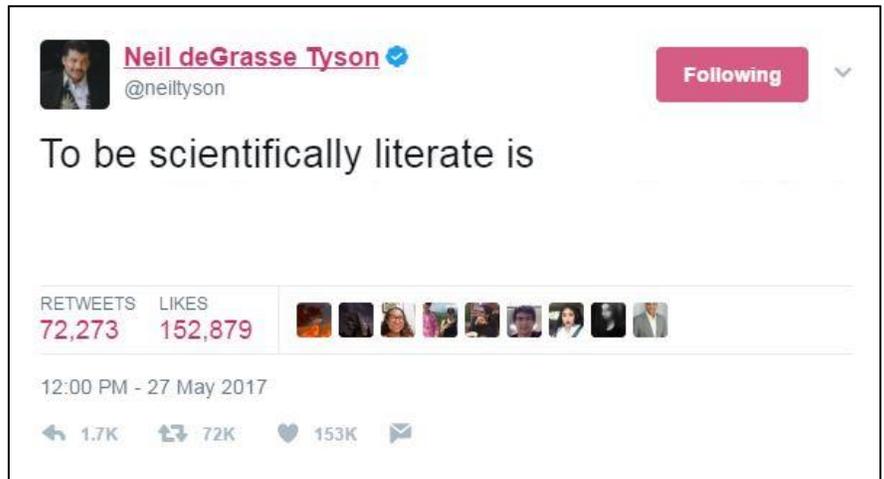
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Office hours: W&F 9 to 10 am or by appointment (just send me an email to find the most suitable time for both of us). I am willing to discuss your progress and maximize your success as well as talk about scientific topics and opportunities for research. Email policy: Under ordinary circumstances, I will reply all your emails within a 24 hour time frame (M-F), most likely between 8:00 am and 6:00 pm. Please, include BIOL101 in the subject.

Required Text: Biology: Science for Life, 4th ed. Colleen Belk and Virginia Maier. 2013

Course Goals

This course is an invitation to Biology, the vast scientific discipline that encompasses the study of life in all its forms and at all its levels. Obviously, it will be impossible to cover this entire subject within only 10 weeks, but we will approach a number of fundamental topics that deserve attention from a broad perspective. This course will be structured in three blocks aligned with three different levels of organization of the phenomenon of life: molecules and cells; organisms and evolution; ecology and biogeography. BIOL-101 is connected to two fundamental college-wide learning outcomes: disciplinary knowledge and critical thinking.

During the following weeks you will be able to understand and discuss concepts in biology that include evolution, ecology, macromolecules, cells, enzymes, photosynthesis, cellular respiration, reproduction, genetics, and physiology. The laboratory portion of the course includes concepts that will teach basic lab skills, microscope use, measurement, and data analysis. In addition to the acquisition of fundamental factual knowledge, we will be stressing the connections between the biological principles themselves and our daily lives in a number of topics: health, nutrition, environmental conservation, etc.

Our ultimate goal will be to discuss the origin and legitimacy of the scientific knowledge in our society and how to identify and debunk pseudoscience. In a nutshell, we will be improving our scientific literacy as defined by Neil deGrasse Tyson in his tweet of May 27th 2017 (that you have to complete above).

Inclusive and respectful learning environment

I am committed to make time in lectures and labs a positive environment for learning irrespective of gender, sexual, racial, religious, or other identities. Students are invited to optionally share their preferred names and pronouns with the instructor and classmates. I expect you to maintain the highest ethical and scientific standards, honesty and courtesy at all times. Any kind of discrimination based on race, class, gender, sexual orientation, national origin, etc. will not be tolerated. Students creating disturbance during class/lab that interferes with the ability of other students to learn or distracts the instructor will be asked to leave. Students requiring classroom/lab accommodations or modifications because of a documented need should contact the Dean of Students and are requested to share this information with the instructor at their earliest convenience.

Academic Integrity/Honor Code

Evidence of dishonesty during exams, research projects and other evaluations will earn a zero. Additional penalties may also apply and the Honor Council will be notified. Please refer to the [Honor Code](#) for more information. As a reminder:

“Cheating means getting unauthorized help on an assignment, quiz, or examination. (1) You must not receive from any other student or give to any other student any information, answers, or help during an exam. (2) You must not use unauthorized sources for answers during an exam. You must not take notes or books to the exam when such aids are forbidden, and you must not refer to any book or notes while you are taking the exam unless the instructor indicates it is an "open book" exam. (3) You must not obtain exam questions illegally before an exam or tamper with an exam after it has been corrected.

Plagiarism means submitting work as your own that is someone else's. For example, copying material from a book or other source without acknowledging that the words or ideas are someone else's and not your own is plagiarism. If you copy an author's words exactly, treat the passage as a direct quotation and supply the appropriate citation. If you use someone else's ideas, even if you paraphrase the wording, appropriate credit should be given. You have committed plagiarism if you purchase a term paper or submit a paper as your own that you did not write.”

(Davis BG. 1993. Tools for Teaching. Jossey-Bass Publishers: San Francisco)

Expectations

Before and after class: You must read in advance the sections of the text book or the lab guide that will be addressed during the session or lab in order to be fully prepared. Other materials (papers, news, blog posts, podcast episodes, videos...) may also be assigned via Moodle. You are responsible to keep track of these assignments. Lectures, discussions and activities will rely on the assumption that you are prepared for class, so we can focus and deepen on concepts with special interest or difficulty. Each 3-credit course requires 8-10 hours of out-of-class student work per week (not counting the lab), therefore you should be spending a minimum of 6-8 hours/week outside of class reading the text book, revising your notes, etc.

During class: I expect you to take notes during class. Slides and other materials will be available via Moodle after each session. They will be useful as reminders or summaries, but they are not intended to include all the important content, discussions, extra examples that you need to study. Pay attention to content that will be commented during the lectures, summarized on the whiteboard, etc. The rationale for this decision is research based: there is extensive evidence suggesting that (good) notes improve learning by enhancing attention and synthesis (For details and a compilation of references see Nilson, LB. 2016. *Teaching at its best*. San Francisco, CA. Jossey-Bass).

Attendance: Punctual attendance is expected at all classes and required for all lab sessions. Leaving class is not allowed unless in case of emergency (this rule does not apply to labs). Every student is allowed two unexcused absences. I reserve the right to reduce your class participation/assignments grade by 5 points for every extra unexcused class absence, including arriving too late or leaving too early. All excused absences (medical appointments, professional interviews, conferences, etc) will need to be documented. Travel is a not valid excuse.

Grading Policies

Your grade for the course will be based on a 1,000 point system:

Class/Forum participation	6%	60 pts
Scientific literacy assignments	6%	60 pts
Weekly Moodle quizzes	8%	80 pts
Presentation (The sci-fi moment)	10%	100 pts
Lab	20%	200 pts
Exam 1 (Sep 6 th)	10%	100 pts
Exam 2 (Sep 22 nd)	10%	100 pts
Exam 3 (Oct 11 th)	10%	100 pts
Final Exam (Oct 30 th)	20%	200 pts

Grades will be determined on a point basis (not percentages); they will not be rounded up, nor curved.

980-1000 = A+ 880-899 = B+ 780-799 = C+ 600-699 = D
 920-979 = A 820-879 = B 720-779 = C <600 = F
 900-919 = A- 800-819 = B- 700-719 = C-

Due to FERPA regulations, grades will not be revealed via telephone or email. Late work is not acceptable on a regular basis, but it might be accepted under some extreme circumstances at my discretion with a 5% penalty if turned in the 12 hours following the original deadline. A 10% penalty accrues for each day after. Under exceptional circumstances, oral make-up exams may be administered if agreed upon prior to the exam, but they will likely be harder than the original one.

Tentative class schedule

Week	Day	Content	Readings
1	Aug 21 st	No class. Read the syllabus by yourself	
	Aug 23 rd	Introduction to the scientific method and scientific literacy	Ch. 1 pgs. 3-17, 20-25
	Aug 25 th	Water, biochemistry and cells	Ch. 2 pgs. 31-51
2	Aug 28 th	Nutrition and metabolism	Ch. 3 pgs. 56-69
	Aug 30 th	Enzymes, metabolism, cellular respiration	Ch. 4 pgs. 74-88
	Sep 1 st	Photosynthesis, greenhouse gases	Ch. 5 pgs. 94-103
3	Sep 4 th	Labor Day	
	Sep 6 th	Exam 1	Chapters 1 to 5
	Sep 8 th	Introduction to DNA	Ch. 6 pgs. 112-120
4	Sep 11 th	Mitosis and cancer	Ch. 6 pgs. 120-32
	Sep 13 th	Meiosis	Ch. 6 pgs. 132-142
	Sep 15 th	Genetics	Ch. 7 pgs. 148-167
5	Sep 18 th	Gene expression	Ch. 9 pgs. 195-216
	Sep 20 th	Introduction to evolution	Ch. 10 pgs. 221-246
	Sep 22 nd	Exam 2	Chapters 6 to 9
6	Sep 25 th	Evolution (continued)	TBA
	Sep 27 th	Natural selection	Ch. 11 pgs. 254-270
	Sep 29 th	Species and classification 1	Ch. 12 pgs. 276-280
7	Oct 2 nd	Species and classification 2	Ch. 12 pgs. 276-280
	Oct 4 th	Biodiversity 1	Ch. 13 pgs. 309-312
	Oct 6 th	Biodiversity 2	Ch. 13 pgs. 329-334
8	Oct 9 th	Visit to the Fryxell Geology Museum	
	Oct 11 th	Exam 3	Chapters 10 to 13
	Oct 13 th	Intro to Ecology	TBA
9	Oct 16 th	Ecology	Ch. 14 pgs. 340-352
	Oct 18 th	Conservation Biology	Ch. 15 pgs. 358-366
	Oct 20 th	Conservation Biology 2	Ch. 15 pgs. 366-373
10	Oct 23 rd	World biomes	Ch. 16
	Oct 25 th	World biomes 2	Ch. 16
	Oct 27 th	Course wrap up	
	Oct 30 th	FINAL EXAM. Hanson 109 at 9 am	

Class Participation

Participation during class (or in the Moodle forum) is important for the development of the course, and will be graded up to a maximum of 60 points. You will have the choice to self-report your participation weekly and the details will be explained early in the term. Dishonest participation reports will be considered a violation of the honor code. Remember that missing class may result in losing participation points (see above).

Scientific literacy

Starting on week 2, we will address the issue of pseudoscience and how to maintain a scientific literacy in our days. A new topic will be introduced on Monday and a few readings recommended during the week. The expectation is that on Friday some time will be spent discussing these issues. Participation in these conversations will be assessed independently.

Weekly Quizzes

Every Friday there will be a multiple choice quiz on Moodle with questions that will prepare you for the exams. These quizzes will be due the following Tuesday at noon and will count up to 10 points each. I will drop your two lowest grades. Due date may change upon agreement of the majority of the class if an earlier deadline may help you to prepare an exam. These quizzes are constant and predictable and it is your responsibility to complete them.

The sci-fi moment

Every student will be required to pair with a classmate and prepare a short presentation (about 5 minutes) delivered during class on a sci-fi film or book which content can be related to biology. You are expected to make a critical comment on these aspects in front of the class and be ready to discuss it. You will find in Moodle a list of suggestions (open to growth), clarifications and a rubric for this activity. Yes, the exams will include a question related to the these presentations.

Exams

Three exams plus the final semi-comprehensive exam are scheduled. I will return exams to you for in class review or during office hours, but you may not keep or copy them. Failure to comply with this policy constitutes academic misconduct. No one leaves the room during an exam unless there is a medical emergency; please use the restroom before the exam starts.

Lab Syllabus for BIOL101

Due to OSHA regulations no shorts, skirts, sandals/flip-flops, or the like can be worn during lab. Shirts must also have sleeves. Food and/or drink (including gum) are not allowed in the lab. Class expectations on punctuality, participation, preparation, late work, etc, also apply to the lab sessions (see attendance policy below). Be sure to bring your lab guide with you every week and read it in advance. The lab guide may be updated with additional lab instructions and materials.

Attendance is expected to all lab sessions. A single unexcused lab absence results in a zero for any quiz or assignment of that session. A second unexcused lab absence results in a failing grade (F) in BIOL101. You may switch lab section in the event of a planned and approved absence, but you must inform me in advance. Make-up labs will not be available as a regular resource and will only be arranged under exceptional circumstances at the instructor's discretion.

Lab Grade

Lab work is done mostly as part of a group. Your lab grade (200 pts) will come from the following:

Lab group contract	20 pts
Lab reports	80 pts (10 pts each)
Plant experiment presentation	100 pts (See rubric on Moodle)

Tentative Lab Schedule

Week	Date	Content
1	Aug 22 nd	Lab skills / scientific method / Lab group contract
2	Aug 29 th	Start plant experiment, Cells, diffusion/osmosis lab
3	Sep 5 th	Photosynthesis lab
4	Sep 12 th	DNA isolation / Enzyme lab
5	Sep 19 th	PCR lab
6	Sep 26 th	Digest of PCR product / gel electrophoresis
7	Oct 3 rd	Classification
8	Oct 10 th	Bioblitz
9	Oct 17 th	Work on presentations
10	Oct 24 th	Plant experiment presentations