Course Syllabus

Fall 2020

BIOLOGY 200 – Concepts in Biology – Honors Sections 1 & 3

Instructors and Office Hours

Dr. Caroline DeVan (caroline.m.devan@njit.edu), Office hours: Monday & Wed 10:30am-12:00pm or by appointment.
Dr. Xiaonan Tai (xiaonan.tai@njit.edu), Office hours: by appointment.

Course Meetings: Class meets twice weekly for lecture and once weekly for recitation.

Lecture: Monday and Wednesday, 12:30pm-1:50pm, Kupfrian 211 or online (see Canvas for WebEx meeting link). Lectures will be in the Converged Instructional Delivery Mode. This course will include some students physically in the classroom and some attending remotely. If you will be attending in person (i.e., physically in the classroom), you must indicate that using the Back2Classroom app: https://back2classroom.njit.edu. If you are attending remotely, use the CISCO WebEx link on the left-hand menu of our course Canvas page. Regardless of which way you attend, the class will be held synchronously meaning everyone is expected to attend class either in person or remotely during the scheduled class period. Please see NJIT's Pandemic Recovery Plan for more information and updates: https://www.njit.edu/pandemicrecovery/.

NJIT Campus Map: www.njit.edu/about/visit/njit-maps.php

Recitation: Recitations meet on Fridays and will be held remotely.
Section H01: Friday 7:30am - 8:50am
Section H03: Friday 12:30pm - 1:50pm
All recitations will be held remotely, to join class use the CISCO WebEx link on the left-hand menu of our course Canvas page. Recitations will be held synchronously meaning everyone is expected to attend class remotely during the scheduled class period.

Course Description:
This course will introduce students to the study of biology at the beginning of their undergraduate career. Central ideas in the biological sciences will be highlighted, with an emphasis on the process of scientific discovery and investigation. The course will provide the basis for more advanced coursework and learning experiences in biological sciences as students delve into the curriculum of study. This is a required course for all NJIT and Rutgers-Newark Biology majors.

Course Website: http://canvas.njit.edu/.

Textbook and Required Materials:
- We will use the FREE online textbook Opex Stax Biology 2e: https://openstax.org/details/biology-2e , supplemented with additional readings. All readings will be provided via links on the course website, but you may find it useful to download (free) the OpenStax Biology 2e text.
- The **iClicker Reef** app is required for this course: http://iclicker2.wpengine.com/students/apps-and-remotes/apps. If you are attending in person you can also use an iClicker Remote (iClicker 1, iClicker 2, iClicker + are all OK). Remotes will only work when in-person.

Communication with instructor

- **"In-person" communication during class and office hours and Canvas message app are the preferred forms of communication.** If you do talk to me before/during/after class asking me to do a task, please send a follow-up email through the Canvas message app. You can email me directly as well, but I may respond more slowly. When emailing me through the Canvas app or directly please indicate your full name and the course you are in as part of the email subject line. I will be checking the Canvas messaging app and my email regularly throughout the work week during normal business hours. Outside of these times I will respond to messages and emails as soon as possible, but do not expect an immediate reply.
- ***Office hours:*** Office hours are open times when you can come discuss with me any questions or concerns you have about the course or course material. Office hours will be held each week at the regularly scheduled times via WebEx – use the CISCO WebEx link on the left-hand menu of our course website and then look for Office Hours to make an individual 30 minute appointment. These appointments allow for student privacy, but if multiple students want to meet as a group for the same appointment this can be accommodated. Some weeks additional slots will open in the Office Hours link, but if none of the available times work for you, you are encouraged to set up an appointment.
- ***Appointments:*** I am always happy to make an appointment with a student. Ideally appointments should be made in advance. To schedule an appointment, you should message me through the Canvas app – be sure to include your name, the class you are in, and the times you are available to meet in your message. All appointments will be made through WebEx.

Course Policies:

- All course materials (including recordings of lectures) are for students' own use only (no sharing or posting anywhere).
- Homeworks and projects may be submitted late, but 10% of the points available for each 24 hours after the assignment was due will be deducted from late submissions. Email Dr. DeVan for access to submit HWs in Canvas 'quiz' format after the deadline.
- Late submissions (up to 10 days late) of journals will receive half credit.
- Review quizzes and exams cannot be completed late without documentation of an excusable absence.
- Each student is expected to do his or her own work independently. (See Academic Dishonesty statement below.)

Accessibility Statement: Please let me know if you need accommodations for a disability. If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director of the Office of Accessibility Resources & Services (OARS), to discuss your specific needs: https://www.njit.edu/studentsuccess/accessibility

COVID-19 Safety Requirements: All persons physically present in any department facility or classroom shall comply fully with the NJIT COVID-19 safety policy at all times. Masks must be worn before entry to all department facilities and classrooms, and social distancing guidelines must be followed. Individuals who are unable to wear a face mask due to medical reasons should contact the Office of Disability Services or Human Resources. Students who enter a classroom without wearing a mask properly, or remove their mask, will be cautioned by the instructor. The same is true for students who disregard the seating order or guidelines for social distancing. Students with obvious symptoms of respiratory illness should not come to campus and will be asked to leave. Students who do not comply with a request by a department instructor to adjust their behavior, in accordance with the University Policy, will be subject to disciplinary actions. Instructors have the right to expel the student or terminate the class session at which any student fails to comply with the University Policy.

Academic Dishonesty: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf. Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.

Learning Outcomes:

A. Biological Principles

Students will….

1. Identify mechanisms of evolutionary change and explain how they lead to genetic change in populations through time.
2. Describe the structural characteristics of nucleotides (DNA/RNA) and explain how they are related to the functions of these molecules.
3. Identify the basic steps involved in gene expression and describe ways that gene expression can be regulated so that different cells produce different proteins.
4. Be able to transcribe information from DNA to RNA and to translate mRNA into amino acid sequences.
5. Interpret information depicted on a phylogenetic tree.
6. Outline the stages of cell division (mitosis and meiosis), explain what occurs during each stage, and describe how the nuclear DNA of daughter cells compares to that of the original cell.
7. Be able to utilize a Punnett square to predict the potential genotype/phenotype of offspring.
8. Define and give some examples of interspecific interactions and describe how different types of interactions affect the population sizes of the species involved.
9. Identify the different trophic levels in a community and explain how energy moves through them.
10. Explain traits related to an organism's life history and what influences the evolution of different life history strategies.

B. Learning, Reasoning, and Problem-Solving Skills

1. **Learning How to Learn**
   - Students will develop personal learning strategies based on recognition of their own learning processes.
   - Students will identify their learning style and develop a learning plan that is aligned with that style.
   - Students will reflect on the note taking and study process and self-monitor their habits throughout the semester
   - Students will develop a plan for their continued learning beyond this course.
2. **Application**
   - Students will develop hypotheses to explain observed phenomena.
   - Students will design a basic experiment to test a hypothesis, taking into account the ethical and methodological considerations for proper experimental design.
   - Students will read and evaluate data critically:
     - identify and describe patterns in raw data.
     - interpret statistical analysis of others' results.
     - draw conclusions based on graphical presentation of data.
   - Students will communicate scientific information effectively:
     - present source material without plagiarizing.
     - convey information in written and graphical form.
     - target delivery appropriately to audience.
3. **Integration**
   - Students will synthesize ideas from multiple areas in order develop complex concepts.
4. **Human Dimension**
   - Students will feel confident in their ability to apply knowledge to solve problems.
   - Students will cooperate with their peers to solve problems as part of a team.
   - Students will take responsibility for their learning process and academic success.
5. **Caring/Valuing**
   - Students will get excited about the value of course material within their personal and professional lives.
   - Students will commit to being a good learner in this course and beyond.

Assessment of Learning:

Learning Journal – Every week, you will have an assigned prompt asking you to reflect on your own learning and progress in the course, to which you must respond via your personal forum on Canvas. Journal entries are assigned over the weekend. Only instructors can see your entries, and points are awarded (2 pts per weekly entry) for complete, thoughtful responses.

Lecture Participation – Lecture participation will be assessed using iClicker questions. Each lecture will include at least a couple clicker questions. You must answer (correct or not) at least 80% of the questions to receive full credit for this component; lower response rates are scaled accordingly.

Online Quizzes – During the course, there will be 4 quizzes (administered via Canvas) to assess your understanding of concepts that we have covered in class and your ability to apply that knowledge. These are intended to provide practice as part of your preparation for exams and to give you an opportunity to mark your progress. You will also take a Pre-Quiz and Post-Quiz; this quiz is used to assess scientific literacy before and after the course.

Homework – There will be several homework assignments throughout the course that will require slightly more in depth work on a topic, beginning the discovery and application of knowledge. Homework assignments will be discussed during Recitation and completed assignment will be submitted on Canvas.

Project – Science often requires pulling together information from multiple sources to arrive at an end result. The course will include two projects that consists of several components that build towards a final goal.

Exams – There will be two exams that cover the application and understanding of the material covered in the course. These exams will also require you to apply the skills that we have emphasized. Exams will be open-note, open-book exams that must be completed completely independently during the scheduled class time (Exam 1) and the scheduled final exam time (Exam 2).

Course Grade: Your grade for this course will be based on the components in the table below. You can choose how your grade is calculated by determining the weight of each grade component as a percentage of your total semester grade, within the given ranges. Your final grade will be the highest of two possible grades: the grade that results from your selected weight (Your %) or the one resulting from the standard weight (Standard %).

Grade Component	% Range	Standard %	Your %
Learning journal	**5-10%**	**7.5%**	
Lecture participation	**2.5-7.5%**	**5%**	
Quizzes	**10-15%**	**12.5%**	
Homework	**12.5-17.5%**	**15%**	
Projects	**17.5-22.5%**	**20%**	
Exams	**37.5%-42.5%**	**40%**	

Grading Scale:	
A	>90%
B+	85-90%
B	80-85%
C+	75-80%
C	70-75%
D	60-70%
F	<60%

Schedule: Dates listed by week; lectures will meet twice every week and recitation will meet every week, unless otherwise noted. Please note that this is the proposed schedule and is subject to change. A more detailed schedule will be continually updated via the Canvas course site.

Week of	Week #	Lecture Topic	Recitation	Assignments/Notes
8/31	1	Mon - No Lecture Wed - Intro: Syllabus, Class goals	Discussion on Intelligence	HW 1 Pre-Quiz on Canvas NO LECTURE on Mon 8/31
9/7	2	Mon – No Lecture (Labor Day) **Tues** 9/8 - What is Science? Wed – Experimentation/Graphing	Monarch butterflies & Bt Corn	TUES 9/8 – NJIT on MON schedule HW 2
9/14	3	Mon – What is Biology? Evolution/Natural Selection Wed - Adaptation/Fitness	Source of variation & Selection	HW 3 Review Quiz 1 on Canvas
9/21	4	Mon - What is flu? Wed – DNA/RNA Discovery/Structure	Disease spread	HW 4
9/28	5	Mon - DNA Replication Wed - Transcription/RNA processing	Primer Design	HW 5
10/5	6	Mon - Translation Wed – Regulation of Gene Expression	Decoding the Flu, Project 1 Part 1	Project 1, Part 1 HW6 Review Quiz 2 on Canvas
10/12	7	Mon - Mutation Wed - Phylogenetic Trees	SARS, Project 1 Part 2	Project 1, Part 2 HW 7
10/19	8	Mon – COVID-19 Wed - Scientific Writing	Scientific Writing, Project 1 Part 3	Project 1, Part 3 HW 8
10/26	9	Mon - Exam 1 Wed - What is DFTD?	DFTD	HW 9
11/2	10	Mon – Cell Cycle/Mitosis Wed - Cancer	Cancer Genetics	HW 10 Project 1, Part 4
11/9	11	Mon - Meiosis Wed - Epigenetics	Epigenetics, Project 2 Part 1	Project 2, Part 1 HW 11 Review Quiz 3 on Canvas
11/16	12	Mon - Inheritance Wed - Population Genetics	Pedigrees, Project 2 Part 2	Project 2, Part 2 HW 12
11/23	13	Mon - Interactions / Competition Wed - No Lecture (Fri schedule)	NO Recitations	
11/30	14	Mon - Predation / Trophic Cascades Wed - Interaction Networks	Tasmanian Food Webs, Project 2 Part 3	Project 2, Part 3 HW 13 Review Quiz 4 on Canvas
12/7	15	Mon - Life History Strategies Wed – Future for Tasmanian Devils	NO Recitations	Project 2, Part 4

12/15-21		Exam 2 and PostQuiz - During Final Exam Period*		Final Exam Schedule will be posted here: http://www.njit.edu/registrar/exam

*The NJIT final exam schedule will be announced later in the semester, until then you should make sure you are available and have good internet access throughout the whole time period.

Your classroom as well as your college experience is meant to be a place where the free flow of ideas is encouraged and nurtured. It is not acceptable for any community member to make hurtful and demeaning remarks, or otherwise disrupt your learning experiences or your safety. As such, there are many **NJIT** support systems and policies of which you should be aware.

Basic Needs

Students who face challenges securing their food or a safe and stable place to stay are urged to contact the Dean of Students (doss@njit.edu). If you are comfortable doing so, please notify me as well.

Food Insecurity: If you are experiencing food insecurity, there is a food pantry on campus for your convenience (You must bring your UCID).

Campus Center, Room 478

Spring 2020 hours:

Mondays 2-5pm
Tuesdays 11am – 2pm, 4-7pm
Wednesdays 9am-7pm
Thursdays 9am-5pm
or by appointment
(foodpantry@njit.edu)

Student Parents

If circumstances arise that necessitate your absence from class - such as the illness of a child, closing of day care for inclement weather, etc. - please contact me as soon as possible so we may make arrangements to keep you up-to-date with course material and activities. If you should need any other kind of assistance for circumstances relating to your status as a student and parent, please consider contacting the Dean of Students and Campus Life at 973.596.3466 for a referral to appropriate services including on and off campus support.

Emergency Support

Crises Happen: If you experience a life emergency and are unsure which support services to turn to, NJIT Public Safety can connect you to emergency support systems - call 973.596.3111.

For medical, psychological or psychiatric emergencies you can also call:
University Hospital Crisis 973.623.2323

If you want to report a concern about another students' well-being you can also reach out to the NJIT CARE Team (https://www.njit.edu/care/) or the Dean of Students Office.

Consensual, Healthy Personal & Professional Relationships

Your body is your own and NJIT strives to protect its community members from any unwanted advances. Title IX prohibits discrimination based on sex, including harassment, domestic and dating violence, sexual assault, and stalking. Sexual violence undermines students' academic success. Anyone dealing with sexual misconduct should consider talking to someone about their experience, so he/she/they can get the support needed.

Confidential Resource:

- Center for Counseling and Psychological Services (C-CAPS) Campbell Hall, Room 205 (Main Level) | 973.596.3414

Non-Confidential Resources:

- NJIT Public Safety 973.596.3111
- Dean of Students Office, 255 Campus Center | 973.596.3466

Mental Health and Stress Management

Center for Counseling and Psychological Services (C-CAPS) is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available.

https://www.njit.edu/counseling/gethelp

Diminished mental health, including significant stress, mood changes, excessive worry, or problems with eating and/or sleeping can interfere with optimal academic performance. The source of symptoms might be related to your course work; if so, please speak with me. However, problems with relationships, family worries, loss, or a personal struggle or crisis can also contribute to decreased academic performance. Please seek out help as needed.

Campbell Hall, Room 205 (Main Level) | 973.596.3414

Special Accommodations

If you have a disability or a personal circumstance that will affect your learning in this course, please let me know as soon as possible so that we can discuss the best ways to meet your needs. Any student who needs accommodation for disabilities should also contact the Office of Accessibility Resources and Services (OARS): https://www.njit.edu/studentsuccess/accessibility

Kupfrian Hall, Room 201973.596.5417 | oars@njit.edu

Religious/Cultural Observance Students who have religious or cultural observances that coincide with this class should let me know by email within the first two weeks of class. I strongly encourage you to honor your cultural and religious holidays! However, if I do not hear from you within the first two weeks, I will assume that you plan to attend all class meetings.

Supporting Academic Integrity Our community functions best when its members treat one another with honesty, fairness, respect, and trust. The college promotes the assumption of personal responsibility and integrity, and prohibits all forms of academic dishonesty and misconduct.

Issues of Concern (Non-Emergency)

Alert the Dean of Students Office (doss@njit.edu) about issues of concern, including academic and non-academic violations (Life Office to issues of concern (Life Office to issues of concern (https://www5.njit.edu/doss/reporting/).