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2018

### Biology II, BIO 1201, Course Outline

Tatiana Voza

*CUNY New York City College of Technology*

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# BIO1201: BIOLOGY II OER

For Biology II Students and Instructors

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## How to Use this Site

Welcome on the Open Educational Resources (OER) for Biology II site 😊

The site is meant to help you manage your semester and centralize free & open information, documents and resources related to the course.

## Students

### Before class

- [Read the chapters](#) and assess your understanding of the material and note the points and concepts giving you trouble so you can ask your instructor to clarify them in class.
- Print out the [slides](#) as handouts and use them in class to write additional information.
- Prepare for the [labs](#): print and read the exercise before coming to class.

## Study for exams

- Assessing yourself with the end of chapter questions, review sheets, games and quizzes for [each chapter](#)
- Going over the textbook/manual over and over and taking notes.
- Watching, reading, listening to [additional material](#) for a better understanding of the topics.
- How to learn... useful tips and info in this short video:
- Watch: [Metacognition: Learning about Learning video](#) (YouTube)
  
- **Access the grading & course policies and topics schedules ([syllabus](#))**

## Instructors

### Prepare your classes

Access points for:

- [slide presentations](#) and [learning outcomes](#)
- [laboratory manual](#)
- The [Instructor's Handbook](#) and the course [syllabus](#)

### In class

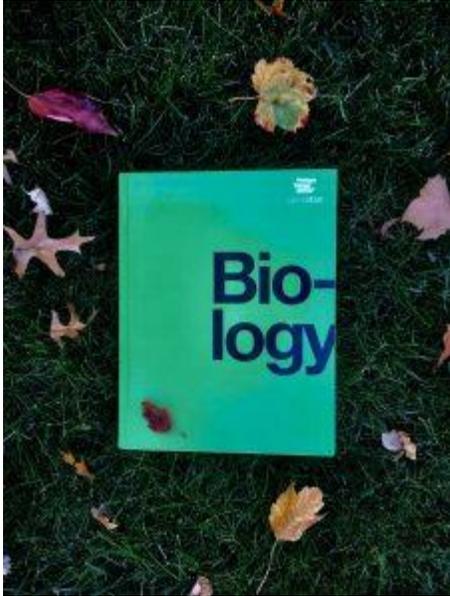
- Play the [assessment games](#) to determine your classes' level of comprehension of the topics before, during or at the end of class.
- Use the [additional resources](#) to illustrate some topics.

**[Leave messages](#) and feedback regarding the site and material**

## Textbook

The textbook used is the **Biology** book by **Openstax** (Rice University). It is available in different formats:

- [Free PDF File](#) (recommended) for computer/tablet/phone and be able to read offline.
- [Free Online View](#)
- [Print Copy](#), (about 1200 pages) to order via Amazon \$52.



## Grading & Policies

### Grading

Students' performance in this course will be evaluated as follows:

- Lecture: 50% of course grade; based on *at least* 4 exams and attendance, respectively 80% and 20% of the lecture grade.
- Lab: 50% of course grade; based on *at least* 5 quizzes (30% of the lab grade), uniform midterm and final practical exams (50% of the lab grade) and attendance (20% of the lab grade)

**Students must pass (*i.e.* score 60 or above) both components to pass the course.**

**ALL GRADES ARE COUNTED; NONE ARE DROPPED NOR ARE THEY CURVED.**

**NO MAKE-UPS ARE GIVEN EXCEPT AT THE DISCRETION OF THE INSTRUCTOR AND/OR PENDING SUBMISSION OF WRITTEN PROOF OF REASON FOR ABSENCE TO THE CENTER FOR STUDENT ACCESSIBILITY. TYPICALLY MAKE-UP EXAMS ARE SCHEDULED ON FINALS WEEK AND A POINT PENALTY IS APPLIED.**

**The passing grade is 60% (D).** Letter grades are determined according to standard percentage point evaluation outlined on the [BIO1201 grading scale document \(pdf\)](#).

### Attendance / Participation Grades

Attendance/Participation grades will be based on one of the following (as specified by your instructor) or a combination of:

- Several pop quizzes given at the start and/or end of class (first and last 5 minutes), based on reading assignments (see lecture and lab lecture schedules on pages 5-8), topics discussed in class, lab activities.
- Table below (note that leaving class early counts as “late”):

<b>If meeting <i>once</i> a week:</b>	<b>If meeting <i>twice</i> a week:</b>
0 lateness, 0 absence: 100%	0 lateness, 0 absence: 100%
1-2 absences: 80%	1-2 absences: 80%
3 absences: 50%	3-4 absences: 50%
4 absences or more: 0%	5 absences or more: 0%
2 latenesses = 1 absence	

## **Academic Integrity Policy**

“Academic dishonesty includes any act that is designed to obtain fraudulently, either for oneself or for someone else, academic credit, grades, or any other form of recognition that was not properly earned. Academic dishonesty encompasses the following:

**Cheating:** Defined as intentionally giving, receiving, using or attempting to use unauthorized materials, information, notes, study aids, including any form of unauthorized communication, in any academic exercise. It is the student’s responsibility to consult with instructors to determine whether or not a study aid or device may be used.

**Plagiarism:** Plagiarism is intentionally and knowingly presenting the ideas or works of another as one’s own original idea or works in any academic exercise without proper acknowledgement of

the source. The purchase and submission of a term paper, essay, or other written assignment to fulfill the requirements of a course, and violates section 213-b of the State Education Law. This also applies to the submission of all or substantial portions of the same academic work previously submitted by the student or any other individual for credit at another institution, or in more than one course.

More on the [Academic Integrity Policy at City Tech](#) for Instructors.

## Accessibility Statement

- City Tech is committed to supporting the educational goals of enrolled students with disabilities in the areas of enrollment, academic advisement, tutoring, assistive technologies and testing accommodations. If you have or think you may have a disability, you may be eligible for reasonable accommodations or academic adjustments as provided under applicable federal, state and city laws.
- You may also request services for temporary conditions or medical issues under certain circumstances.

If you have questions about your eligibility or would like to seek accommodation services or academic adjustments, please contact the Center for Student Accessibility at 300 Jay Street room L-237, 718 260 5143 or through the [Center for Student Accessibility website](#).

## Online Conferencing Consent

Students who participate in this class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the “chat” feature, which allows you to type questions and comments live.

**Download:** [Biology II Course Syllabus](#)

## Lecture Schedule

***Read the material online by clicking on the topic and assess your understanding with the corresponding games and quizzes.***

For each lecture/week:

- You can find a [Powerpoint slide presentation](#). To print slides as handouts, select *4 or 6 slides /page, black & white and double-sided*, in the printer settings.
- The **learning outcomes/review sheets** can be found by clicking on the lecture main title
- [PDFs of the textbook](#), separated for weekly readings and printing, are available. (courtesy of Prof. M. Gotesman).

<p><b>Week 1</b></p> <p><a href="#">Game 1a</a> <a href="#">Game 1b</a></p>	<p><b><u>Classification of Living Organisms</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Understanding Evolution</a></li> <li>• <a href="#">Organizing Life on Earth</a></li> <li>• <a href="#">Systematic and evolutionary relationship between organisms</a></li> </ul>	<p><b>Sections 18.1 20.1 20.2</b> (also see <a href="#">1.2</a>, <a href="#">47.1</a> &amp; <a href="#">47.2</a>)</p>
<p><b>Week 2</b></p> <p><a href="#">Game 2a</a> <a href="#">Game 2b</a></p>	<p><b><u>Viruses, Bacteria &amp; Archaea</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">The Viruses: viral structure, viral reproduction, viral infections; Prions &amp; Viroids</a></li> <li>• The <a href="#">Prokaryotes</a> – Bacteria and Archaea Domains: <a href="#">diversity, structure and reproduction, metabolism and ecological roles, diseases and uses</a></li> </ul>	<p><b>Chap. 21 &amp; 22</b></p>
<p><b>Week 3</b></p> <p><a href="#">Game 3</a></p>	<p><b><u>The Protists</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Eukaryotic origins</a></li> <li>• <a href="#">General features of protists</a></li> <li>• <a href="#">Protist Supergroups</a></li> <li>• <a href="#">The Algae: green, red, brown, diatoms</a></li> <li>• Euglenoids</li> <li>• <a href="#">The Protozoa (Zooflagellates, Amoebas and Ciliates)</a></li> <li>• <a href="#">Slime &amp; Water Molds</a></li> <li>• <a href="#">Ecological importance</a></li> </ul>	<p><b>Chap. 23</b></p>
<p><b>Week 4</b></p>	<p><b>EXAM 1</b> (Classification, Viruses, Bacteria &amp; Archaea and Protists)</p>	

<p><a href="#">Game 4</a></p>	<p><b><u>The Fungi</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Characteristics and structure of Fungi</a></li> <li>• <a href="#">Reproduction of Fungi</a></li> <li>• <a href="#">Classification of Fungi: Zygomycota, Ascomycota, Basidiomycota, Chytridiomycota and AM Fungi</a></li> <li>• <a href="#">Symbiotic Relationships of Fungi</a>: lichens, mycorrhizae</li> </ul>	<p><b>Chap. 24</b></p>
<p><b>Week 5</b></p> <p><a href="#">Game 5</a></p>	<p><b><u>Evolution and Diversity of Plants – Seedless Plants</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Origin of Plants and Colonization of Land</a></li> <li>• <a href="#">Characteristics of plants and Alternation of Generations</a></li> <li>• <a href="#">Non -Vascular</a> and <a href="#">Vascular</a> plants</li> </ul>	<p><b>Chap. 25</b></p>
<p><b>Week 6</b></p> <p><a href="#">Game 6</a></p>	<p><b><u>Seed Plants</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Gymnosperms and Angiosperms</a></li> <li>• <a href="#">Monocots and Eudicots</a></li> <li>• <a href="#">Angiosperms Diversity</a> and <a href="#">Adaptations</a></li> <li>• Angiosperm <a href="#">Reproductive Strategies</a></li> <li>• <a href="#">Pollination, Fertilization and Seed/Fruit Dispersal</a></li> </ul>	<p><b>Chap. 26 &amp; 30 +Sections 31.3 32.1 32.2</b></p>
<p><b>Week 7</b></p>	<p><b>EXAM 2</b> (The Fungi and Plants: Evolution, Diversity and Reproduction)</p>	

<p><a href="#">Game 7a</a></p> <p><a href="#">Game 7b</a></p>	<p><b><u>The Kingdom Animalia: Introduction to Animal Diversity</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Introduction to Animals and their Classification</a>: level of organization, type of symmetry, type of coelom, segmentation and embryology, protostomes and deuterostomes</li> <li>• Overview of Animal Phyla: <a href="#">Invertebrates</a> and <a href="#">Vertebrates</a></li> </ul>	<p><b>Sections 27.1, 27.2, 27.3</b></p> <p><b>+</b></p> <p><b>Chap. 28</b></p> <p><b>+</b></p> <p><b>Section 29.1</b></p>
<p><b>Week 8</b></p> <p><a href="#">The Human Body 101</a></p> <p><a href="#">Homeostasis</a></p> <p><a href="#">Game 8</a></p>	<p><b><u>Animal Organization</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Form and Function</a></li> <li>• <a href="#">Types of tissues</a></li> <li>• <a href="#">Homeostasis</a>: negative and positive feedback</li> </ul>	<p><b>Chap. 33</b></p>
<p><b>Week 9</b></p> <p><a href="#">The Human Circulatory System</a></p> <p><a href="#">Game 9</a></p>	<p><b><u>Circulation</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Overview of circulatory systems</a></li> <li>• The <a href="#">mammalian circulatory system</a>, <a href="#">pressure and flow</a></li> <li>• <a href="#">Blood and Blood Types</a></li> </ul>	<p><b>Chap. 40</b></p>
<p><b>Week 10</b></p> <p><a href="#">Innate and Adaptive Immunity Explained</a></p> <p><a href="#">Game 10</a></p>	<p><b><u>Immunity</u></b></p> <ul style="list-style-type: none"> <li>• The immune system: <a href="#">specific</a> and <a href="#">non-specific</a> defenses</li> <li>• <a href="#">Antibodies</a></li> <li>• <a href="#">Disruptions in the immune system</a></li> </ul>	<p><b>Chap. 42</b></p>

<p><b>Week 11</b></p> <p><a href="#">Game 11</a></p>	<p><b>EXAM 3</b> (Kingdom Animalia and Animal Organization &amp; Homeostasis, Circulation, Lymphatic System)</p> <p><b><u>Digestion and Nutrition</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Digestive systems and adaptations to diet</a></li> <li>• <a href="#">Human digestive system</a></li> <li>• <a href="#">Nutrition</a></li> </ul>	<p><b>Chap. 34</b></p>
<p><b>Week 12</b></p> <p><a href="#">Game 12</a></p>	<p><b><u>Respiration</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Overview of respiratory systems</a></li> <li>• <a href="#">Breathing</a></li> <li>• <a href="#">Transport of gases in humans</a></li> </ul>	<p><b>Chap. 39</b></p>
<p><b>Week 13</b></p> <p><a href="#">Game 13</a></p>	<p><b><u>Body Fluid Regulation and Excretion</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Osmoregulation</a></li> <li>• <a href="#">Waste products</a> and <a href="#">excretory systems</a></li> <li>• <a href="#">The human urinary system</a> and its <a href="#">regulation</a></li> </ul>	<p><b>Chap. 41</b></p>
<p><b>Week 14</b></p> <p><a href="#">Game 14</a></p>	<p><b><u>Nervous System</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Overview of nervous systems</a></li> <li>• <a href="#">Neurons and glia cells</a></li> <li>• <a href="#">CNS</a> and <a href="#">PNS</a></li> <li>• <a href="#">Drug abuse and neurodegenerative diseases</a></li> </ul>	<p><b>Chap. 35</b></p>

<p><b>Week 15</b>  <a href="#">Game 15</a></p>	<p><b><u>Reproduction</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Asexual and sexual</a> reproduction</li> <li>• <a href="#">Fertilization</a></li> <li>• <a href="#">Male and female reproductive system</a></li> <li>• <a href="#">Regulation of human reproduction</a></li> <li>• <a href="#">Pregnancy and infertility</a></li> </ul>	<p><b>Chap. 43</b></p>
<p><b>EXAM 4 – FINAL</b> (Digestion -Nutrition, Respiration, Excretion, Nervous System &amp; Reproduction)</p>		

## Lecture Slides

For each lecture you can find a Powerpoint presentation here:

[Lecture Powerpoint Slides](#)

To print slides as handouts, select *4 or 6 slides/page, black & white and double-sided*, in the printer settings.

## Labs

The lab schedule corresponds to lab exercises in the [Biology II Laboratory Manual](#) (pdf). Students should read the scheduled lab exercises before coming to class.

For each lab session:

- The **learning outcomes/review sheets** can be obtained by clicking on the lab title in the table below.
- a link to the individual laboratory exercise PDF is available

<p><b>Week 1</b></p> <p><a href="#">Lab I – PDF</a></p> <p><a href="#">How to use a dichotomous key (video)</a></p> <p><a href="#">How to use a dichotomous key (image)</a></p>	<p><b><u><a href="#">Systematics, Taxonomy &amp; Phylogeny</a></u></b></p> <ul style="list-style-type: none"> <li>● List the taxonomic levels from the broadest to the most specific.</li> <li>● Explain the degree of similarity and difference between organisms classified in a taxonomic table.</li> <li>● Identify animals and plants through the use of a dichotomous key.</li> </ul>	
<p><b>Week 2</b></p> <p><a href="#">Lab II – PDF</a></p> <p><a href="#">Prokaryote Concept Map</a></p>	<p><b><u><a href="#">Introduction to Microbiology: Prokaryotes and Protists</a></u></b></p> <ul style="list-style-type: none"> <li>● Describe the distinguishing features of members of the Domain Bacteria.</li> <li>● Describe differences between bacteria and cyanobacteria.</li> <li>● Discuss the distinctive features of each group of algae and protozoans.</li> <li>● List examples, habitats, reproductive methods, and unique features of representative members of the Kingdom Protista.</li> </ul>	
<p><b>Week 3</b></p> <p><a href="#">Lab III – PDF</a></p>	<p><b>Quiz 1</b> (Systematics, Taxonomy &amp; Phylogeny, Prokaryotes and Protists)</p>	

	<p><b><u>Kingdom Fungi</u></b></p> <ul style="list-style-type: none"><li>● Describe the characteristic features of Kingdom Fungi.</li><li>● Explain the division names: Chytridiomycota, Zygomycota, Ascomycota, Basidiomycota and AM Fungi.</li><li>● Discuss variations in structure and the sequence of events for sexual reproduction for the major divisions of the Kingdom Fungi.</li><li>● Understand the importance of fungi for ecosystems and in human life.</li></ul>	
<p><b>Week 4</b></p> <p><b><u>Lab IV – PDF</u></b></p>	<p><b><u>Kingdom Plantae I – Bryophytes, Ferns</u></b></p> <ul style="list-style-type: none"><li>● Describe the process of alternation of generations.</li><li>● Explain the criteria for plants classification: conducting tissue, seeds and flowers and distinctive evolutionary features</li><li>● Discuss similarities and differences between ferns and bryophytes.</li><li>● Describe the life cycles of ferns and their allies.</li></ul>	

<p><b>Week 5</b></p> <p><a href="#">Lab V – PDF</a></p> <p><a href="#">Virtual Field Trip</a></p> <p><a href="#">Midterm Review Part 1</a></p> <p><a href="#">Midterm Practice I</a></p>	<p><b><a href="#">Kingdom Plantae II – Gymnosperms &amp; Angiosperms</a></b></p> <ul style="list-style-type: none"> <li>• Describe the life cycle of a pine tree (gymnosperm)</li> <li>• Describe the life cycle of flowering plants (angiosperms)</li> <li>• List and give the functions of the principal parts of a flower.</li> <li>• Describe the structure and function of roots, stems, and leaves.</li> <li>• Observe and explain characteristics of fresh monocots and eudicots sprouts</li> </ul>	
<p><b>Week 6</b></p> <p><a href="#">Lab VI – PDF</a></p> <p><a href="#">Ctenophora and Cnidaria</a></p> <p><a href="#">Planaria Feeding</a></p>	<p><b>Quiz 2 (Fungi &amp; Plants)</b></p>	
	<p><b><a href="#">Kingdom Animalia I – Lower Invertebrates</a></b></p> <ul style="list-style-type: none"> <li>• Explain and discuss animal classification (levels of organization, body symmetry, coelom, protostomes, deuterostomes)</li> <li>• Describe the distinguishing features of members of the phylum Porifera and the phylum Cnidaria. Describe the body forms of cnidarians. Compare the feeding methods of sponges and jellyfish. Observe the feeding behavior of live hydra capturing live water fleas (daphnia; crustaceans).</li> <li>• Describe the general morphology of flatworms (phylum Platyhelminthes). Observe the morphology and behavior of live Planaria</li> </ul>	

<p><b>Week 7</b></p> <p><a href="#">Lab VII – PDF</a></p> <p><a href="#">Live Rotifers</a></p> <p><a href="#">Earthworm Dissection</a></p> <p><a href="#">Annelids (Shape of Life)</a></p> <p><a href="#">Clam Dissection</a></p> <p><a href="#">Molluscs (Shape of Life)</a></p>	<p><b><a href="#">Kingdom Animalia II – Lower Invertebrates (continued)</a></b></p> <ul style="list-style-type: none"><li>• Describe the general morphology, major classes and advanced characteristics of roundworms (phylum Nematoda) and rotifers (phylum Rotifera). Observe the behavior of live rotifers.</li><li>• Describe the general morphology of organisms of phylum Annelida and phylum Mollusca. Dissect preserved earthworms and bivalves (clams)</li></ul>	
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<p><b>Week 8</b></p> <p><a href="#">Lab VIII – PDF</a></p> <p><a href="#">Grasshopper Observation</a></p> <p><a href="#">Terrestrial</a> and <a href="#">Marine</a> Arthropods (Shape of Life)</p> <p><a href="#">Sea Star Dissection</a></p> <p><a href="#">Echinoderms (Shape of Life)</a></p> <p><a href="#">Frog Dissection</a></p> <p><a href="#">Chordates (Shape of Life)</a></p> <p><a href="#">Midterm Review Part 2</a>  <a href="#">Midterm Practice IIa</a>  <a href="#">Midterm Practice IIb</a></p>	<p><b><a href="#">Kingdom Animalia III – Arthropods and Chordates</a></b></p> <ul style="list-style-type: none"> <li>• Describe the general morphology, characteristics and major classes of phylum Arthropoda. Describe modifications of the exoskeleton and paired appendages of arthropods. Observe preserved insect specimens (grasshoppers)</li> <li>• Describe the morphology, characteristics of the phylum Echinodermata. Dissect preserved sea stars (if available).</li> <li>• Describe the morphology, characteristics of the phylum Chordata. Dissect preserved frogs</li> </ul>	
<p><b>Week 9</b></p>	<p><b><a href="#">Uniform Midterm Practical</a> + Quiz 3 (Animals)</b></p>	

<p><a href="#">Lab IX – PDF</a></p> <p><a href="#">A Quick Tour of Tissues</a></p>	<p><b><a href="#">Vertebrate Organization – Tissues and Organs</a></b></p> <ul style="list-style-type: none"> <li>• Describe the general properties of tissues versus single cells</li> <li>• Describe the characteristics of epithelial, connective, muscular and nervous tissues</li> <li>• Describe the organization of the skin as an organ made of several tissues working together</li> </ul>	
<p><b>Week 10</b></p> <p><a href="#">Labs X &amp; XI – PDF</a></p> <p><a href="#">Fetal Pig Dissection</a></p>	<p><b><a href="#">Vertebrate Anatomy I – Real &amp; Virtual Fetal Pig Dissection</a></b></p> <ul style="list-style-type: none"> <li>• Understand the classification of the pig as a mammal; name the unique mammalian characteristics represented by the fetal pig.</li> <li>• Define all the anatomical terminology, planes and structures</li> <li>• Dissect and identify the components of the digestive and respiratory systems</li> </ul>	
<p><b>Week 11</b></p>	<p><b><a href="#">Vertebrate Anatomy II – Real &amp; Virtual Fetal Pig Dissection</a></b></p> <ul style="list-style-type: none"> <li>• Identify, observe and dissect and the heart and pericardium; identify major blood vessels.</li> <li>• Define, identify, and describe components of the female and male urogenital system of the fetal pig.</li> </ul>	

<p><b>Week 12</b></p> <p><a href="#">Lab XII – PDF</a></p> <p><a href="#">Urinalysis</a></p> <p><a href="#">Urinalysis Results</a></p>	<p><b>Quiz 4</b> (Vertebrate Anatomy: Tissues, Organs and Organ Systems)</p> <hr/> <p><b><u>Vertebrate Anatomy III – Organs of Homeostasis – Urinalysis</u></b></p> <ul style="list-style-type: none"> <li>● Define homeostasis and why it is an important characteristic of every life form</li> <li>● Describe the structure and function of the human lungs, liver and kidneys and their role in the maintenance of homeostasis</li> <li>● Describe the process of urine formation in the human kidney</li> <li>● Explain and discuss negative and positive feedback mechanisms.</li> <li>● Test urine samples, discuss and explain results</li> </ul>
<p><b>Week 13</b></p> <p><a href="#">Lab XIII – PDF</a></p> <p><a href="#">Sheep Brain Dissection Video</a></p> <p><a href="#">Sheep Brain Practice</a></p>	<p><b><u>The Nervous System – Sheep Brain Dissection</u></b></p> <ul style="list-style-type: none"> <li>● Define and describe the components of the central and peripheral nervous systems</li> <li>● Identify the components and basic function of the sheep brain and their human counterparts on the models available</li> <li>● Describe the structure of the spinal cord and the mechanism underlying reflexes</li> </ul>
<p><b>Week 14</b></p> <p><a href="#">Lab XIV – PDF</a></p>	<p><b>Quiz 5</b> (Physiology: Homeostasis, Organ Functions and Nervous System)</p>

	<p><b><u>Reproduction &amp; Development</u></b></p> <ul style="list-style-type: none"> <li>• Asexual and Sexual Reproduction in Animals</li> <li>• Human male and female reproductive systems and cycles</li> <li>• Describe the main steps in the embryological development of vertebrates</li> <li>• Identify the various stages in the developmental models provided</li> </ul> <p><b>Review for Final Practicum</b></p>	
<p><b>Week 15</b></p>	<p><b><u>Uniform Final:</u> Fetal Pig/Brain Practicum</b></p>	

## Resources

### Reading – Online Texts

Interactive Biology [lectures](#)

### Watching – Lectures, Videos & Animations, Documentaries

*Biology lectures*

[Khan Academy](#) – [Bozeman Science](#) – [Crash Course](#) – [Brightstorm](#)

*Videos*

<b>Week 1: Phylogeny &amp; Evolution</b>	<b>Week 2: Viruses, Prokaryotes</b>	<b>Week 3: Protists</b>	<b>Week 4: Fungi</b>	<b>Week 5 &amp; 6: Plants</b>
<a href="#">Darwin and the Tree of Life</a>  <a href="#">Convergent Evolution</a>	<a href="#">Lytic vs Lysogenic Virus Cycles</a>  <a href="#">Discovering Microbes</a>  <a href="#">Binary Fission</a>  <a href="#">Resistant Bacteria on Giant Petri Dish</a>  <a href="#">Oil-Eating Bacteria</a>	<a href="#">The Endosymbiont Theory</a>  <a href="#">Kingdom Protista</a>  Deadly protists: – <a href="#">the malaria parasite</a>  – <a href="#">Trypanosoma</a>	<a href="#">What are Fungi?</a>  <a href="#">The Fungarium at Kew Royal Botanic Gardens</a>  <a href="#">Fungus Cannon</a>  <a href="#">The Wood Wide Web (mycorrhizae)</a>  <a href="#">Never Eat the Clean Part of Moldy Bread</a>	<a href="#">Bryophyte Life Cycle</a>  <a href="#">Fern Life Cycle</a>  <a href="#">Seed Production in Gymnosperms</a>  <a href="#">Sex Lives of Christmas Trees</a>  <a href="#">Gnetophytes: Welwitsia, a Living fossil</a>  <a href="#">Double Fertilization in Angiosperms</a>  <a href="#">The Millenium Seed Bank</a>  <a href="#">Buzz Pollination</a>

<p><b>Week 7: Animals</b></p> <p><a href="#">Animals Phyla</a></p> <p><a href="#">Coral Bleaching</a></p> <p><a href="#">Planaria Regeneration</a></p> <p><a href="#">House Centipedes</a></p> <p><a href="#">Sea Urchins</a></p> <p><a href="#">Oh Worm!</a> (Additional Dissection Videos)</p>	<p><b>Week 8: Homeostasis &amp; Tissues</b></p> <p><a href="#">Human Body 101</a></p>	<p><b>Week 9: Circulatory Systems</b></p> <p><a href="#">The Human Circulatory System</a></p> <p><a href="#">Coronary Artery Bypass</a></p> <p><a href="#">Blood Groups</a></p>	<p><b>Week 10: Immune Systems</b></p> <p><a href="#">Leukocyte Chasing Bacteria</a></p> <p><a href="#">Your Immune System Under a Microscope</a></p> <p><a href="#">The Immune System Explained</a></p> <p><a href="#">How Vaccines Work</a></p> <p><a href="#">Herd Immunity</a></p>	<p><b>Week 11: Digestive Systems</b></p> <p><a href="#">Swallowing X-ray</a></p> <p><a href="#">MyPlate.org</a></p> <p><a href="#">Cow Ruminating</a></p> <p><a href="#">Cloaca-Turd Machine</a></p>
<p><b>Week 12: Respiratory Systems</b></p> <p><a href="#">Breathing</a></p> <p><a href="#">Breathing 2</a></p> <p><a href="#">The Human Respiratory System</a></p>	<p><b>Week 13 Excretory Systems</b></p> <p><a href="#">Kidney Function Animation</a></p>	<p><b>Week 14: Reproductive Systems</b></p> <p><a href="#">Fertilization</a></p> <p><a href="#">Fertilization &amp; Fetal Development</a></p> <p><a href="#">Chick Embryo Development</a></p> <p><a href="#">From Zygote to Tadpole</a></p>	<p><b>Week 15: Nervous Systems</b></p> <p><a href="#">Human Brain 101</a></p> <p><a href="#">The Unfixed Brain</a></p> <p><a href="#">You Are Two</a></p> <p><a href="#">Neurons Making Connections</a></p>	

*Documentaries*

[Your Inner Fish](#) (PBS; 3 episodes) – [Planet Earth](#) (BBC; 2 seasons) –

[What Plants Talk About](#) (Nature; PBS) – [The First Flower](#) (Nova; PBS) – [In the Mind of Plants](#) (Arte) – [The Seedy Side of Plants](#) (Nature; PBS) – [The Private Life of Plants: Flowering](#) (BBC)

[Greatest Miracle](#) (Nova; PBS)

## Listening – Podcasts

[How Charles Darwin Worked](#)

[How Natural Selection Works](#)

[Fun Facts About Fungi](#)

## Interdisciplinary (ID) Biology II

Like the regular Biology II (BIO 1201) course, the ID-Biology II (BIO1201ID) course is a continuation of Biology I (BIO1101), focusing on the basic description of living organisms ranging from Prokaryotes to higher Eukaryotes. Topics covered also include animal organization and description of their main organ systems, with a particular attention to how such systems work in humans. Throughout the curriculum, [interdisciplinary topics](#), centered around 4 major themes, “History & Scientific Discoveries”, “Biology & Industry”, “Disease Impact & Public Health Policies”, “Science & Race, Gender & Social Status”, will be discussed, providing social, historical and economical contexts and connections to biology.

Students’ performance on this course will be evaluated as follows:

1. Lecture: 40% of final grade, based on 4 exams and attendance/participation quizzes
2. Lab: 40% of final grade, based on 5 quizzes, a fetal pig and final practical, and attendance/participation lab activities
3. [Term paper](#) (group or individual): 20% of the final grade.
4. **Students must pass (*i.e.* score 60 or above) both components, lab and lecture, to pass the course.**

The detailed **Interdisciplinary Biology II syllabus** can be viewed and downloaded [here](#).

Upon completion and passing the course, students get both science and ID credits. For more information on City Tech ID classes click [here](#).

## ID Topics Schedule

Interdisciplinary discussions are scheduled throughout the semester. They will take place before, during or after the Biology II lectures and each exam will have several questions on the ID topics covered before.

Below is the schedule of ID topics with links to the material used in class. Students are expected to **go over the material before coming to class** in order to follow and contribute to the in-class discussions.

	ID Topic	ID Material
<p><b>Discussion 1</b>  <a href="#">Slides</a></p>	<p><b>History &amp; Scientific Discoveries:</b></p> <p>Evolution vs Politics or Religion</p>	<p><b>Discussion on Linnaeus &amp; Kuhn and paradigmatic shifts; Darwin's Life</b></p> <ul style="list-style-type: none"> <li>· <a href="#">Excerpt</a> from <i>The Structure of Scientific Revolutions</i> by T. Kuhn · BBC <a href="#">documentary</a> on Darwin's life and struggles</li> </ul>
<p><b>Discussion 2</b>  <a href="#">Slides</a></p>	<p><b>History &amp; Scientific Discoveries:</b></p> <p>Beliefs &amp; Proofs</p>	<p><b>Discussion on the <a href="#">Miasma</a> and <a href="#">Germ Theory</a> of Disease</b></p>

<p><b>Discussion 3</b></p> <p><a href="#">Slides</a></p>	<p><b>Biology &amp; Industry:</b></p> <p>Ethnobotany &amp; Pharmaceuticals</p>	<p><b>Discussion on Patents and <a href="#">Neem Oil</a></b></p> <ul style="list-style-type: none"> <li>· <b><a href="#">“Granting Community Theft.”</a></b> By J. Vidal in <i>The Guardian</i> 9/8/2003</li> <li>· <b>Major Legal Case:</b> <a href="#">ASSOCIATION FOR MOLECULAR PATHOLOGY v. MYRIAD GENETICS, INC</a></li> </ul>
<p><b>Discussion 4</b></p> <p><a href="#">Slides</a></p>	<p><b>Science &amp; Race, Gender, Social Status:</b></p> <p>Women in Science</p>	<p><b>Discussion on Women in Science:</b></p> <ul style="list-style-type: none"> <li>· <b>Female Biologists Biographies:</b></li> <li>– <a href="#">Rosalind Franklin.</a></li> <li>– <a href="#">Rachel Carson.</a></li> <li>– <a href="#">Barbara McClintock.</a></li> </ul>

<p><b>Discussion 5</b></p> <p><a href="#">Slides</a></p>	<p><b>Science &amp; Race, Gender, Social Status:</b></p> <p>Race and Research</p>	<p>Discussion on the <a href="#">HeLa cells history</a></p> <ul style="list-style-type: none"><li>· Excerpts from <i>The Immortal life of <a href="#">Henrietta Lacks</a></i> by R. Skloots</li><li>· Podcast: <a href="#">How HeLa Cells Work</a></li></ul>
<p><b>Discussion 6</b></p> <p><a href="#">Slides</a></p>	<p><b>History &amp; Scientific Discoveries:</b></p> <p>Failures and Luck</p>	<p>Discussion on Blood Groups</p> <ul style="list-style-type: none"><li>· Blood groups and human migrations</li><li>· Podcast: <a href="#">What's the deal with Blood Types</a></li></ul>

<p><b>Discussion 7</b></p> <p><a href="#">Slides</a></p>	<p><b>Diseases Impact &amp; Public Health Policies:</b></p> <p>Politics vs Science</p>	<p>Discussion centered on articles on Ebola and Emergency <a href="#">Public Health Policies</a></p> <ul style="list-style-type: none"> <li>· <a href="#">CDC website</a> visit</li> <li>· <a href="#">Ebola article</a> from The Freeman Spogli Institute (FSI)</li> </ul>
<p><b>Discussion 8</b></p> <p><a href="#">Slides</a></p>	<p><b>Biases in Science and Medecine</b></p> <p>Race and Research</p>	<p>Discussion on biases in Experimental Designs and Translational Medicine</p> <ul style="list-style-type: none"> <li>· Articles/docs on biases in <a href="#">translational medicine</a> and <a href="#">care</a></li> </ul>
<p><b>Discussion 9</b></p> <p><a href="#">Slides</a></p>	<p><b>Diseases Impact &amp; Public Health Policies: Lobbies</b></p> <p>Politics vs Health</p>	<p>Discussion: Bloomberg &amp; soda ban</p> <ul style="list-style-type: none"> <li>· Public Health Law Center <a href="#">doc</a>: Taxing Sugar Drinks: A Tool for Obesity Prevention, Cost Saving &amp; Health Improvement</li> </ul>

<p><b>Discussion 10</b></p> <p><a href="#">Slides</a></p>	<p><b>Biases in Science and Medecine</b></p> <p><b>Race and Research</b></p>	<p><b>Discussion: Tuskegee Syphilis Experiments</b></p> <p>• <b>Website:</b> <a href="#">U.S. Public Health Service Syphilis Study at Tuskegee</a></p>
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## **ID Essays**

### **Description of the end of semester Interdisciplinary Paper (individual or group project)**

Write a 1-2-pages essay describing how biology intersects with social aspects of human life. You can think about this paper in terms of gender, race, public policy, and business or corporate influence.

Select two of the following issues and tie them together with biology in your papers.

- Public Policy
- Race
- Gender
- Business or corporate influence
- History & Scientific Discoveries (descriptive paper)

The best papers will seamlessly integrate the issues you choose with biology in cohesive paper. In other words, you are relating these different issues to each other in a seamless manner. Your paper should not read like two or three separate papers addressing each issue.

### **Style and Format**

2 pages

Typed double spaced

12 pt Times New Roman font or equivalent

1 inch margins

Your paper must have a title (the wittier the better)

Name and section # at the top of page 1 or on the title page

Use either footnotes or parenthetical citations to cite your sources

Include all references at the end of your paper and present them in a consistent manner (same format for all)

### **What is an Essay?**

An essay is an argumentative paper that expresses the author's point of view on a specific topic. Essays are usually both analytical as the author is judging or critiquing something, and also descriptive as the author needs to use facts to prove the accuracy of their opinion.

## **Structure**

Introduction – A good introduction will contain (1) a catch, (2) a thesis statement, and (3) will give an indication of how the rest of the paper will be structured.

Body – This is the portion of the paper where the author makes their argument. Here the author presents information that proves the thesis of the paper. The paragraphs in the body should flow into each other.

Conclusion – The conclusion of an essay should explain how the author proved their point. In this way the conclusion is not simply a restatement of the thesis, but a blending the thesis and the body. Tell the reader how the details you discussed in the body proved the thesis in your introduction.

## **What is a Descriptive Paper?**

A descriptive paper is a paper that paints a picture of a certain object, event, situation, or issue. These types of papers leave the reader with a clear impression of something they did not know about before. A high quality descriptive paper does not only present facts, but also ties those facts to a larger theme. Better papers will connect the facts of the biological research you describe to a theme present in the relationship between biology and society.

## **Structure**

Introduction – A good introduction will contain (1) a catch, (2) a brief description of the topic, and (3) will connect that topic to a larger theme.

Body – This is the portion of the paper where the author presents descriptive information that paints the picture you are trying to create. The paragraphs in the body should flow into each other.

Conclusion – The conclusion of a descriptive paper should briefly capture the most important part of the description and link it to the theme of the paper. In this way the conclusion is not simply a summary, but a blending the information and the theme. Tell the reader how the details you discussed in the body highlight the theme of the paper. Leave the reader with a clear impression of why the topic is important.

# Essay Assessment Rubrics

	1	2	3	4	5
Timeliness					
Unique, descriptive title					
Essay begins with a concise introduction					
Thesis statement is bold faced and specific					
Author(s) support claim(s) with logic and evidence					
Essay digs beneath the surface of the topic					
Author(s) end with a concise conclusion					
Citations/resources cited properly					
Grammar & Spelling					
Format & Presentation					
Notes					

1	Unsatisfactory
2	Satisfactory
3	Good
4	Very Good
5	Excellent

## ID Papers Published in City Tech Writer

- [Queer Planet](#) by Candice Powell and Olga Soloveychik
- [Breast is Best](#) by Candice Powell