

Biology 5 (Biol 5) Human Biology

<i>Semester: Spring 2023</i> <i>Reedley Community College</i>	
Lecture Instructor: Dr. Christopher Emerling Email: christopher.emerling@reedleycollege.edu	<i>Class No. 50007</i> Lecture: Online Asynchronous Lab: W 3–5:50 pm LFS 17
Office Hours: M 11–11:50 am, T 10:30 am–1 pm, W 3:20–4:10 pm, LFS 13 Online Office hours: By appointment only Zoom ID: 990 6009 7271 Phone: extension 3134 <i>Class Dates: 1/9/23–5/19/23</i>	

Catalog Description:

This course is an introductory human biology course that examines science and societal issues. This course emphasizes the structure of the human body and the functional interrelationships of the body's systems: integument, circulatory, digestive, respiratory, urinary, skeletal, muscular, nervous, endocrine, reproductive, and genetics

Prerequisites:

None, eligibility for ENGL 125, 126, or 153; or ESL 67 and 68 recommended. This is an introductory course using the principles approach to general biology which satisfies the general science requirements focused on students entering health or science careers. It is a prerequisite for all advanced science courses (Human Anatomy, 20; Human Physiology, 22; Human Anatomy and Physiology, 24; Microbiology, 31).

Student Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. demonstrate knowledge regarding the process of science and society, microscopy, and the cell
2. identify human body levels of organization and homeostatic mechanisms
3. demonstrate knowledge of the chemical basis of life
4. evaluate scientific literature and current biological achievements
5. apply the principles of genetics to humans and understand the outcome of normal and abnormal DNA
6. describe the basic cellular, molecular and gross anatomy of tissues, organs and organ systems and explain the basic function of those tissues and organs that relate to the integument, circulation, digestive, respiratory, urinary, skeletal, muscular, nervous, endocrine, reproduction, genetics, and evolution
7. identify and recall fundamental structures from anatomical models and slides using correct nomenclature and language

Course Objectives:

In the process of completing this course, students will:

1. read, analyze, evaluate, and discuss scientific method, the cell, and human levels of organization
2. learn the periodic table of the elements, the chemistry of the carbon atom, and the chemical structure of humans
3. analyze and interpret data on the homeostatic mechanisms within the human body
4. learn the cell's structure, function, and the cell cycle in relation to the multicellular human body
5. observe and document the structure and function of the human body by examining human body systems including: circulatory, digestive, respiratory, urinary, skeletal, muscular, nervous, sensory, endocrine, and reproduction

6. review classical and molecular genetics and learn the processes of replication, transcription, and translation
7. perform experiments, observe, and record data
8. study evolution
9. discuss social issues between humans and science
10. develop a vocabulary to effectively communicate information related to anatomy and physiology.
11. summarize the levels of structural organization important to human anatomy

TENTATIVE LECTURE SCHEDULE

Week	Lecture	Readings	Assignments
Week 1: 1/9–1/13	Course Intro Unit 1. What is Science? Science limitations	Ch 1.1 The Science of Biology, 1.2 Themes and Concepts of Biology	
Week 2: 1/16–1/20	Unit 1. Science limitations cont'd, First Scientific Experiment Unit 1. How Scientists Minimize Bias		
Week 3: 1/23–1/27	Unit 1. How Scientists Minimize Bias cont'd Unit 1. Scientific Community in Action		
Week 4: 1/30–2/3	Unit 2. Atoms & Molecules	Ch 2.1 Atoms, Isotopes, Ions, and Molecules: The Building Blocks, 2.2 Water, 2.3 Carbon	Unit 1 Exam
Week 5: 2/6–2/10	Unit 2. Organic molecules, Lipids, Carbs Unit 2. Enzymes, Proteins, Nucleic Acids	Ch. 3.1 Synthesis of Biological Macromolecules, 3.2 Carbohydrates, 3.3 Lipids Ch. 6.5 Enzymes, 3.4 Proteins, 3.5 Nucleic Acids	Choose Paper Topic
Week 6: 2/13–2/17	Unit 2. How DNA encodes traits, Transcription & Translation Unit 2. How DNA encodes traits, Transcription & Translation	Ch. 14.1 Historical Basis of Modern Understanding, 14.2 DNA Structure and Sequencing Ch. 15.1 The Genetic Code, 15.3 Eukaryotic Transcription, 15.5 Ribosomes and Protein Synthesis	
Week 7: 2/20–2/24	Unit 3. Metabolism	Ch. 6.1 Energy and Metabolism, 6.4 ATP: Adenosine Triphosphate, 7.1 Energy in Living Systems, 7.2 Glycolysis, 7.5 Metabolism without Oxygen	Unit 2 Exam

Week 8: 2/27–3/3	Unit 3. How Cells Move Substances, Homeostasis, Response to Stimuli, Reproduction Unit 3. Adaptation, Viruses	Ch. 5.1 Components and Structure (of Plasma Membranes), 5.2 Passive Transport, 5.3 Active Transport, 33.3 Homeostasis Ch. 21.1 Viral Evolution, Morphology, and Classification, 21.1 Virus Infections and Hosts	Choose Research Sources
Week 9: 3/6–3/10	Unit 4. Eukaryotic cell structure, Mitochondria & Chloroplasts Unit 5. Multicellularity, Mitosis	Ch. 4.1 Studying Cells, 4.2 Prokaryotic Cells, 4.3 Eukaryotic Cells, 4.4 The Endomembrane System and Proteins, 4.5 The Cytoskeleton, 5.4 Bulk Transport, 7.3 Oxidation of Pyruvate and the Citric Acid Cycle, 7.4 Oxidative Phosphorylation, 8.1 Overview of Photosynthesis, 8.2 The Light-Dependent Reactions of Photosynthesis, 8.3 Using Light Energy to Make Organic Molecules, 23.1 Eukaryotic Origins Ch. 10.1 Cell Division, 10.2 The Cell Cycle, 14.4 DNA Replication in Eukaryotes, 10.4 Cancer and the Cell Cycle, 10.5 Prokaryotic Cell Division, 16.1 Regulation of Gene Expression	Unit 3 Exam
Week 10: 3/13–3/17	Unit 5. Meiosis Unit 5. Genetics	Ch. 11.1 The Process of Meiosis, 11.2 Sexual Reproduction Ch. 12.1 Mendel's Experiments and the Laws of Probability, 12.2 Characteristics and Traits, 12.3 Laws of Inheritance	Unit 4 Exam
Week 11: 3/20–3/24	Unit 5. Genetics cont'd Unit 6. Evolution & DNA	Ch 13.2 Chromosomal Basis of Inherited Disorders, 17.1 Biotechnology Ch. 18.1 Understanding Evolution, 18.2 Formation of New Species	Paper Outline Due
Week 12: 3/27–3/31	Unit 6. Evolution & Shared Traits	Ch. 19.1 Population Evolution, 19.2 Population Genetics, 19.3 Adaptive Evolution Ch. 20.1 Organizing Life on Earth, 20.2 Determining Evolutionary Relationships	Unit 5 Exams

Spring Break: 4/3–4/7	NO CLASS		
Week 13: 4/10–4/14	Unit 7. Human Special Senses Unit 7. Nervous, Muscular, Skeletal & Integumentary Systems	Ch. 36.1 Sensory Processes, 36.3 Taste and Smell, 36.4 Hearing and Vestibular Sensation, 36.5 Vision Ch. 35.1 Neurons and Glial Cells, 35.2 How Neurons Communicate, 35.3 The Central Nervous System, 35.4 The Peripheral Nervous System, 38.2 Bone, 38.3 Joints and Skeletal Movement, 38.4 Muscle Contraction and Locomotion, 36.2 Somatosensation	Unit 6 Exam
Week 14: 4/17–4/21	Unit 7. Digestive System Unit 7. Circulatory, Respiratory, Urinary Systems	Ch. 34.1 Digestive Systems, 34.2 Nutrition and Energy Production, 34.3 Digestive System Processes Ch. 40.1 Overview of the Circulatory System, 40.2 Components of the Blood, 40.3 Mammalian Heart and Blood Vessels, 39.1 Systems of Gas Exchange, 39.3 Breathing, 39.4 Transport of Gases in Human Bodily Fluids, 41.2 The Kidneys and Osmoregulatory Organs, 41.4 Nitrogenous Wastes	Rough Draft Due
Week 15: 4/24–4/28	Unit 7. Immune, Lymphatic & Endocrine Systems Unit 7. Reproductive System	Ch. 42.1 Innate Immune Response, 42.2 Adaptive Immune Response, 42.3 Antibodies, 37.1 Types of Hormones, 37.2 How Hormones Work, 37.4 Regulation of Body Processes, 37.5 Endocrine Glands Ch. 43.3 Human Reproductive Anatomy and Gametogenesis, 43.4 Hormonal Control of Human Reproduction, 43.5 Human Pregnancy and Birth, 43.6 Fertilization and Early Embryonic Development	Paper Peer Reviews Due

Week 16: 5/1–5/5	Unit 8. Population, Community Ecology	Ch. 44.1 The Scope of Ecology, 45.1 Population Demography, 45.2 Life Histories and Natural Selection, 45.3 Environmental Limits to Population Growth, 45.4 Population Dynamics and Regulation, 45.5 Human Population Growth Ch. 45.6 Community Ecology, 46.2 Energy Flow through Ecosystems	Unit 7 Exam
Week 17: 5/8–5/12	Unit 8. Ecosystem & Global Ecology, Conservation Biology	Ch. 46.1 Ecology of Ecosystems, 46.3 Biogeochemical Cycles, 44.5 Climate and the Effects of Global Climate Change Ch. 47.1 The Biodiversity Crisis, 47.2 The Importance of Biodiversity to Human Life, 47.3 Threats to Biodiversity	Final Paper Due
Week 18: 5/15–5/19	Finals Week		Unit 8 Exam Make-up Exams

Textbook

- There is a *free* textbook available to read and/or download online at <https://openstax.org/details/books/biology-2e> Chapter readings listed in the Tentative Lecture Schedule above.

Technology Requirements

- All students must have access to a device with internet access to that allows students to retrieve and complete assignments and obtain learning materials through Canvas.
- Check Canvas and your Reedley College email accounts regularly (multiple times per week) for announcements.
- If you need access to technology in order to complete your course, please make sure to contact the [Information Center](#) to check out a laptop or other needed technology.

ATTENDANCE AND DROP/ADD POLICY

Attendance is expected of all students every week in this class. Attendance online is counted by completing the attendance assignment for the week (typically a discussion). In order to avoid being dropped from this class, you must attend the first day of lecture and/or lab, unless you contact me ahead of time to provide a legitimate excuse for your absence.

Beyond this, I reserve the right to drop students (both enrolled and waitlisted) based on the following policy:

1. Student does not attend the second and/or third weeks of class
2. Student does not respond to contact efforts from the professor after missing the second week of class

ASSESSMENTS

Category	Assignment Description	Points
Lecture	Lecture Exams	50% of grade
	Term Paper	10% of grade
Lab	Labs Activities	10% of grade
	Lab Practical Exams	25% of grade
	Case Study	5% of grade

The final course grade is based on a non-traditional scale:

Percent Range	Grade
85-100	A
70-84.99	B
50-69.99	C
30-49.99	D
Less than 30	F

Course grades are non-negotiable. Instructor reserves the right to adjust individual tests and/or assignments should it be to the benefit to the entire class. Final grades may be adjusted to the benefit of the students, should there be a justifiable reason for doing so. I do not round up grades to the next letter grade given that there are multiple opportunities to boost grades during the course.

LECTURE ASSESSMENTS

Lecture exams These may be any combination of multiple-choice, true-false, matching, short-answer and other types of questions based on topics discussed in each lecture, and highlighted in the study guides. Questions may be based on words only or may include images. Please note that I require spelling and grammar to be as close to accurate as reasonably possible; spelling must be at least phonetically approximate, such that it is unambiguous what your answer is. If I can't clearly understand it, I can't give you points for it.

Term Paper You will be writing a paper on human disease / disorder of your choice, and your grade will depend on the final product of your paper. However, we will be gradually working on the paper throughout the semester by coming up with a topic, finding sources, writing an outline, completing a rough draft, and giving feedback to your peers on their drafts, culminating in a final version of the paper.

LAB ASSESSMENTS

Lab Activities There will be weekly activities during the lab portion of this course, guided by lab handouts. Your lab instructor will inform you as to whether you will be printing out the labs prior to class or can bring a digital copy. Your lab instructor will also inform you as to whether you will be submitting the lab activities for points, or whether they will simply be learning guides.

Lab Practical Exams There will be exams specifically based on the lab materials, known as lab practicals. These will be based on information covered during the lab activities and in the lab handouts. They frequently will include visual components, and may involve stations in which you will have to answer questions based on models / specimens / items physically placed in front of you.

Case Study The lab will also include a Case Study assignment. The implementation will vary based on your lab instructor, but it will essentially involve applying knowledge gained in class to diagnose diseases / disorders. It will involve a presentation component and may be group-based. Your lab instructor will inform you as to how it will be executed.

EXTRA CREDIT

I do not provide extra credit opportunities in a traditional sense. My belief is that the goal is for you to learn and complete what we are doing in class, not something beyond the scope of the normal content. However, I do believe strongly in providing the chance to learn from your mistakes and being able to master content on subsequent attempts. As such, during finals week, you will have the opportunity to 'retake' several of the exams that you had previously taken. They will not be identical to the earlier versions of the exams, but rather will include similar content. The grades on any exams you retake will replace your original exam score, whether it is higher or lower.

LATE ASSIGNMENTS AND EXAM MAKE-UP POLICY

The only assignment for the lecture portion of the course with a due date is the final paper. This will be due in week 17, and given that you have 17 weeks to complete it, you likely will not receive an opportunity to submit it late. Possible exceptions may include if the student falls victim to extreme, **documentable** circumstances on the days leading up to the submission of the paper. The same applies for lecture exams, but only up to a certain point. If a student misses an exam, they will have finals week to make up some of the exams that are missed. For lab practicals, this will be up to the discretion of your lab instructor given the usual difficulty associated with setting up lab practicals.

COMMUNICATION POLICY

The best way to get ahold of me is to send me a direct message through Canvas. The second best way is to email me at christopher.emerling@reedleycollege.edu. I regularly check announcements for comments and replies, so this is also a viable option for communicating about specific content. Don't know how to send a message in canvas? Check out this quick guide [How to send a message in canvas](#).

Please allow a 24hr response time on business days (Mon-Fri). I often reply on weekends as well, but given that I try to give myself breaks from work on the weekends, please do not assume that I will reply on non-business days. I tend to be very prompt with my responses, however, there are times when it may take me up to 24hrs or more to respond. As a rule, I try to prioritize Canvas messages and e-mails that require an immediate response over those that are less urgent, so please indicate if the message is urgent. If you do not receive a response from me after 24hrs then please double check that you have contacted me correctly (e.g., was it the correct email address?), and then try again with both Canvas messages and e-mail. Emailing and messaging can be used 24/7. If I expect to be away from my computer for any significant length of time, you will be notified in advance.

OFFICE HOURS

Office hours are a great chance to meet one-on-one with your instructors, so you can get extra clarification on concepts that you have found difficult, practical advice on studying, additional context for completing assignments, and otherwise general support in the course. You can stop by my office directly during these hours, but if you cannot make it in person, I can jump onto Zoom and chat with you. If you wish to meet on Zoom, please contact me as soon as possible to schedule it so I can ensure that I'm available. My office hours, office number and my Zoom ID are posted on the first page of this syllabus. Office hours may not be posted in the first week but will be posted as soon as I have all the information I need to schedule them.

CANVAS

All course content will be located on Canvas. Please turn on e-mail notifications for Announcements in Canvas or check them regularly. You can find them under the tab "Announcements" and see the three most recent announcements at the top of the course page.

STARFISH

I will be using a service called “Starfish” throughout the semester as a way to provide you with progress reports. Of course, you are able to view your grade any time on Canvas, but this gives me a way to acknowledge your success or encourage you if you’re struggling during the class. If you’re having a particularly difficult time, enough Starfish alerts from your instructors can trigger your counselor to contact you and help you to figure out the best plan of action for the course (i.e., whether to drop, get tutoring, change majors, etc.). Check your emails periodically in case you receive any Starfish alerts or “kudos” from myself or other instructors.

DROPPING THE COURSE

It is the student’s responsibility to drop themselves from the course, not the professor, though the professor may drop you under certain conditions (see above). Here are some important dates:

January 20th: last day to drop for full refund

January 27th: last day to drop to avoid a “W”; last day to Add in person

March 10th: last day to drop (letter grades assigned after this date)

TUTORING

We may have a tutor embedded in our course this semester. The tutors are former, successful students who understand the material well, know how to study for the class and can help you succeed. I highly recommend that most students receive tutoring, even students who tend to do reasonably well. Students that are getting tutored are not ‘less than’ others who don’t go to tutors. I received tutoring when I was in college (calculus and physics), and it helped me enormously to succeed in those classes.

COLLEGE POLICIES

The college has several policies that you will be expected to adhere to in my course. The policies on Disabled Students Programs and Services, Student Conduct Standards, Academic Dishonesty, and the Computer/Network Equipment Use Policy, portions of which are below, can all be found in the Reedley College Catalog.

Academic Dishonesty: “Students at Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share the responsibility to ensure that this education is honestly attained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences.” Reedley College Catalog. In an online classroom, academic dishonesty can manifest in (1) copying other students’ work, (2) sharing answers on exams and much more. When you cheat, not only do you defraud the college, but you devalue your education and the education of others by weakening the integrity of our institution. Furthermore, in my experience, cheaters almost never succeed at their career goals, so don’t ruin your opportunity to learn!

Please see the Student Conduct Standards and Grievance Procedures Handbook available in the Vice-President of Student Services office, or at the links listed below.

Student Conduct Standards: <https://www.reedleycollege.edu/about/about-us/policies-and-procedures/student%20conduct%20standards.html>

Grievance Procedures: <https://www.reedleycollege.edu/about/about-us/policies-and-procedures/grievance-procedures.html>

Academic Accommodations: If you have a verified need for an academic accommodation or materials in alternate media (e.g. Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the instructor as soon as possible so he can help determine how to best accommodate you. If you have not already, you should contact Disabled Student Programs & Services (DSP&S) as soon as possible so they can begin to assign your accommodations.

DIVERSITY STATEMENT

Diversity is not only a fact of life but, to me, it is one of life's most beautiful traits and greatest strengths. My goal is for all students from all backgrounds and perspectives to be able to succeed, thrive and feel valued in my courses. My valuing of diversity encompasses gender, sexual identity, disability and health status, age, socioeconomic status, religion, philosophy, ethnicity, race, and culture. If you believe that my course and/or my instructional techniques are in any way invalidating your group identity or are in some way hampering your ability to succeed, please let me know so that I can address any concerns you have.

FINAL NOTES FOR LECTURE PORTION OF SYLLABUS

Every syllabus represents the intended roadmap and structure of the course, but due to unforeseen events and/or feedback during the semester, adjustments may be necessary. This is a reminder that some details described in this syllabus are potentially subject to change at the discretion of the instructor, but I will inform you as promptly and clearly as possible as to the reasoning for any changes.

Student Learning Outcomes are statements about what the discipline faculty hope you will be able to do at the end of the course. This is NOT a guarantee: the ultimate responsibility for whether you will be able to do these things lies with you, the student. In addition, the assessment of Student Learning Outcomes is done by the department in order to evaluate the program as a whole, and not to evaluate individual faculty performance.

Lab Component

This course, being a 4-unit course, has a required laboratory component attached. Please make note that lab portion of the class is NOT taught by the same person teaching the lecture component. When it comes to communication with your instructors, please make sure to communicate with the instructor best suited for your question or concern. Any questions about the labs, lab exams, and case study should be sent to the lab instructor (contact information below) and any questions regarding adds/drops, lectures, lecture exams, other projects, and final grades should be sent to lecture instructor. Either instructor will respond to you to the best of their ability, but for the fastest solution to a concern, please use these communication instructions.

Contact Information:

Lab Instructor: Kevin Helwick

Email: kevin.helwick@reedleycollege.edu

When contacting me: The easiest way to reach me is by email! Please allow 24 hours as a response time. If I don't respond by then, feel free to message me again (politely!)

Required Materials:

You must have an electronic device such as a laptop or tablet, if you don't, a laptop will be provided to you during class time*

All necessary lab handouts will be available for free online in a PDF format or are available for purchase at the campus bookstore. Students may either electronically write on their handouts or print out the PDFs and handwrite assignments. If a student chooses to print and handwrite their lab assignments, they **MUST** follow the following instructions:

- Handwriting must be neat (if I can't read it, I can't grade it!)
- Assignments must be properly scanned (no cell phone photos!)

For scanning assignments, either use a full scanner connected to a computer OR you may use one of many scanning apps made for phone and tablet devices, such as Genius Scan and Cam Scanner. These apps use your phone's camera to create a better, clearer image without the background noise.

Lab-Specific Policies:

1. The general setup of labs for this course is that all assignments, exams, and projects will be due by Friday at 11:59 PM via Canvas Submission, no exceptions. **Since you have an extended number of days to turn the assignments in, NO late work will be accepted unless there is an extenuating circumstance!**
2. Safe lab practices must always be followed.

Exams:

The lab practicals are different from lecture exams, and will require you to identify structures from images, remember procedures, and more. These practicals are based off of the lab activities and my PowerPoints only, although studying the lecture material will help reinforce most of the concepts covered in lab.

Late Assignments/Absence policy*:

Lab Practical **MUST** be taken on the day they are scheduled unless there is an extreme, documented reason why a student cannot complete the practical on the given day. If there is an extreme documented reason for missing a practical you **MUST** make it up during one of my other sections during that week. You must coordinate this with me **prior** to making it up!

As for lab activities, you will have an extended amount of time to turn them in. All assignments will be due by Friday at 11:59pm giving you extra time to submit them. Because of this, no late work will be accepted unless you have a documented reason.

If you do not show up to lab and don't notify me you will not be given points for the lab. If you absolutely must miss lab due to an extenuating circumstance please email me and we will figure out an alternative assignment.

Case Study:

As required by the department, students will complete a case study group project. Students will work in teams of 3-4 people. This is a major project and is **required** to pass the class. You will be given a medical scenario in which your team must strategize and figure out what disease your patient has given the background I provide, how you would treat the patient and come up with a plan of action for long-term treatment (if needed). You will create a powerpoint presentation with background information on the topic you are given that **must** be 15 minutes minimum! Be prepared to answer questions from myself and the class.

Tentative Schedule:

Week of 1/09	Microscopes & Safety Lab
Week of 1/16 (MLK Week)	Biological Macromolecules Lab
Week of 1/23	Cells Structure and Function lab
Week of 1/30	Lab practical one
Week of 2/06	DNA Structure and Function lab (Case study assigned)*
Week of 2/13	Mitosis and Meiosis Lab
Week of 2/20 (Presidents Day)	Genetics lab

Week of 2/27	Histology Lab
Week of 3/06	Cardiovascular System Lab
Week of 3/13	Homeostasis and Maintenance Labs
Week of 3/20	Lab practical 2
Week of 3/27	Musculoskeletal system lab
Week of 4/3 (Spring Recess No class)	No Labs
Week of 4/10	Nervous System and Senses Lab (Case study outline due)
Week of 4/17	Endocrine and Reproductive Systems lab
Week of 4/24	Virtual Dissection Lab
Week of 5/1	Human Evolution Lab
Week of 5/08	Lab Practical 3/ Case Study Presentations
Week of 5/15 Finals Week	No Labs

I reserve all rights to change and update this syllabus as needed and any changes or updates will immediately be announced to the class.