

# Biology 5 (Biol 5) Human Biology

<i>Semester: Spring 2024</i>		<i>Reedley Community College</i>
Lecture Instructor: Dr. Chris Emerling Email: christopher.emerling@reedleycollege.edu		<i>Class No. 50086</i> Lecture: Online Asynchronous Lab: Fri 9–11:50 am LFS 17
Office Hours, Life Sciences (LFS) 13: MW 3:20–4:10 pm, TTh 11–11:50 am Online Office hours: Fri 10–10:50 am Zoom ID: 990 6009 7271 Phone: extension 3134		<i>Class Dates: 1/8/24–5/17/24</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 SCHEDULE

Week	Lecture	Readings	Assignments
Week 1: 1/8– 1/12	Course Intro  Unit 1. What is Science? Science limitations	1.2 The Process of Science	Lab 1: Science & Microscopy
Week 2: 1/15– 1/19  <b>No class Monday (MLK day)</b>	Unit 1. Science limitations cont'd, First Scientific Experiment  Unit 1. How Scientists Minimize Bias		Lab 2: Biological Macromolecules
Week 3: 1/22– 1/26	Unit 1. How Scientists Minimize Bias cont'd  Unit 1. Scientific Community in Action		Lab 3: Cell Structure & Function
Week 4: 1/29– 2/2	Unit 2. Atoms & Molecules	2.1 The Building Blocks of Molecules; 2.2 Water	Lab 4: DNA Structure and Function
Week 5: 2/5– 2/9	Unit 2. Organic molecules, Lipids, Carbs  Unit 2. Enzymes, Proteins, Nucleic Acids	2.3 Biological Molecules	<b>Lab Exam 1</b>  <b>Lecture Exam 1</b>
Week 6: 2/12– 2/16  <b>No class Friday (Lincoln Day)</b>	Unit 2. How DNA encodes traits, Transcription & Translation  Unit 2. How DNA encodes traits, Transcription & Translation	9.1 The Structure of DNA; 9.3 Transcription; 9.4 Translation  10.1 Cloning and Genetic Engineering; 10.2 Biotechnology in Medicine and Agriculture; 10.3 Genomics and Proteomics	Lab 5. Mitosis & Meiosis

<p>Week 7: 2/19–2/23</p> <p><b>No class Monday (Washington Day)</b></p>	<p>Unit 3. Metabolism</p> <p>Unit 3. How Cells Move Substances, Homeostasis, Response to Stimuli, Reproduction</p>	<p>1.1 Themes and Concepts of Biology</p> <p>4.1 Energy and Metabolism; 4.2 Glycolysis; 4.4 Fermentation</p>	<p>Lab 6. Genetics &amp; Trait Inheritance</p>
<p>Week 8: 2/26–3/1</p>	<p>Unit 3. Adaptation, Viruses</p> <p>Unit 4. Eukaryotic cell structure, Mitochondria &amp; Chloroplasts</p>	<p>3.4 The Cell Membrane; 3.5 Passive Transport; 3.6 Active Transport</p> <p>17.1 Viruses</p>	<p>Lab 7. Histology &amp; Integumentary System</p>
<p>Week 9: 3/4–3/8</p>	<p>Unit 5. Multicellularity, Mitosis</p> <p>Unit 5. Meiosis</p>	<p>3.1 How Cells Are Studied; 3.2 Comparing Prokaryotic and Eukaryotic Cells; 3.3 Eukaryotic Cells; 4.3 Citric Acid Cycle and Oxidative Phosphorylation; 5.1 Overview of Photosynthesis; 13.2 Eukaryotic Origins</p> <p>6.1 The Genome; 6.2 The Cell Cycle; 6.3 Cancer and the Cell Cycle; 6.4 Prokaryotic Cell Division</p>	<p>Lab 8. Skeletal &amp; Muscular Systems</p>
<p>Week 10: 3/11–3/15</p>	<p>Unit 5. Genetics</p> <p>Unit 5. Genetics cont'd</p>	<p>7.1 Sexual Reproduction; 7.2 Meiosis; 7.3 Variations in Meiosis</p> <p>8.1 Mendel's Experiments; 8.2 Laws of Inheritance; 8.3 Extensions of the Laws of Inheritance</p>	<p><b>Lab Exam 2</b></p> <p><b>Lecture Exam 2</b></p>
<p>Week 11: 3/18–3/22</p>	<p>Unit 6. Intro to Human Organ Systems</p> <p>Unit 6. Human Special Senses</p>		<p>Lab 9. Digestive, Respiratory &amp; Urinary Systems</p>
<p><b>SPRING BREAK: 3/25–3/29</b></p>	<p><b>NO CLASS</b></p>		<p><b>NO CLASS</b></p>
<p>Week 12: 4/1–4/5</p>	<p>Unit 6. Nervous, Muscular, Skeletal &amp; Integumentary Systems</p>	<p>16.6 Nervous System; 16.5 Musculoskeletal System</p>	<p>Lab 10. Nervous System</p>

Week 13: 4/8–4/12	Unit 6. Digestive System  Unit 6. Circulatory, Respiratory, Urinary Systems	16.2 Digestive System  16.3 Circulatory and Respiratory Systems; 16.1 Homeostasis and Osmoregulation	Lab 11. Cardiovascular System
Week 14: 4/15–4/19	Unit 6. Immune, Lymphatic & Endocrine Systems  Unit 6. Reproductive System	17.2 Innate Immunity; 17.3 Adaptive Immunity; 16.4 Endocrine System  18.1 How Animals Reproduce; 18.2 Development and Organogenesis; 18.3 Human Reproduction	Lab 12. Endocrine & Reproductive Systems
Week 15: 4/22–4/26	Unit 7. Evolution & DNA  Unit 7. Evolution & Shared Traits	11.1 Discovering How Populations Change; 11.2 Mechanisms of Evolution; 11.3 Evidence of Evolution  12.2 Determining Evolutionary Relationships; 11.4 Speciation; 11.5 Common Misconceptions about Evolution	<b>Lab Exam 3</b>  <b>Lecture Exam 3</b>
Week 16: 4/29–5/3	Unit 8. Population, Community Ecology	19.1 Population Demographics and Dynamics; 19.2 Population Growth and Regulation  19.3 The Human Population; 19.4 Community Ecology	Lab 13. Dissection
Week 17: 5/6–5/10	Unit 8. Ecosystem & Global Ecology, Conservation Biology	20.1 Waterford's Energy Flow through Ecosystems; 20.2 Biogeochemical Cycles  21.1 Importance of Biodiversity; 21.2 Threats to Biodiversity; 21.3 Preserving Biodiversity	Lab 14. Human Evolution
Week 18: 5/13–5/17	<b>Finals Week</b>		<b>Final Exam</b>

## Textbook

- There is a *free* textbook available to read and/or download online at <https://openstax.org/details/books/concepts-biology> Chapter readings listed in the Tentative 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
	Scientific Paper Assignment	5% of grade
Lab	Labs Activities	10% of grade
	Lab Practical Exams	35% 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.

**Peer-Reviewed Scientific Article Assignment** You will be learning about a disease / disorder of your choice by reading one or more peer-reviewed scientific articles. You will summarize what you read and then determine where and how the article's results might be useful for the broader public to be aware of.

## 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.

## LATE ASSIGNMENTS AND EXAM MAKE-UP POLICY

The Scientific Article Assignment and lab assignments will have due dates that are generally non-negotiable. Possible exceptions may include if the student falls victim to extreme, **documentable** circumstances on the days leading up to the submission of the assignment. 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 a portion of those that are missed.

## 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.

## COMMUNICATION POLICY

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

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 or may be altered given changes in scheduling. However, they 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" during some points of the semester as a way to provide you with progress reports and to make referrals. 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 19<sup>th</sup>:** last day to drop for full refund

**January 28<sup>th</sup>:** last day to drop to avoid a "W"

**March 8<sup>th</sup>:** last day to drop to earn a "W"; 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

**Lab Instructor:** Sara Blake

**Email:** sara.blake@reedleycollege.edu

## Assessments

**Pre-Lab Quizzes:** Quizzes will be held each week at the very start of lab. They will cover the material from the beginning of that week's lab document – which means you will need to read ahead if you want to be prepared for the quizzes! These will be Canvas quizzes and require an access code given in class.

**Lab Reports:** These are the grade parts of the Labs, where you write up your results or conclusions and illustrations of the important cells and structures that we cover that day. Since we are in an age of pocket technology, if you are uncomfortable hand-illustrating our microscope findings you are welcome to take photos with a phone and embed them in your reports.

**Lab Practicals:** The 3 lab exams will be held **in class** and use photos and illustrations of models, slides, diagrams, and experimental setups. Questions will be a combination of multiple choice, short answer, and matching questions. These exams must be taken on the scheduled day (see the schedule at the end of the syllabus).

## Attendance and Add/Drop Policy

If you miss a lab, you miss the points for that pre-lab quiz and the lab report for that day. You are however able to attend other labs for the same course during the same week if one fits into your schedule. You have until half way through the semester to drop. If you elect to do so, be sure to drop yourself. Do not assume you have been automatically dropped! This is very important, as after the half way point a grade must be given whether you attend class or not.

## Tentative Lab Schedule

WEEK	LAB TOPIC
1	Laboratory Safety Lab 1: Microscopy
2	Lab 2: Biological Macromolecules
3	Lab 3: Cell Structure and Function
4	Lab 4: DNA Structure and Function
5	<b>Lab Practical 1</b> Lab 5 Part 1: Mitosis
6	HOLIDAY
7	Lab 5 Part 2: Meiosis Lab 6: Genetics
8	Lab 7: Histology and Integumentary System
9	Lab 8: Skeletal and Muscular Systems
10	<b>Lab Practical 2</b>
11	Lab 9: Digestive, Respiratory, and Urinary Systems
12	SPRING BREAK
13	Lab 10: Nervous System
14	Lab 11: Cardiovascular System
15	Lab 12: Endocrine and Reproductive Systems
16	<b>Lab Practical 3</b>
17	Lab 13: Dissection
18	Lab 14: Human Evolution