

U of M Biol 1015 – Human Physiology, Technology, and Medical Devices

4 credits - University of Minnesota, Twin Cities / Pine City High School

College in the Schools

Mr. Jeff Adams 2018-2019 Syllabus

Contact information:

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9:00- 9:59 Room 243

10:03- 2:53 Science Office

Student Information Website: <http://cce.umn.edu/college-in-the-schools/students>

Course Description:

This life-science course is organized around the core principles of human physiology, such as homeostasis, information flow, causal mechanisms, structure and function relationships, and the levels of organization. Students first learn the concept of hierarchical organization of the body and the basic mechanism for homeostasis, which provides a foundation for all subsequent course topics related to health (e.g., cardiovascular fitness) and disease (e.g., atherosclerosis and Type 2 diabetes). Students will also learn about technologies and/or medical devices associated with the science. For example, during units on the cardiovascular system students will engage in assignments focusing on pacemakers and stents, and how these technologies have affected both medical culture and the health of our wider society.

Biol 1015 contains a laboratory component, that includes the use of anatomical and mechanical models, demonstrations, and hands-on activities. Some of the methods used by physiologists are presented: hypothesis testing, computer simulations, dissections, etc. In many lab activities, medical technologies will be integrated into the lessons. For example, students will learn the basic science behind medical imaging (e.g., the physics of x-rays, MRIs, etc.) and then use medical images to learn human anatomy and physiology. Students will also learn how modern imaging technology has transformed medical culture by allowing health care professionals to “see inside the box” and thus better comprehend health and disease.

In the lecture portion of the course, students will engage in Process Oriented Guided Inquiry Learning (POGIL) activities that promote a conceptual understanding of human physiology. POGIL activities use highly structured guiding questions and cooperative group learning strategies to promote academic discussions. POGIL activities mirror the scientific method in that students are placed in a position of skepticism that is resolved through the construction of arguments that utilize scientific evidence. Through participating in the class activities, Biol 1015 students will better understand how technology has advanced our understanding of human physiology and has also transformed modern medical culture.

Prerequisites: senior, top 30% of class, and successful completion of a rigorous chemistry course (honors chemistry at PCHS or permission from Mr. Adams)

Credit Information:

Biol 1015 is a freshman-level, introduction to human physiology.

Biol 1015 is **not** the first semester of a two-semester anatomy and physiology course.

Biol 1015 is **not** a substitute for higher-level (3000 level) anatomy or physiology courses.

Biol 1015 **does** satisfy the U of M LE graduation requirements for biological science with lab.

Biol 1015 **does** satisfy the U of M LE graduation theme requirements for a Technology and Society Theme.

Course Goals for Biol 1015

1. To foster and develop the academic and personal skills required to to be successful in future college courses
2. To create a classroom environment where students can engage in intelligent conversations about the core concepts of human physiology, technology, and medical devices.
3. To awaken students to the roles of technology in science and how it shapes ourselves, our culture, and our world.
4. To get students to think, to get students to think like scientists, and to get students to think like physiologists. But mostly, to get students to think.

Course Objectives for Biol 1015

After completing this course, students should:

1. Have an understanding of negative and positive feedback as it applies to maintaining homeostasis within the human body.
2. Have a basic understanding of human anatomy in relation to different levels of organization (e.g., cells, tissues, organs, etc.)
3. Have an understating of the human body as a causal mechanism whose function can be viewed in light of the laws of physics and chemistry.
4. Have a basic understanding of the nature of information (e.g., hormones, nerve signals, etc.) and how information moves within the human body
5. Be able to view new technologies related to human health, such as new imaging technologies, within a historical context, and be able to evaluate the new technology in terms of ability to diagnose medical conditions.

Biol 1015 and the University of Minnesota's Student Learning Outcomes (SLOs)

Being able to uncover the need for life-long learning, to understand how biological knowledge is created, to reflect on the importance of that knowledge for daily living, and to use that knowledge critically to make informed decisions are things that every liberally educated citizen should be able to do. When you successfully complete this course, you should be able to:

- **identify, define, and begin to solve problems** in human anatomy and physiology that impact you, your country, and the world (met by your participation in group problem solving activities and participating in cooperative group quizzes);
- **locate and critically evaluate the veracity of resources** that can help you identify, define, and begin to solve biologically related problems and to answer questions you have about biological science (met by your completion of lab reports, participation in cooperative group quizzes, and the completion of course projects);
- **use the major principles and concepts** you studied in this course to help identify, define, and begin to solve biologically related problems and to answer questions you have about biological science (met by answering chapter questions, completing case studies, participating in group problem-solving sessions, preparing for exams, writing laboratory reports, and completing course projects);
- **understand and describe the role of creativity, innovation, discovery, and expression** in the tradition-rich discipline of human anatomy and physiology (met by designing and carrying out laboratory experiments, completing laboratory reports, and completing course projects);
- **effectively interpret and communicate meaning** from a complex data set and organize it so that someone else can interpret meaning (met by carrying our laboratory experiments, laboratory reports, and completing course projects).

Text:

Martini, Frederic, William C. Ober, Judi L. Nath, Edwin Bartholomew, and Kevin Petti, (2014). *Visual Anatomy & Physiology*. 2nd Edition. San Francisco, CA: Pearson Education.

Roach, Mary. *Stiff: The Curious Lives of Human Cadavers*. New York: W.W. Norton & Co, 2004. Print.

Additional readings will include news articles, nonfiction text, and will be provided to students when needed.

Grading

Laboratory (including lab quizzes)

Projects / Homework	35%
Cooperative Quizzes	30%
Exams	35%

A	100-94%	B-	83.9-80%	D+	69.9-68%
A-	93.9-90%	C+	79.9-78%	D	67.9-60%
B+	89.9-88%	C	77.9-74%	F	Below 60%
B	87.9-84%	C-	73.9-70%		

The student’s semester grade in the course for Pine City High School will be the average of the two quarter grades in that semester. Pine City High School uses a weighted grade for this course when determining the student’s grade point average. The final grade earned for U of M credit and for high school credit will be the average of the four quarter grades and the final exam.

University of Minnesota grades cannot be discussed with a student’s parents unless permission is given by the student in accordance with the Family Educational Rights and Privacy Act (FERPA). However, Pine City High School grades for this course can be discussed with the student’s parents. It is highly recommended that the students in CIS course allow parent(s) access to their U of M grades. This can be done on the U of M website.

Incompletes

According to University policy, the "I" grade indicates that the instructor:

1. Believes that legitimate reasons due to extraordinary circumstances exist to justify extending the deadline for course completion. Examples of extraordinary circumstances include extended illnesses, serious accidents or other emergencies. The student must provide documentation such as a letter from his/her physician to support the claim of extraordinary circumstances.
2. Verifies that the student has successfully completed a substantial portion of the course's work with a passing grade.
3. Has a reasonable expectation that the student can successfully complete unfinished course work within a specified time frame.
4. Acknowledges that the "I" is not given to help a student improve his/her grade in the course.

To receive an incomplete, the student and instructor must sign a contract (available in the Biology Program Office 3-104 MCB) agreeing to the work to be completed and the timeframe for this completion.

If an incomplete is given, the work must be completed within the agreed timeframe or the course grade will automatically convert to an F.

Laboratory:

Essentials of Human Anatomy and Physiology will include a number of dissection activities, physiology activities, and exercises in the computer lab. These activities and exercises, along with their assessments, make up the laboratory portion of your grade. Bio 1015 satisfies the U of M graduation requirement for “biological science with lab.” Therefore, you **MUST** earn a passing grade on the laboratory portion of the course in order to earn U of M

credit. If you miss a laboratory activity or exercise, you will need to make up the lab after school at a time scheduled by Mr. Adams.

Sample labs that may be included in the course:

Rat dissection	Calorimetry	Blood Flow
Determining Rate of osmosis	Heart dissection	Brain dissection
Mapping the Homunculus	Muscle actions	Computer simulations

Projects / Homework:

Projects and Homework include, but are not limited to, video projects, case studies, presentations, and research papers. Although not all homework is collected as a part of your grade, the expectation is that all homework will be completed by the assigned date. This includes reading assignments. **No credit is given for late projects or homework.** Due dates will be posted on the course calendar/weekly schedule.

While in the lab, students will often “share data” with the entire class (e.g., post it to the board) when conducting lab exercises, and this is not plagiarism. However, in no way can students ever share text from their lab reports / assignments (such as a description of the lab procedures, discussion and conclusions, etc.) with another student. Student should NEVER let another student copy text that will be turned in for grading – in that case both individuals are guilty of plagiarism and will be written up to the U of M Board of Academic Misconduct and appropriate consequences will be implemented.

Cooperative Quiz Information:

The goal of the quizzes is to help you prepare for the exams. The intent of cooperative quizzes is to help you learn the concepts of anatomy and physiology and thus perform well on the quarter exams.

There are two parts to a cooperative quiz. First, you will take a quiz on an individual basis and turn-in your answers. Second, after everyone has completed the individual portion of the quiz, you will be put into groups where you will again take the quiz. Now you will be able to talk to your group members about the quiz and you will complete one answer sheet per group. All students must take both the individual and cooperative portions of the quiz, if you take only the individual portion you will receive only half credit on the quiz. Groups will be assigned randomly each week.

Cooperative quizzes will consist of 20 points, 10 points for the individual portion and 10 points for the group portion. Your lowest cooperative quiz will be dropped each quarter. There are **no make-ups for cooperative quizzes**. Therefore, if you miss a quiz, that will be your dropped score. Cooperative quizzes will be given on Thursday or Friday of each week, as shown on the weekly schedule.

Exams:

There is one exam each quarter for a total of 4 exams. The exams for quarters 1-3 will each consist of 200 questions taken over two day (100 questions each day). The exam for quarter 4 is 100 questions. The final exam will consist of 200 questions taken over two days. The final exam will cover material for the entire course. Exams may consist of multiple choice, identification and short response questions. Exams **must** be taken on the scheduled day. In cases of extreme emergency, make-up exams will consist of essay and oral questions, and will need to be taken after school with arrangements with Mr. Adams. Students need to prepare for exams since there are no re-takes in this course. Dates for the exams are set as the following:

- Exam 1 – November 1 & 2
- Exam 2 – January 16 & 17
- Exam 3 - March 26 & 27
- Exam 4 - May 17
- Final Exam – May 21 & 22

Attendance: Many of the activities done in class are designed to take place in groups. If you are not in class you are missing out on the learning process and also letting down your group members. The PCHS attendance policy applies to this class. However, you **MUST** be in class to take the cooperative quizzes and receive credit for that portion of the quiz. If you are absent for a laboratory, you will need to make up the lab **after** school at a time scheduled by Mr. Adams.

Poor attendance may result in loss of University credit and, according to University policy, will result in a grade reduction. Students should not go over 12 total absences per semester for college credit in the class; this includes School Authorized activities and absences (exception will be given for U of M sponsored activities). For those who do go over, every 3 days after the 12 days maximum will result in a 1/3 grade reduction (example B+ will be dropped to a B). Please note the University timeline for withdrawal.

Credit and Workload Expectations: For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week necessary for an average student to achieve an average grade in the course. For example, CIS Essentials of Anatomy and Physiology is a 4 credit course so it should require 12 hours of work per week to achieve an average grade.

Strategies to help you:

1. **READ YOUR TEXTBOOK!** Take notes while you read. Read the Clinical notes, captions, tables, and graphs. Read the chapter objectives and quiz yourself after reading the chapter.
2. Copy your notes, and then re-copy your notes. Rehearsal and repetition are the keys to learning anatomy and physiology.
2. Make flash cards, and then **use them**
3. Your textbook has questions within the reading and at the end of the chapter. Be sure you answer these questions prior to a test.
5. Use WebAnatomy and the class links as much as you can. This will help you master the material.
6. Make drawings and sketches of everything. For example, draw the neuromuscular junction, sarcomere, parts of the skull, action potential chart, etc. Your drawings do not have to be artistic but will help you learn that structure and function are related..
7. Use a study group. Work together. Help each other. Quiz each other over and over.
8. See Mr. Adams for other suggestions and strategies.

University of Minnesota, Twin Cities Campus Academic Policies

Student Conduct Code

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: Student Conduct Code. To review the Student Conduct Code, please see:

http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: <http://policy.umn.edu/education/studentresp>.

Scholastic Dishonesty

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/education/instructorresp>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/education/makeupwork>.

Appropriate Student Use of Class Notes and Course Materials

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/education/studentresp>.

Grading and Transcripts

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

A	4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
A-	3.667
B+	3.333
B	3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
B-	2.667
C+	2.333
C	2.000 - Represents achievement that meets the course requirements in every respect
C-	1.667
D+	1.333
D	1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements

For additional information, please refer to: <http://policy.umn.edu/education/gradingtranscripts>.

[S/N (Satisfactory/Non-satisfactory) is not a grading option for courses offered through CIS.]

Sexual Harassment

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy:

<http://regents.umn.edu/sites/regents.umn.edu/files/policies/SexHarassment.pdf>.

Equity, Diversity, Equal Opportunity, and Affirmative Action

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy:

http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact [Associate Director of College in the Schools, Jan M. Erickson (j-eric1@umn.edu or 612-624-9898) and/or] Disability Resource Center (612-626-1333) to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with Disability Resource Center and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the Disability Resource Center website, <https://diversity.umn.edu/disability/>.

Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

Academic Freedom and Responsibility

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact your instructor [course faculty coordinator, and/or CIS Associate Director Jan M. Erickson for assistance].

** Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".*

I have read the above syllabus and understand the expectations for Bio1015 Essentials of Human Anatomy and Physiology. I understand that this is a University of Minnesota college course, and that I must follow University of Minnesota academic policies and expectations as stated in the Student Handbook.

The student agrees by signing below that permission is granted for Mr. Adams to discuss the CIS Essentials of Human Anatomy and Physiology grade with the student's parents.

Student signature _____ **date** _____

Parent signature _____ **date** _____