

BMS 300 - Principles of Human Physiology

Spring 2026 – 801 online
4 credits, traditional grading

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We do not use Canvas email.

Course Objectives: This course is designed to provide a general introduction to human physiology.

Prerequisites: A college-level course in both chemistry and biology. The lectures are prepared with the assumption that students have these prerequisites and individuals without them will likely experience difficulties in this class.

Optional Textbook: *Vander's Human Physiology: The Mechanisms of Body Function*, 13th edition by Eric P. Widmaier, Hershel Raff, and Kevin T. Strang. Out of print editions may also be used.

Required E-book: The book contains the course objectives, notes, and links from the objectives to figures and accompanying narratives designed to discuss, explain, and extend material presented in lecture. The electronic book will also be required to access weekly quizzes (see Extra Credit, below).

To access the ebook, click on the Ebook Link in Canvas on the Ebook page. This will automatically create an account with the publisher and sync your ebook and Canvas gradebook. Your CSU account will be charged for the ebook once your account is created. If you purchased the ebook in a previous semester, you still need to click the link for access to the current semester's quizzes, however, you will not be charged again.

Expectations: A sound background in physiology is critical for anyone intending to continue their education in a health-related field or graduate school. This course has historically proven particularly useful for students preparing for professional programs. ***Rote memorization for test regurgitation will, for the most part, not be a successful strategy. This class emphasizes concepts and mechanisms requiring interpretation, comparisons, and critical analysis of concepts.*** The course is cumulative – each lesson builds on the previous lesson(s), so we encourage you to make connections between the lessons rather than simply memorizing the material. Exams require understanding, integration, and application of concepts and mechanisms. For these reasons, some may think this is a difficult class. Students who are attentive in class and who engage in additional out-of-class study time (*approximately 2 hours per lecture hour*) generally master the material and achieve a favorable outcome. Students are encouraged to spend their out-of-class study time using their notes in conjunction with material provided in Canvas and the Ebook to become fluent in the course learning objectives. Practice is an important part of learning the concepts presented in this course and writing complete responses without reference to the notes or other resources has proven invaluable to many students. Learning objectives can be found in the Ebook and the introduction to each day's lecture. As an adult, **you** are responsible for your learning. We are here to help you, but **you** must put in the effort and do the work. Good communication between you and your instructors is essential. If you need help, ask early – do not wait until the day before an exam to seek help. Additional resources for improving your study skills are available under the Study Resources page in Canvas and on The Institute for Teaching and Learning (TILT) website.'

Lecture Videos: Lecture videos are linked on the Lectures page within Canvas. Lectures may be viewed on any device, however, the streaming rate will automatically match the capacity of your device and bandwidth availability. If your video does not seem clear, check the resolution by clicking on the gear icon in the bottom right of the video.

Assessments:

Assessment	Details	Date	Points
Exams: The Final Exam is counted twice and the lowest exam score is dropped. See below for details	Unit 1 Exam	2/16/26	100
	Unit 2 Exam	3/9/26	100
	Unit 3 Exam	4/6/26	100
	Unit 4 Exam	4/27/26	100
	Final Exam	5/11/26	100
Quizzes	10 weekly quizzes	See Canvas schedule	20

Exams: All exams are administered through Canvas and proctored by Respondus. You will need a computer with a functional camera and microphone. Exams must be taken between 8:00 am and 11:59 pm MT on the day of the exam. **To ensure you have the full 2 hours to complete an exam, you must start by 10:00 pm.**

- **Unit Exams:** Each of the four Unit Exams will be 32 multiple choice (MC) questions, worth 2.5 points each for a total of 80 points. The remaining points will come from Fill-in-the-Blank (FIB) passage questions. Because there will be more than 20 blanks with each blank worth 1 point, scores higher than 100 are possible.
- **Final Exam:** The final exam is cumulative with 80 questions, worth 1.25 points each for a total of 100 points. You must take the final exam to complete the course. **The final exam will be counted twice and your lowest exam grade will be dropped.**

Quizzes: There will be 10 Quizzes throughout the semester, generally themed on organ systems, worth a total of 20 possible points. Quizzes have unlimited attempts, and the highest score will be kept. **Quizzes are required and are separate from the extra credit Ebook Quizzes.** The quiz schedule is listed on the Quiz page in Canvas.

Grading: The combined total points for the course will be 520, based on five exams at 100 points each and 20 points for quizzes. The final exam will be counted twice, then your lowest exam score will be dropped. In cases where your final examination score is higher than a unit examination score, the score on the final will effectively substitute for your lowest unit examination score. If your lowest score is on the final, only one final exam score will be counted.

Grades will be based on the following percentages:

- A = 89.5% and higher
- B = 79.5 to 89.4%
- C = 69.5 to 79.4%
- D = 59.5 to 69.4%
- F = 59.4% and below

If the class average falls below the C range, the coordinator may shift the break points downward. Under no circumstances will the break points be shifted upward.

Grade Calculation Examples

Example 1	Example 2
E1 = 60 (lowest dropped)	E1 = 88
E2 = 68	E2 = 84
E3 = 80	E3 = 90
E4 = 74	E4 = 92
Final = 70	Final = 80
Final = 70	Final = 80 (lowest dropped)
Quizzes = 18	Quizzes = 18
EC = 16	EC = 16
Total = 398 / 520 Final Grade = 76.5 = C	Total = 470 / 520 Final Grade = 90.4 = A

Extra Credit Opportunities:

- **Pre-lecture Ebook Quizzes:** Ebook quizzes are intended to acquaint students with upcoming lecture material and are designed to familiarize students with information in the notes and objectives before lecture. Each five-question quiz is worth a maximum of 1.0 point with each question worth 0.2 points. A maximum of 10 extra credit points will be added to your score. Additional information with links to each quiz can be found on the Ebook page in Canvas.

Schedule of e-book Quizzes

Quiz:	Topics:	Opens 8:00 am MDT	Closes 11:59 pm MDT
Quiz 1	Cells and Tissue	Jan 19	Jan 25
Quiz 2	Skin and Bone	Jan 26	Feb 1
Quiz 3	Endocrine	Feb 2	Feb 8
Quiz 4	Nervous I	Feb 9	Feb 15
Quiz 5	Nervous II	Feb 16	Feb 22
Quiz 6	Muscle	Feb 23	Mar 1
Quiz 7	Cardiovascular I	Mar 2	Mar 8
Quiz 8	Cardiovascular II	Mar 9	Mar 15
Quiz 9	Blood and Immune	Mar 23	Mar 29
Quiz 10	Respiration	Mar 30	Apr 5
Quiz 11	Renal to Stomach	Apr 6	Apr 12
Quiz 12	Intestine and Liver	Apr 13	Apr 19
Quiz 13	Reproduction I	Apr 20	Apr 26
Quiz 14	Reproduction II	Apr 27	May 3

- **Tutorials:** Tutorials are hosted by undergraduate student volunteers who have excelled in BMS 300 in previous semesters. We have found student discussion is extremely helpful in guiding students in techniques for mastering the material in BMS 300. Verbalizing the material presented in class has proved to be one of the best ways to absorb and retain physiological concepts key to BMS 300. Online tutorials will be held several times each week. Days and times are listed in a calendar on Canvas under the Tutorials tab. Instructions for using Zoom are under the calendar. Students will receive 1 extra credit point for each tutorial attended for a maximum of 10 extra credit points for the semester. **A maximum of one session per week will be counted toward the total.** Online tutorials automatically track attendance. **Your screen name must match your Canvas name for credit.**

Academic Integrity: BMS 300 adheres to the CSU [Academic Integrity Policy](#) and the [Student Conduct Code](#) and all students are expected to familiarize themselves with these policies. Violations of the university's academic integrity standards include, **but are not limited to:**

- Cheating – includes any use of unauthorized sources of information and providing or receiving unauthorized assistance on any form of academic work.
- Unauthorized Possession or Disposition of Academic Materials – includes the unauthorized selling or purchasing of class materials, and uploading class materials into online programs (including generative AI programs, Chegg, Quizlet, etc.). ****NO course materials for BMS 300 have been approved or authorized for students to upload to the internet or distribute in any format****
- Falsification – includes receiving unauthorized assistance on academic work, lying to avoid taking an exam, and the use of generative AI tools to create work a student submits as their own.
- Facilitation – includes knowingly discussing specifics of the content of examinations with students who have not yet taken it, sharing one's work, or providing unauthorized resources to other students.

At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.

Make-up Examinations: There are no provisions for make-up examinations during the summer. In a case where an examination has been missed or where the final exam score is higher than one of the unit exams, the final exam will substitute for that unit exam and will count twice. Only one such substitution may be made. Any student who misses more than one examination must present evidence in a timely manner to the coordinator and show that all absences were for reasons that meet the University criteria for excused absences. **IN MOST CASES (EXCEPT FOR CLEAR EMERGENCIES), ARRANGEMENTS MUST BE MADE PRIOR TO THE SCHEDULED EXAMINATION.** For such cases, a mutually acceptable arrangement will be sought for make-up examinations. Unexcused absence from a second missed examination will result in a zero score.

Audits: Anyone taking the course for formal audit credit must take the examinations or demonstrate by some other means that he/she is participating in the course in order to obtain a satisfactory audit grade.

Completing an Incomplete Grade. If you are completing an Incomplete grade (I), please contact the course coordinator so that your name can be added to the roster of students in Canvas.

Accommodations and Special Needs: Our faculty are committed to the principle of universal learning. If you have special needs, please contact the Student Disability Center to speak with an accommodation specialist. Individuals with exam accommodations may need to take their exams at the Testing Center. Testing times must be scheduled at least 7 days ahead and we highly recommend scheduling all of your exams in advance..

University Policies and Resources: The following link (<https://col.st/2FA2g>) and QRN code provide policies relevant to your courses and resources to help with various challenges you may encounter.



As part of the Learning Objectives for BMS 300 you will be expected to be able to:

1. Recognize the role of water as a solvent in cell biology and its relationship to hydrophilicity and hydrophobicity and biological membranes.
2. Describe the structure and function of organelles in eukaryotic organisms, and compare and contrast cytoplasmic and membrane protein synthesis.
3. Describe the role of nucleic acids in protein synthesis and relate them to the Central Dogma of molecular biology.
4. Describe the cellular organization of tissues, and relate the function of each to how they are organized into organs including skin and bone.
5. Explain the role of the endocrine system in the homeostatic control of body function, and describe the importance of receptor-ligand binding and negative feedback in this system.
6. Describe the structural organization of the central and peripheral nervous systems and distinguish among sensory input, analysis and motor output and explain its relationship to sensory neurons, interneurons, and motor neurons.
7. Describe the structure of neurons and interrelate the roles of membrane potential, synaptic potential and action potential in intercellular communication in the nervous system.
8. Sketch the cellular organization of skeletal muscle and relate the drawing to excitation contraction coupling and the Sliding Filament Theory of muscle contraction.
9. Describe the structure of the heart and the pattern of blood flow through it including systemic, pulmonary, and coronary flow.
10. Interrelate the cellular organization of the heart with the differential ion channel distribution and describe the conductile and contractile systems as they relate to heart rate, rhythm, contraction, and the cardiac cycle.
11. Describe the components of blood and relate their functions and roles to carrying oxygen and to innate and adaptive immunity.
12. Describe lung structure including the conducting and respiratory zones relate the structure to the role of the diaphragm in inspiration and the role of compliance and elastic recoil in expiration.
13. Relate Dalton's Law of Partial pressures to gas exchange in the alveolus and describe the structural and functional relationships between the alveolar epithelium and the endothelium of lung capillaries.
14. Describe the gross and cellular organization of the kidney and interrelate the structural and functional aspects of the blood vascular and renal compartments to kidney function. Differentiate ion and water movement in each of the regions of the nephron as it relates to paracellular and transcellular transport.
15. Describe the structure of the gastrointestinal tract and relate its cellular organization to motility, secretion, absorption and hormonal control in this system.
16. Understand the role of genetics and hormones in sexual differentiation and describe the organization of the male and female reproductive systems.
17. Describe the events of fertilization, implantation and fetal development.