

BMED 3100-A: Systems Physiology with Problem Solving Studio, Spring 2025

Instructors:

Dr. Gautam (agautam75@bme.gatech.edu), Dr. Markowitz (jeffrey.markowitz@bme.gatech.edu), Dr. LaPlaca (michelle.laplaca@bme.gatech.edu), Dr. Suri (shalu.suri@bme.gatech.edu)

Lecture: Wednesday and Friday 9:30-10:20 am; Scheller 100

Problem Solving Studio (PSS):

Problem Solving Studio (PSS) Mondays

Section A01 (Dr. LaPlaca) - 8:25am - 10:20 am (MOSE 1301)

Section A02 (Dr. Suri) - 12:30pm-2:25 pm (MOSE 1301)

Section A03 (Dr. Gautam) - 3:30pm-5:25 pm (MOSE 1301)

Section A04 (Dr. Markowitz) - 12:30pm-2:25 pm (MOSE 1222)

Office Hours: Online, Zoom, Days/time TBA, see Canvas. Students are encouraged to engage in online office hours with video input to promote active discussion and engagement.

CATALOG DESCRIPTION

An introduction to human physiology emphasizing biomedical engineering approaches to the understanding of basic organ function, disease states, and medical intervention. Prerequisite: A grade of 'D' or higher in CHEM 1315 or CHEM 2311, or junior standing.

REQUIRED MATERIALS

Widmaier, Eric P., Raff, Hershel, Strang, Kevin T. (2023) *Vander's Human Physiology 16th Edition*, Boston:McGraw-Hill Higher Education. ISBN: 9781264125739. If you choose to use a different edition, you are responsible for locating the appropriate sections and identifying any content difference.

COURSE CONTENT

Physiology serves as a foundational discipline in biomedical engineering, and this course underscores the integration of physiological and biomedical engineering principles. The focus is on comprehending basic organ function, introducing disease states, and exploring medical interventions. Beginning with core physiological principles like homeostasis and structure-function relationships, the course progresses to examine how regulatory systems, such as the nervous and endocrine systems, impact the cardiovascular, respiratory, and renal systems. Throughout the semester, you will engage in critical thinking and integrate information. Assessment methods include both formative tools, which monitor the learning process and identify misconceptions in low-stakes assignments, and summative evaluations, such as problem-solving studio (PSS), homework, and exams, designed to assess concept understanding and learning progression.

LEARNING OUTCOMES

Upon successful completion of this class, you should be able to:

1. **Describe** the anatomical structures and **explain** the physiological functions of major human organ systems.
2. **Analyze** homeostatic mechanisms and **evaluate** how different organ systems integrate to maintain physiological balance.
3. **Apply** physiological principles and **use** quantitative reasoning to **explain** organ function in both normal and pathophysiological states.
4. **Describe and interpret** physiological mechanisms at the molecular, cellular, tissue, and systems levels.
5. **Interpret and analyze** data from clinical case studies using physiological principles and **synthesize** insights to explain system-level function.
6. **Communicate** physiological concepts and findings effectively in both written and oral formats with peers, scientists, clinicians, and biomedical engineers.
7. **Identify and evaluate** ethical, clinical, and societal issues associated with biomedical engineering applications in human physiology.
8. **Collaborate** with peers by providing constructive feedback and engaging in scientific dialogue to enhance team-based problem-solving.

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

INSTRUCTOR & STUDENT RESPONSIBILITIES AND POLICIES

Class Preparation and Active Engagement:

Our goal is to foster a positive learning environment, and we expect active participation from all students, aligning with Georgia Tech Student-Faculty Expectations: <http://catalog.gatech.edu/rules/22/>. To maximize success, we urge you to prepare thoroughly, engage in active study, practice information retrieval regularly, and participate actively in both class and PSS sessions. The emphasis in the course is on understanding core concepts rather than rote memorization. We encourage ongoing self-reflection on your knowledge throughout the course.

Effective learning involves repeated exposure to the material, so we recommend regular engagement with the course content. Additionally, learning is enhanced when exposure is chunked into shorter time periods rather than lengthy sessions. Therefore, we suggest breaking up your study sessions into several shorter periods. You will receive constructive feedback on various learning activities, providing valuable insights into concepts that may not be entirely clear. Use this feedback as a tool to deepen your understanding and work towards your goals in this course.

Communication:

All course-related information, including the syllabus, assignments, and materials (excluding the textbook), will be available on Canvas. Important class announcements, including any alterations to the syllabus, schedule, or assignments, will also be communicated through Canvas. It is essential to regularly check Canvas for updates and ensure that notifications are enabled.

We aim to cultivate a positive learning community not only between the instructor team (instructors and TAs) and students but also through interactive peer-to-peer engagement. Therefore, you are encouraged to use Piazza (with anonymous-to-class enabled) to post questions, provide answers, or share any relevant course information. General inquiries about the class and course content can be posted on Piazza, and responses may come from fellow students or a member of the instructor team. When necessary, instructors and TAs will step in to address or clarify any questions or comments.

For all inquiries, please use **Canvas messaging exclusively** to reach out to your section instructor and Teaching Assistants (TAs). If you choose to email your question, ensure that you use your Georgia Tech student email address and include [BMED 3100] in the subject line. It's important to be aware that emails may be easily overlooked due to the large volume received from various sources.

If you do not receive a response within 24 hours, you may consider resending the original email. However, kindly refrain from sending identical emails separately to multiple recipients to streamline communication and avoid potential confusion.

Device Use Policy:

In this course, we ask that students be present and actively engaged to maximize learning and collaboration. To reduce distractions and promote equity in the classroom:

- During lecture and PSS, all non-essential devices must be put away or silenced.
- Cell phones, smartwatches, and other personal devices should be turned off or in silent mode and kept out of view.
- The use of laptops or tablets is permitted only when needed for classwork, such as during PSS by the designated Recorder.
- No recording (audio, video, or pictures) of class sessions is permitted without explicit instructor approval.
- A basic scientific calculator (non-internet enabled) may be used during PSS or exams, if needed.
- Storing notes or accessing materials on any device (phones, watches, calculators, etc.) during PSS or exams is strictly prohibited.
- If you choose to use a laptop or tablet during lecture for note-taking or to follow slides, please do so respectfully and in a way that does not distract peers.

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

Honor Code:

The Georgia Tech Academic Honor Code (<http://policylibrary.gatech.edu/student-affairs/academic-honor-code/>) must be always adhered to. Following the Honor Code creates a fair and equitable learning environment for all students. All work you submit must be your own. You should never include in your assessment anything that was not written directly by you without proper citation, as this is unethical and unacceptable and is a direct violation of the Georgia Tech Academic Honor Code. Honor Code violations or suspected violations will be reported to the Dean of Students, possibly resulting in grade penalties and/or other disciplinary action. You will be asked to acknowledge understanding and adherence to the Honor Code on each exam and are expected to follow it in all your class activities and assignments.

You are encouraged to be resourceful and use different learning tools as you study, but you must know the difference between copying and collaboration. Collaboration (defined by Webster's Dictionary as "the action of working together; united labor; the work and activity of a number of persons who individually contribute toward the efficiency of the whole") requires mutual willingness and acknowledgement of working together. Cheating includes plagiarism (defined by Webster's Dictionary as "to steal and pass off (the ideas or words of another) as one's own; use (another's production) without crediting the source") and can be intentional or unintentional. Cite all sources other than the course textbook, lecture slides, and class notes. The following outlines expectations for deliverables:

- **Problem solving studio** activities are completed **collaboratively without resources**.
- **Homework** is completed **individually with or without resources**. Students are encouraged to attempt homework first without resources to more easily identify gaps in knowledge.
- **Exams** are completed **individually without resources**.

In addition, we consider the following behaviors to be cheating:

- using false excuse to delay an assessment
- obtaining information from others regarding content of an assessment
- copying from another student on an assessment with or without their knowledge
- helping someone else cheat on an assessment
- using unauthorized resources or notes / "cheat sheets" on an assessment
- using an unauthorized electronic device to obtain information during an assessment
- working with others on an assessment when asked for individual work
- turning in work copied from/done by another, including AI systems
- paraphrasing/copying from written or internet sources, including content generated by artificial intelligence (AI) tools, without proper citation (note: exact quotes are rarely used in scientific writing). Put it in your own words and cite.

ASSIGNMENTS & ASSESSMENTS

General: All assignments, quizzes, and exams must be uploaded or completed on Canvas. Allocate sufficient time for document uploads. It is your responsibility to thoroughly read all instructions and ensure the accurate uploading of files in the correct format within the designated timeframe. Word limits, when applicable, are specified and will be strictly enforced.

Problem Solving Studio (PSS) (13 @ 20 pt each; drop lowest PSS; 240 pts, 24%): A total of fourteen (14) PSS sessions are scheduled, with PSS 1A being ungraded, and all subsequent sessions carrying 20 points each. The primary objective of PSS is to enhance your understanding by applying both current and accumulated physiological concepts to address real-world problems. PSS sessions are conducted in-person and involve collaborative group activities. Groups will be preassigned and will undergo a switch halfway through the semester.

At the conclusion of each PSS session, a single problem set for each group will be uploaded as a PDF file into Canvas. Upon the submission of all PSS assignments, including individual submissions for excused absences, the answer keys will be made available. Individual PSS submissions related to excused absences must be submitted by Friday midnight following the missed PSS.

The assessment of PSS problem sets will follow specifications grading, utilizing an "EMRF" rubric, and feedback will be accessible on Canvas (refer to the PSS Rubric for details). The aim is to provide a comprehensive evaluation of your performance and guide your progress throughout the semester.

PSS pages will be available in the "Files" section on Canvas under the PSS folder. Groups of questions will be published at designated times throughout the session.

During the PSS session, only the designated "Recorder" is allowed to have their laptop open to input the team's responses. No other electronic devices are permitted, with the exception of a non-internet calculator. If the Recorder is observed

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

using any other applications or windows on their device, the entire team will receive a zero for that PSS.

For additional details, please refer to the full PSS policy in the "Policy" section.

Prior to each PSS session, it is essential to be prepared by accomplishing the Pre-PSS Lecture Video Quizzes, which are automatically graded on Canvas, and by reviewing the relevant sections in the textbook. This preparation is integrated into the Weekly Pre-PSS Assessments, which are structured to incorporate active learning methods. PSS assignments are intentionally crafted to be tackled without the aid of books or additional resources. Hence, thorough preparation significantly enhances your problem-solving skills, ensuring a more effective and successful engagement with the assignments.

Weekly Pre-PSS Assessments (13 @ 5 pts each; drop lowest weekly assessment; 60 pts, 6%): Every week, asynchronous assessments based on interactive videos with formative components are scheduled, and these are to be submitted in Canvas by 11:59 pm on the specified due date. The content covered in these assessments encompasses preparatory material for PSS sessions and may also include cumulative material. The quizzes primarily focus on the material covered in preparation for the PSS but may incorporate relevant cumulative content.

For late submissions, if received before the first PSS session (between 12:00 am – 8:25 am the day after the due date), credit will be reduced to 50% of the earned score. No assessments will be accepted after 8:25 am the day after the due date, resulting in a zero score. Two (2) attempts are allowed for each video quiz, with the final score being the highest of the two attempts. It is essential to adhere to these guidelines to ensure fair and consistent evaluation of your assessments.

PSS Group Peer Evaluations (4 @ 5 pts each; 20 pts, 2%): Prior to the final PSS in each unit, students are required to assess their group members through Canvas and provide constructive peer feedback to their team. The deadline for this assignment is 11:59 pm on the day preceding the last PSS in each unit, as specified in the schedule. It is crucial to offer a fair evaluation encompassing both positive and constructive feedback. Your responses will be kept confidential from your group members, but you will be asked to share suggestions for group improvement during PSS sessions. Failure to submit peer evaluations will lead to a zero for your individual PSS grade. Please ensure timely and thoughtful completion of this assessment to contribute to the group collaboration's overall success.

Homework (HW): The purpose of homework is to evaluate your ability to synthesize and apply material in preparation for the upcoming exam. Therefore, homework assignments are scheduled the week before each exam and feature exam-like multiple-choice and short answer questions. The homework questions are strategically designed to provide practice for exam-related inquiries. Homework assignments consist of two parts. Part 1 is completed prior to the in-class discussion and Part 2 after the in-class discussion. Homework assignments are an individual effort, aligned with the Honor Code. Please note that homework Canvas assessments allow for a single attempt. It is crucial to adhere to these guidelines to ensure fair and consistent evaluation of your homework assignments.

Part 1-Homework (HW) (4 @ 40 pts each; 160 pts, 16%): Part 1 is to be completed prior to the in-class discussion. It consists of an objective section and a short answer section, to be completed in Canvas outside of class. The objective section is autograded for accuracy and the short answer is graded on the EMRF grading scale. Both are due by 11:59 pm on the specified date, with a late policy allowing 50% of earned credit if submitted late but before the next class (between 12:00 am – 9:30 am the day after the due date). No submissions will be accepted after 9:30 am the day after the due date, resulting in a zero score.

Part 2-Homework Wrappers (4@5 pts each, 20 pts): Part 2 is completed following the in-class discussion by 11:59 pm on the discussion day, with a late policy of allowing 50% of earned credit if submitted late. During in-class discussions, we will delve into the Homework questions outlined in Part I. Group discussions play a crucial role in promoting collaborative learning and can effectively pinpoint any misconceptions or knowledge gaps among students. Homework wrappers serve as a valuable exercise in addressing critical thinking questions and enhancing your analytical skills.

Exams (3 Unit exams; 3 @ 100 pts, 300 pts, 30%):

The exam material may be drawn from various sources, including the textbook, lectures, slides, videos, case studies, PSS, and HW. It's crucial to understand that exam content may extend beyond the textbook. Therefore, attending lectures, reviewing recordings, studying PSS questions, and actively participating in both PSS sessions and lectures are

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

essential for comprehensive preparation. Your responsibility covers all material presented, whether in synchronous lectures or asynchronous videos.

All exams will be closed book, featuring both multiple-choice questions (marked on a scantron sheet) and short answer questions based on a case study summary, like PSS and HW formats. Exams will be conducted in person during lecture or final exam time, as specified in the schedule. Equation sheets will be provided. You must upload all exam pages as a single PDF to Canvas and submit all paper pages before leaving the room to ensure proper evaluation of your responses.

The lowest exam grade or excused exam from Units 1-3 will be replaced by the cumulative portion of the final exam.

Final Exam (Cumulative portion 100pts and Unit 4 portion 100 pts; 200 pts, 20%): The final exam is divided into two parts. The first part is a cumulative section that encompasses content from Units 1-3, while the second part focuses specifically on Unit 4. Both segments include multiple-choice and problem-solving components. The final exam will be conducted in person during the regularly scheduled final exam period. It's important to note that the cumulative portion of the final exam can only replace one exam from Units 1-3.

Mid-Course Feedback Survey: We will ask you to fill out an anonymous **Critical Incident Questionnaire (CIQ)** during the semester. The survey is not graded. The collected information from the CIQs will be shared with the class and let the instructors know about concerns, suggestions, and class components that are working or not working for you. This feedback is extremely valuable as we constantly strive to improve the class and we value your opinions. Thanks for the feedback!

Introduction Quiz: A video recording quiz has been crafted to help you navigate our course Canvas page and familiarize yourself with the course syllabus. Understanding the course policies will significantly contribute to achieving your academic goals. Completing this quiz earns you an additional 5 extra credit points!

Grades: Grades will be posted on Canvas. Each activity has a total number of possible points out of 1000 points:

| | |
|--|--------------------|
| Problem solving studio (PSS) (13 @ 20 pts each, drop lowest PSS) | 240 pts |
| Weekly Pre-PSS assessments (13 @ 5 pts each, drop lowest grade) | 60 pts |
| Homework (4 @ 45 pts each) | 180 pts |
| PSS Group Peer Evaluations (4 @ 5 pts each) | 20 pts |
| Exams (3 x 100 points each) | 300 pts |
| <u>Final Exam (Unit 4, 100 points, + Cumulative, 100 points)</u> | <u>200 pts</u> |
| TOTAL | 1000 Points |
| EC Introduction Quiz | 5 Points |

Grading scale: A: 900-1000 points; B: 800-899 points; C: 700-799 points; D: 600-699 points; F: 0-599 points

Any inquiries or concerns regarding grades must be brought up within one week after the return of assignments and the availability of keys. To dispute a grade, you should use the Grade Dispute Form on Canvas surveys, and the entire assignment will be reevaluated at the end of the term. It's important to note that the reevaluation may result in an increase or decrease in the overall score, and the submission of a grade dispute does not guarantee the awarding of points. If you have questions about the points accumulated in the course, it is essential to address them before the final instructional day.

ATTENDANCE & MAKE-UP POLICY

Synchronous In-Person PSS: Attendance in your designated section for PSS is mandatory, and PSS sessions cannot be made up in another section. Active participation from each group member is crucial for the problem-solving process, making it imperative that you attend your assigned PSS session. Points may be deducted from your PSS grade if you arrive late or leave early. Once your group has successfully uploaded the problem set, you are then free to leave.

PSS Sessions

PSS pages will be available in the "Files" section on Canvas. Groups of PSS questions will be released at designated times throughout the session.

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

- **Laptop/Tablet Usage:** Only the designated "Recorder" in each group will be allowed to have a laptop or tablet open. The Recorder is responsible for inputting the group's responses into the PSS document (see Recorder Responsibilities below).
- **Zero Tolerance Policy:** If the Recorder is observed having any other window open on their device, the entire group will receive a zero for the PSS. This is a **zero-tolerance policy**, and no exceptions will be made. Please read this carefully.
- **Switching Roles:** If the Recorder needs to access another website or requires additional assistance, they must inform the instructional team and leave the room. Another group member will temporarily take over the Recorder role.

Recorder Responsibilities

- - The Recorder is the sole person responsible for inputting the group's responses into the PSS document.
 - Only the Recorder may enter responses.
 - The Recorder role will rotate among the group members for each PSS session.

Missed PSS

Making up PSS sessions is not allowed unless there is an excused absence. In an excused absence (see Excused Absence section), a student may complete the PSS problem set as an individual assignment outside the regular PSS group. Individual PSS submissions related to excused absences must be submitted by Friday 11:59 pm following the missed PSS. Regardless of whether the absence is excused or unexcused, the lowest PSS grade will be dropped.

Instructions For How To Submit Missed PSS

- 1- If you miss a PSS due to an **excused absence** (see Excused Absence section below), please attach your redacted documentation with your Individual PSS submission. If there is no document with the appropriate dates your submission may not be graded. Please follow up with your section instructor for more details if needed.
- 2- Go to the Canvas ['PSS Make Up Submission'](#) in the 'Quizzes' section and upload your individual PSS and document with redacted private information.
- 3- You have until Friday, 11:59 pm of the week of the missed PSS to submit your assignment. **No LATE** submissions are allowed past the Friday due date. Please contact your section instructor if you believe you cannot submit by the Friday due date.

Lectures: Attending lectures holds significant importance for several reasons including: 1-providing direct exposure to the course material, allowing you to hear explanations, examples, and insights from the instructor. This firsthand experience enhances your understanding and comprehension of key concepts, 2- offer the opportunity to ask questions and seek clarification on topics that may be challenging or unclear, 3- instructors often emphasize certain points or provide context that may not be readily available in textbooks or other course materials. Understanding the emphasis placed on specific information can guide your study efforts, and finally 4- lectures may include additional information, real-world examples, or current developments in the field, which enriches your understanding beyond what is covered in textbooks or assigned readings. While alternative resources like textbooks and online materials are valuable, attending lectures complements these resources and contributes to a holistic learning experience. Ultimately, active participation in lectures enhances your academic performance and deepens your understanding of the subject matter.

Synchronous In-Person Lectures (Wednesdays and Fridays): In-person lectures will be held at Kendeda Rm 152. The lectures will address topics outlined in the schedule. It is anticipated that you familiarize yourself with the relevant material, lecture slides, and study the corresponding sections in the textbook before the lecture. Please be aware that the exams for Units 1-3 will be administered during the designated lecture slots (refer to the Schedule).

Assignments Week 1: Those registering for class during the first week are responsible for all assignments and content; any graded assignments should be made up by Tuesday of Week 2.

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

Homework and Weekly Assessments: If you anticipate an upcoming absence, please inform your section instructor at your earliest convenience and submit assignments prior to the absence. Make-up opportunities will be considered only for excused reasons, with the due date to be determined between the instructor and the student. Unexcused absences will result in a zero score.

For late submissions, a 50% credit policy will be applied. For Homework, this applies between 12:00 am and 9:30 am the day after the due date, and for Weekly Assignments, between 12:00 am and 8:25 am the day after the due date. No assignments will be accepted after the specified cutoff time the day after the due date, resulting in a zero score. It's crucial to allocate sufficient time for electronic submission to ensure timely completion.

Peer Evaluations: Makeup submissions and late submissions for peer review assignments are not allowed.

Missed Exam For Excused Absence

If you miss an exam due to an excused absence (as defined in the Excused Absence section below), you have two options for addressing the missed exam:

1. **Make-Up Exam:** You may take a make-up exam (please refer to the Make-Up Exam section below for more details).
2. **Exam Replacement:** Alternatively, the missed exam grade will be replaced (see the Exam Replacement Policy below for further information).

For further clarification, please review the policies in the respective sections: Excused Absence, Make-Up Exam, and Exam Replacement.

Please note that only one missed exam is eligible for these options. Any subsequent exams missed will not be eligible for a make-up exam or exam replacement. For further clarification, please review the policies in the respective sections: Excused Absence, Make-Up Exam, and Exam Replacement.

See section on policy on missed multiple exams due to an extended illness below.

Make-Up Exams

A single make-up exam is offered for a missed exam due to an excused absence (see Excused Absence section below) at the end of the semester during the Georgia Tech (GT) scheduled Conflict Examination Period.

- **No alternative make-up exam dates will be scheduled.** If you are unable to attend the GT scheduled make-up exam due to travel plans or other commitments, you forfeit the opportunity to take the make-up exam.
- The make-up exam will be proctored on site; the time will be published later in the semester.
- If you take a make-up exam you are still eligible for grade replacement, including for the grade received on the make-up exam. See below for specifics on grade replacement.

Grade Replacement for Missed Exams

In the event of an excused absence (see "Excused Absences" section below):

1. The weight of the missed exam may be transferred to the cumulative final exam, which will then count twice.
2. This grade replacement policy applies to only one excused missed exam.

Important Notes:

- Missing an exam without a verified excuse, failing to notify the instructor within 24 hours, failing to provide documentation within five (5) business days, or missing more than one exam will result in a grade of zero for the missed exam. No grade transfer opportunity will be provided.
- Falsified documentation will result in a grade of zero for the missed exam and will be reported to the Dean of Students.

Missed Final Exam

1. **Excused Absences**

If a final exam is missed due to an **excused absence** (as outlined in the **Excused Absence** policy):

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

- Supporting documentation for the excused absence must be submitted within the established deadlines (refer to the Excused Absence policy for details).
- The student may take a make-up final exam during the Conflict Examination Period, with the specific time determined by instructor availability.
- If a student cannot be present for the final exam due to a documented critical illness, then the **average of the Unit 1-3 exams** will be used to calculate the final exam grade. Unit 4 exam grade will also be replaced by the same average score. This option is subject to the discretion of the instructional team and will include consultation with the Dean of Students.

2. Non-Excusable Absences

A final exam missed due to reasons listed in the **Non-Excusable Absences** section (e.g., travel plans, oversleeping, or other non-legitimate reasons) will result in a grade of **zero** or, in rare cases, an **incomplete** at the discretion of the instructional team. This decision will follow the guidelines outlined in [GT's policy on missed final exams](#)[Links to an external site.](#).

3. Scheduling Conflicts

• Two Final Assessments at the Same Time:

If a student has two final assessments scheduled for the SAME TIME NOT same day, the course with the **lower course number** will be considered in conflict. The student must notify the instructor **no later than two weeks** before the start of the Final Examination Period. The final assessment for the conflicting course will then be rescheduled to the Conflict Examination Period, as outlined in [GT's policy on final exam scheduling conflicts](#)[Links to an external site.](#).

• Three Final Assessments in One Day:

If a student is scheduled for **three final assessments in one day**, the exam scheduled for the **middle time slot** will be considered in conflict. The student must notify the instructor **no later than two weeks** before the start of the Final Examination Period. The exam for the conflicting course will then be rescheduled to the Conflict Examination Period, refer to GT's policy on final exam scheduling conflicts.

Excused absences

Documentation Requirements

To request an excused absence, submit supporting documentation as follows:

- Planned Absences: Provide documentation at least two (2) weeks in advance.
- Unforeseen Absences: Notify the instructor via email within 24 hours of the missed event and provide documentation within five (5) business days.

Excusable Absence Examples:

1. Illness:

- Must be critical, preventing class attendance.
- Provide a medical excuse detailing the date(s) of the visit and the anticipated return date. Redact personal medical details and submit the excuse as a PDF.

2. Personal Emergency or Prolonged Illness:

- Contact both your instructor and the Dean of Students for documentation.

3. Institute Activities:

- Provide pre-approved documentation at least two (2) weeks prior.

4. Career Fairs:

- Notify your instructor in advance. Missed exams during career fairs are subject to the grade replacement policy.

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

5. Presentation at Scientific Meetings:

- Include email confirmation from your research advisor/supervisor and the conference program.

Non-Excusable Absences

The following do not qualify for excused absences:

- Noncritical illness like a headache or not feeling well.
- Scheduling routine doctor's appointments.
- Scheduling interviews or other non-Institute meetings.
- Vacation or travel plans (including conflicts with the GT make-up exam period).
- Oversleeping, traffic delays, forgetting, or mixing up dates.
- Research meetings or experiments during class times.

It is your responsibility to verify assignment and exam dates in advance.

HELP

Help with Academics: In addition to office hours with the instructor and TAs, see <https://bme.gatech.edu/bme/tutoring> for up-to-date information about FOCUS tutoring, PLUS program, and more.

Should you encounter challenges attending class, watching videos, or keeping up with your studies and assignments, please don't hesitate to contact an instructor or TA. The sooner you inform us of any issues or potential challenges, the more effectively we can assist you in finding solutions that enable you to make the most of the semester and enhance your learning experience.

Help with Disabilities: The Office of Disability Services in the Division of Student Life offers counseling and advocacy for eligible students facing disabilities such as auditory, visual, orthopedic, medical, or learning disabilities. To address student needs appropriately, requests for special accommodation must be submitted to the instructor at the course's outset. The Office of Disability Services, located in the Smithgall Student Services ("Flag") Building, Suite 221, can provide you with the necessary forms to submit to instructors (Phone: 404-894-2564).

Help with Stress and Personal Difficulties: If you're feeling stressed and need someone to talk to, don't hesitate to reach out to a counselor, your academic advisor, a professor, a faith leader, a parent, or a friend. The following are resources both on-campus and off-campus that can be beneficial during challenging times:

The **Georgia Tech Center for Mental Health and Resources** <https://mentalhealth.gatech.edu/> in the Smithgall Student Services ("Flag") Building, Suite 238. The Counseling Center is available at **404-894-2575** or by stopping by during regular business hours (Monday-Friday 8-5) to make an appointment.

If you are in crisis and need immediate attention, you can speak with a counselor 24 hours a day, 7 days a week. During regular business hours (Monday-Friday 8-5), contact 404-894-2575 or visit the Center, specifying that you are in crisis. Outside regular hours, call 404-894-2204 and request to speak to the after-hours counselor. Alternatively, contact the Georgia Tech police at 404-894-2500 and ask for the counselor on call. In cases of immediate life-threatening emergencies, dial 911 or, if on campus, call the Georgia Tech Campus Police at 404-894-2500. Additional resources can be found at <https://mentalhealth.gatech.edu/seeking-help/get-help-now>.

The Office of the VP-Dean of Students provides a referral resource for anyone with concerns about a fellow student. Visit <https://referral.studentlife.gatech.edu/> for more information.

The Georgia Crisis & Access Line (GCAL) at 800-715-4225 is staffed round-the-clock by professional social workers and counselors to help those with urgent and emergency needs.

The National Suicide Prevention Lifeline (800-273-8255) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

Course Schedule Table: Note minor changes may be made during the course as needed. However, all measures will be taken to avoid assignment due dates.

| <u>Unit 1: Explore fundamental concepts in physiology and understand how cells operate and communicate with each other to create tissue groups.</u> | | |
|---|--|---|
| Class Date | Class Activity Lecture Topic | Asynchronous Activity And Synchronous Class Activities |
| 1/6 (Mon) | Problem Solving Studio 1A: Physiology Core Concepts, Osmolarity, Case Study 1 intro | L1 A: Physiology Core Concepts and Cell Functions PSS 1A |
| 1/8 (Wed) | <u>Cells & Metabolism</u> <u>Actions</u> | |
| 1/10 (Fri) | <u>Tissues and Transport</u> <u>Actions</u> | |
| 1/13 (Mon) | Problem Solving Studio 1B: Cell Metabolism, Tissues and Transport | <u>L1 B: Membrane Transport and Osmosis</u> |
| 1/15 (Wed) | <u>Cell Signaling</u> <u>Actions</u> | |
| 1/17 (Fri) | <u>Graded and Action Potential</u> <u>Actions</u> | |
| 1/20 (Mon) | No Class Today | |
| 1/22 (Wed) | <u>Neurons, Neurotransmitters, and Synaptic Transmission</u> <u>Actions</u> | |
| 1/24 (Fri) | <u>Unit Integration and Review Session</u> <u>Actions</u> | <u>HW 1 Part 1 MC: (Due Before Class)</u> <u>HW 1 Part 2 (Wrapper Due After Class)</u> |
| 1/27 (Mon) | Problem Solving Studio 1C: Unit 1 Integration - Cell Physiology & Neuron Function | <u>L1 C Neurotransmitters- Connection to Cell Signaling</u> |

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

| 1/29 (Wed) Unit 1 Exam | | |
|---|---|---|
| <u>Unit 2: Discover how the Nervous System maintains homeostasis. Additionally, delve into the functions of the Muscular System, which plays a crucial role in keeping us mobile!</u> | | |
| 1/31 (Fri) | <u>Central Nervous System Organization & Function</u> <u>Actions</u> | |
| 2/3 (Mon) | Problem Solving Studio 2A: CNS Functions Unit 1 Peer Review | <u>L2A: Introduction to the Nervous System</u> |
| 2/5 (Wed) | <u>Sensory Physiology</u> <u>Actions</u> | |
| 2/7 (Fri) | <u>Skeletal Muscle (SKM) Mechanism of Action</u> <u>Actions</u> | |
| 2/10 (Mon) | Problem Solving Studio 2B: Somatic Control and SKM Physiology | <u>L2B: Pathologies that effect Somatic Control and SKM Physiology.</u> |
| 2/12 (Wed) | <u>Somatic Control and Reflexes</u> <u>Actions</u> | <u>Smooth Muscle Mechanism of Action</u> |
| 2/14 (Fri) | <u>Autonomic Nervous System (ANS)</u> <u>Actions</u> | <u>L2C: Sensory and ANS</u> |
| 2/17 (Mon) | PSS 2C: Sensory Physiology and ANS | |

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

| | | |
|--|--|---|
| 2/19 (Wed) | <u>Neural Control and Integration</u> <u>Actions</u> | |
| 2/21 (Fri) | Unit 2 Integration and HW Peer Review Session | HW 2 Part 1 (Due Before Class) HW 2 Part 2 (Wrapper Due After Class) |
| 2/24 (Mon) | Problem Solving Studio 2D: Unit 2 Integration | <u>L2D: Stress Physiology</u> |
| 2/26 (Wed) Unit 2 Exam | | |
| <u>Unit 3: <i>Analyze</i> hormone signaling pathways and their physiological effects, <i>evaluate</i> the integration of endocrine and cardiovascular functions, and <i>interpret</i> data related to heart rate, blood pressure, and hormonal regulation.</u> | | |
| 2/28 (Fri) | Endocrine Part I: Hormone Signaling | |
| 3/3 (Mon) | Problem Solving Studio: 3A-Endocrine | <u>L3A: Endocrine Part II: Hormones and Major Endocrine Pathologies</u> |
| 3/5 (Wed) | The Heart And Blood Flow Through the Heart | |
| 3/7 (Fri) | Cardiac Intrinsic Cycle, Conducting and Contractile Cell Action Potentials | |
| 3/10(Mon) | Problem Solving Studio 3B: Blood Flow through the heart, Cardiac Cell Excitability Mechanisms, EKG Data Analysis Unit 2 Peer Review | <u>L3B: EKG and Cardiovascular Shocks</u> |

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

| | | |
|--|--|---|
| 3/12 (Wed) | Cardiac Cycle | |
| 3/14 (Fri) | Intro to Circulatory System | |
| 3/17-21 Spring Break - No Classes | | |
| 3/24 (Mon) | Problem Solving Studio 3C: Resistance, Velocity, and Flow | L3Ca: Blood Flow, Pressure, and Velocity Part I L3Cb: Blood Flow, Pressure, and Velocity Part II |
| 3/26 (Wed) | Regulation of MAP | Microcirculation and Autoregulatory Mechanisms |
| 3/28 (Fri) | Unit Integration and HW Peer Review | HW 3 Part 1 (Due Before Class) HW 3 Part 2 (Wrapper Due After Class) |
| 3/31 (Mon) | Problem Solving Studio 3D: Microcirculation and Unit Overview | L3D: Stress Physiology and Cardiovascular System |
| 4/2 (Wed) Unit 3 Exam | | |
| Unit 4: Analyze the interplay between the respiratory and renal systems in regulating blood pressure, and explain their coordinated roles in maintaining overall homeostasis. Additionally, evaluate how the renal system maintains blood content homeostasis through filtration and regulation processes. | | |
| 4/4 (Fri) | Introduction to Respiratory System | Asynchronous Lectures: Ventilation Mechanics Ungraded Quiz |
| 4/7 (Mon) | Problem Studio 4A: Ventilation Unit 3 Peer Review | Pre-PSS 4A: O₂ and Hemoglobin |

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

| | | |
|--|---|---|
| 4/9 (Wed) | <u>Intro to Kidney and Nephron Structure and Function</u> <u>Actions</u> | |
| 4/11 (Fri) | <u>Renal Transport and Electrolyte Balance</u> <u>Actions</u> | |
| 4/14 (Mon) | Problem Solving Studio 4B: TBA | <u>Pre-PSS L4B: Glomerular Filtration</u> |
| 4/16 (Wed) | <u>Countercurrent Multiplier and Exchange</u> <u>Actions</u> | Asynchronous Lecture: <u>Acid-Base Homeostasis</u> <u>Actions</u> |
| 4/18 (Fri) | Unit 4 Integration and HW Peer Review | HW 4 Part 1 (Due Before Class) HW 4 Part 2 (Wrapper Due After Class) |
| 4/21 (Mon) | Problem Solving Studio 4C: Acid-Base and Integrative | <u>Pre-PSS L4C: Fluid and Salt Homeostasis</u> |
| Date Friday April 25 ; Final Exam (Unit 4 Exam + Unit 1-4 Cumulative Exam) 8:00am-10:50am Date Friday May, 2: Conflict Exam Day/ Make Up Exam Date: Time TBA; ODS is 8:30 am | | |

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.

Note: Syllabus may change during the semester; changes will be posted. You are responsible for all policies.