

Biology 389: Immunology

Fall 2022

Course Syllabus

Course and Instructor Information

Lecture: T, Th 2:00-3:15, CBB 135

Final Exam: Tuesday, Dec. 20, 8:00am-10:00

Instructor: Dr. Matt Rogge

Office: CBB 345

Email: mrogge@uwsp.edu

Office hours: W 1:00 pm-1:50 pm, F 9:00 am-9:50 am

Other times by appointment

Course Description

The purpose of this course is to discuss the complex activities and interactions of a vertebrate immune system. The course will cover the organs, tissues, and chemical and cellular factors involved in vertebrate immune responses. Cellular interactions and subsequent signaling events leading to development, activation, and effector responses of white blood cells will be detailed. Finally, once a foundational understanding of activation and regulation of immune responses is achieved, the various roles of the immune system in human health will be discussed.

What you should acquire from this class

Students will understand that...

- The vertebrate immune system includes multiple organs, tissues, and cells within the host.
- Various stimuli can activate immune responses, and the types of responses induced will depend on the type of stimulus received.
- An immune response consists of numerous, complex interactions involving chemical and cell-to-cell signaling, leading to effector responses by cells to protect the host against non-self entities.
- The immune system has powerful mechanisms for the destruction of bacteria, viruses, and other pathogens through the recognition of non-self antigens (mainly proteins). If not properly developed, however, these mechanisms can target self-cells and tissue leading to significant human diseases.
- Dysfunction of the immune system can have severe impacts on the health of a host.

Learning outcomes

Knowledge:

Students will...

- Distinguish innate from adaptive immune responses.
- Describe the role of specific cytokines in the generation of specific immune responses.
- Explain how innate immune responses help to initiate adaptive immune responses.
- Explain how antigens are identified by various immune receptors and how specific responses are generated in response to different types of antigens.
- Describe how immunization occurs following natural exposure to pathogens or through vaccination.
- Explain how abnormal cell function or cytokine production leads to immune-related disorders.
- Analyze the roles of the immune system in the inhibition and enhancement of tumor growth.

Skills:

Students will...

- Critically evaluate the role of specific immune responses against different infectious agents.
- Critically analyze why deficiencies in immune factors lead to specific diseases and cancers.

Dispositions:

Students will...

- Appreciate the complexity and power of the vertebrate immune system.

- Recognize the diversity of immune factors and their roles in generating diverse responses to multitudes of different pathogens.
- Recognize the importance of proper stimulation and regulation of immune responses for various human health-related reasons.

Required materials

Textbook: Punt, et al. 2019. Kuby Immunology, 8th Edition. W. H. Freeman and Co., New York, New York. Available from text rental.

Attendance

Students are expected to attend all lecture sessions. **ATTENDANCE AT ALL EXAMS IS REQUIRED.** Students that miss an exam will only be allowed a makeup in the event of illness or emergency, which will require documentation and is at the discretion of the instructor. If you are aware ahead of time of a conflict with a scheduled exam, a meeting with the instructor is required at least a week in advance of the exam to discuss the situation, and reasonable requests will be considered. **A makeup exam is not guaranteed.**

For unexcused absences during an exam, a makeup exam may be given if there was a sudden death of a loved one, violent illness, or accident. Written evidence of some kind will be required for any of the above reasons to make up an unexcused exam absence. **NO EXCEPTIONS.**

Grading

Optional Online quizzes

There will be three *optional* online quizzes, and each is worth 25 points. The first quiz will cover material presented in the first few weeks of class, and subsequent quizzes will cover material presented since that last exam. The format of the quizzes will include any combination of multiple choice, matching, true/false, labeling, and fill in the blank questions. These quizzes will be provided through Canvas and will be available to take for two days. Once you begin the quiz, you have 30 minutes to complete the quiz. You may take the quiz up to 5 times during the two-day window, and your final score will be the **average of all attempts**. No makeups are allowed if you fail to take the quiz within the 2-day window. These lecture quizzes are *optional*. If you do not take the quiz, you will not receive a grade, and the points for the quiz will not contribute to calculation of your final grade. **Once you begin the quiz, the grade will count even if you do not answer any questions. Do not start a quiz unless you intend on completing it.** You do not have to complete all three quizzes (you can choose to do none, one, two, three, or all four).

Quizzes point value: 75 points

Required Exams

There will be three exams. The first two exams are each worth 75 points. The information covered builds upon itself as we progress through the semester, so assume there will be cumulative components to each exam. The final is worth 125 points, with 75 points covering the third unit of material and 50 points covering cumulative material from the semester (including the last portion covered). **ALL** material covered in lecture is fair game on exams. **The level of detail you will be required to know is the level of detail covered in lecture.** The format of the exams will usually include short answer questions (usually 1/3 to 2/3 of the exam) but may also include any combination of multiple choice, ordering of events, matching, labeling diagramming, and fill in the blank questions. No lecture exams are dropped, but the **score of the final exam can replace your lowest midterm exam** (assuming the final exam grade is higher than a midterm exam grade). An equivalent percentage of points will be used as the replacement. For example, if get a 90% on the final and 60/75 (80%) on a midterm, the midterm grade will be changed to 67.5/75 (a 90%).

Exams point value: 275 points

TOTAL POINTS: 275-350 total points (depending on the number of optional assignments completed)

Grades will be calculated by dividing the total points received by the total points possible and multiplied by 100. The following scale will be used to assign a final grade. Grades will not be curved up or down.

| Percentage | Approximate Points | Letter |
|-----------------|--------------------|--------|
| 92.50 to 100% | (648 – 700 pts) | A |
| 89.50 to 92.49% | (627 – 647 pts) | A- |
| 86.50 to 89.49% | (606 – 626 pts) | B+ |
| 82.50 to 86.49% | (578 – 605 pts) | B |
| 79.50 to 82.49% | (557 – 577 pts) | B- |
| 76.50 to 79.49% | (536 – 556 pts) | C+ |

| Percentage | Approximate Points | Letter |
|-----------------|----------------------|--------|
| 72.50 to 76.49% | (508 – 535 pts) | C |
| 69.50 to 72.49% | (487 – 507 pts) | C- |
| 66.50 to 69.49% | (466 – 486 pts) | D+ |
| 60.0 to 66.49% | (420 – 465 pts) | D |
| ≤ 59.99% | (fewer than 420 pts) | F |

ROUNDING: Percentages with a decimal value of 0.50 or higher will be rounded **up** to the next whole percentage (e.g., 89.50% → 90%). Percentages with a decimal value less than 0.50 will be rounded **down** to the next whole percentage (e.g., 89.49999999% → 89%). **NO EXCEPTIONS.**

Future Letters of Recommendation and References

In the future, you may need a former professor to write a letter of recommendation or be a reference for your employment application, application for graduate school, awards and scholarships, or other future endeavors. If you decide that you want to ask me to be a reference for you, you need to consider what you have provided for me to write or talk about. Were you an average, above average, or excellent student? Were you engaged in class and excited about the material? Do I only know you based on a grade you received, or am I familiar with you outside of class and your goals for your life and career? Have you separated yourself from other students I have had in terms of interest, motivation, or academic success? **In other words, what am I going to be able to say about you to convince someone else that you are better than other applicants?** Furthermore, have you exhibited any negative characteristics that I might mention in my letter? The information I give reflects my *entire* impression of you based on what I have observed, and I will not give false or misleading information. Serving as a reference in no way guarantees that the reference will be a *positive* one. You need to consider these things for *any* person you hope to be a reference.

If you do ask me to be a reference or write a letter, I require the request to be in writing and an in-person meeting scheduled to discuss the position(s) for which you are applying. Before I give a recommendation, I require a current CV and/or transcript, copies of or links to forms I need to fill out, and all necessary contact information (names, addresses, phone numbers) required for me to submit the recommendation. Finally, I require these materials be delivered a minimum of **two weeks** before a recommendation is due. More time is greatly appreciated. If any of these criteria are not met, I will not have time, nor will I be well enough informed to write a letter.

Use of electronics during class

Please turn off/mute/set to vibrate any electronic devices that could interrupt class (lab or lecture) before class begins. If it is a personal emergency, feel free to excuse yourself from the class and communicate outside of the classroom.

Graduate credit

Students taking the course for graduate credit will be assigned additional work and should discuss this work with the instructor as soon as possible.

How to be successful in this class

- **Complete** all activities, pay attention, and be an **active** learner. **Attend** all lectures and pay attention.
- Look at the material you anticipate will be covered in class **before** you arrive to class. We cover a lot of material during the semester.
- Develop good note-taking skills. Do not try to write down everything that is said or that appears on the PowerPoint slides. Sort through the information and make note of the **important ideas and concepts** being

discussed. Reading and processing the information is the first step in learning the information. Print out the provided PowerPoint presentations and bring them to class to supplement your notes.

- Learn to take notes with abbreviations so that you can spend enough time listening in addition to writing. Leave space in your notes so that you can go back and fill in more details later.
- Be **engaged** in the classroom. Write information in *your own words*, and answer questions asked by the instructor, even if it is quietly to yourself. If your answer is incorrect, make sure you understand why.
- Do not study *for exams*. Studying that way promotes memorization, not understanding. Instead, **study for learning and understanding**, and do it often. You need to develop critical thinking skills to succeed in a science-based course and career. No boss is going to walk into your workspace and ask you to define a list of terms. They will expect you to **understand and apply** the information, not define it.
- Training your mind (studying and learning) is like training your body (sports, musical instruments, gaming, etc). The more you practice, the better you get. Practice (study) **early and often**.
- Begin studying for exams **at least two weeks** before the exam.
- Begin studying your notes in terms of “**big picture**” ideas. Find the bigger concepts and make sure you have a basic understanding of those ideas. Once those bigger concepts are understood, add additional details relating to those ideas. By doing this, you construct “compartments” in your mind to store the details rather than simply trying to absorb all the details and hoping that they arrange themselves into a coherent idea. Ultimately, the difference between an A, B, or C is the **level of detail** that you know, but you should begin by focusing on the bigger picture.
- Study frequently. **Repetition** is the key to learning any topic. Studying for 40 hours over the span of two weeks will be much more beneficial than studying for 40 hours the weekend before the exam. Learn to study **efficiently**.
- Do not try to memorize definitions. You will need to know what words mean to understand and answer questions, but I will never ask you to define a word.
- When you do not understand something, LOOK IN THE TEXTBOOK! The book can give more detailed explanations and images that may help you better understand the material. Alternatively, use the internet. You have a wealth of information at your fingertips, use it!
- When your notes do not make sense and the book does not help, schedule an appointment with me. I am here to help you learn. I do not expect you to be an immunologist *before* taking the class. I understand that much of this material is new to you and everyone else, and one or two lectures on a topic is not enough for you to fully grasp the concepts. Do not be too stubborn or independent to ask for help or you will risk falling behind.
- After you have studied and know some or most of the material, meet with other students in the class and actively **discuss** the information. **Explain mechanisms, theories, concepts**, etc. to other students. The other students can help you fill in areas where you are deficient. You will find that explaining these things to someone else is one of the best ways to ensure you **know** and **understand** the information. Then have another student explain a different idea or concept and help them identify areas in which they are deficient.
- The level of detail that you will be required to know is the **level of detail that I cover in lectures**. The book has much more detailed information, which may help you better understand the material I cover, but I will not ask about the details I do not cover.
- **Pay attention to the details**. That does not mean to study and know every single detail covered, but when you are answering questions, use **appropriate** terms. Describe things **accurately**. The more **clearly** and **accurately** you describe things and answer questions, the more confident I am that you know and understand the material. In other words, you will get **better grades** by having better **attention to detail**.
- When answering questions on exams, be sure you answer them **clearly** and **completely**. You should not expect me to interpret vague answers in your favor (because I will not). Your ability to explain something clearly is related to your knowledge of the subject. If your answers are not clear or direct, my interpretation is that you do not understand that topic very well.
- When I ask you to **explain** or **describe** something, the answer should not be a one or two-word answer. A good explanation will incorporate answers to the following questions:
 - “**What** is happening?”

- “**Why** is it happening?”
- “**How** it is happening?”
- Remember ***WHAT, WHY, and HOW***.
- Watch the following YouTube videos. The first is 1hr lecture by a psychology professor discussing how to study. The second is a 6 minute summary of the first video.
 - <https://www.youtube.com/watch?v=IIU-zDU6aQQ>
 - <https://www.youtube.com/watch?v=23Xqu0jXlfs>

GENERAL COURSE POLICIES

Attendance

I expect students to attend all lectures. Makeup exams or assignments will only be administered in the event of illness, emergency, university-sponsored event, etc., which will require documentation (an **excused** absence) before a makeup date is agreed upon. If you are aware ahead of time of a conflict with an exam period or other assignment, a meeting with the instructor is required to discuss the situation **at least 1 week before the absence**, and rescheduling may occur at the instructor’s discretion.

It is the student’s responsibility to get any missed lecture or lab material from another classmate. I am not able to re-teach the material to individual students, and full PowerPoint slides will not be given to students that miss lecture or lab material for any reason. To be exposed to all content provided in each session, each student must be present during the scheduled lecture periods.

Attending class will likely be the single most important factor in determining your performance and grade in the course, so plan to attend every class. The relationship between attendance and achievement in education has been extensively documented in peer-reviewed research.

Please refer to the “Absences due to Military Service” and “Religious Beliefs Accommodation” below. Additionally, below are attendance guidelines as outlined by the [UWSP registrar](#):

Attend all your classes regularly. We do not have a system of permitted "cuts." If you decide to drop a class, please do so using accesSPoint or visit the Enrollment Services Center. Changes in class enrollment will impact your tuition and fee balance, financial aid award and veterans educational benefit.

During the first eight days of the regular 16-week term, your instructor will take attendance. If you are not in attendance, you may be dropped from the class. You are responsible for dropping any of your enrolled classes.

- If you must be absent during the term, tell your instructor prior to the class you will miss. If you cannot reach your instructor(s) in an emergency, contact the Dean of Students Office at 715-346-2611 or DOS@uwsp.edu .
- If you are dropped from a class due to non-attendance, you may only be reinstated to the class section using the class add process. Reinstatement to the same section or course is not guaranteed. Your instructors will explain their specific attendance policies to be followed at the beginning of each course.
- If you take part in an off-campus trip by an authorized university group such as an athletic team, musical or dramatic organization, or a class, make appropriate arrangements in advance with the instructor of each class you will miss. If you are absent from classes because of emergencies, off-campus trips, illness, or the like, your instructors will give you a reasonable amount of help in making up the work you have missed.

- If you enroll in a course and cannot begin attending until after classes have already started, you must first get permission from the department offering the course. Otherwise, you may be required to drop the course.
- If you do not make satisfactory arrangements with your instructors regarding excessive absences, you may be dismissed. If you are dismissed from a class, you will receive an F in that course. If you are dismissed from the University, you will receive an F in all enrolled courses.

Late Work

Any late assignments will be assessed a minimum **10% penalty per day** that the assignment is late (weekends included) unless otherwise stated. This penalty will be assessed based on the number of points you earned. For example, if you turned in an assignment two days late and received a score of 8/10, the 40% deduction will be applied to the 8 points you earned (40% of 8 is 3.2 points, so the grade will be 4.8/10, rounded up to 5).

Emergency Procedures

- In the event of a medical emergency call 9-1-1 or use campus phone found across from CBB 130 if in lecture. Guide emergency responders to victim.
- In the event of a tornado warning, proceed to the lowest level interior room without window exposure, such as the hallway outside CBB 135 if in lecture. See **Error! Hyperlink reference not valid.** for floor plans showing severe weather shelters on campus. Avoid wide-span structures (gyms, pools or large classrooms).
- In the event of a fire alarm, evacuate the building in a calm manner.
- Active Shooter – RUN. HIDE. FIGHT. If trapped, hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders. See UW-Stevens Point Emergency Procedures at **Error! Hyperlink reference not valid.** for details on all emergency response at UW-Stevens Point.

Absences due to Military Service

As stated in the UWSP Catalog, you will not be penalized for class absence due to unavoidable or legitimate required military obligations, or medical appointments at a VA facility, **not to exceed two (2) weeks** unless special permission is granted by the instructor. You are responsible for notifying faculty members of such circumstances as far in advance as possible and for providing documentation to the Office of the Dean of Students to verify the reason for the absence. The faculty member is responsible to provide reasonable accommodations or opportunities to make up exams or other course assignments that have an impact on the course grade. For absences due to being deployed for active duty, please refer to the [Military Call-Up Instructions for Students](#).

Inclusivity Statement

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it using this [link](#). You may also contact the Dean of Students office directly at dos@uwsp.edu.

Religious Beliefs Accommodation

It is UW System policy ([UWS 22](#)) to reasonably accommodate your sincerely held religious beliefs with respect to all examinations and other academic requirements.

You will be permitted to make up an exam or other academic requirement at another time or by an alternative method, without any prejudicial effect, if:

- There is a scheduling conflict between your sincerely held religious beliefs and taking the exam or meeting the academic requirements; and
- You have notified your instructor within the first three weeks of the beginning of classes (first week of summer or interim courses) of the specific days or dates that you will request relief from an examination or academic requirement.
- Your instructor will accept the sincerity of your religious beliefs at face value and keep your request confidential.
- Your instructor will schedule a make-up exam or requirement before or after the regularly scheduled exam or requirement.
- You may file any complaints regarding compliance with this policy in the Equity and Affirmative Action Office.

Equal Access for Students with Disabilities

UW-Stevens Point will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

If modifications are required due to a disability, please inform the instructor and contact the [Disability and Assistive Technology Center](#) to complete an Accommodations Request form. Phone: 346-3365 or Room 609 Albertson Hall.

Help Resources

| Tutoring | Advising | Safety and General Support | Health |
|--|---|--|---|
| Tutoring and Learning Center helps with Study Skills, Writing, Technology, Math, & Science. 018 Albertson Hall, ext 3568 | Academic and Career Advising Center, 320 Albertson Hall Ext. 3226 | Dean of Students Office, 212 Old Main, ext. 2611 | Counseling Center, Delzell Hall, ext. 3553. Health Care, Delzell Hall, ext. 4646 |

[Click here](#) to flag a policy or practice that disproportionately affects marginalized students

UWSP Service Desk (1st Floor, Albertson Hall)

The Office of Information Technology (IT) provides a Service Desk to assist students with connecting to the Campus Network, virus and spyware removal, file recovery, equipment loan, and computer repair. You can contact the Service Desk via email at techhelp@uwsp.edu or at (715) 346-4357 (HELP) or visit this [link for more information](#).

Care Team

The University of Wisconsin-Stevens Point is committed to the safety and success of all students. The Office of the Dean of Students supports the campus community by reaching out and providing resources in areas where a student may be struggling or experiencing barriers to their success. Faculty and staff are asked to be proactive, supportive, and involved in facilitating the success of our students through early detection, reporting, and intervention. As your instructor, I may contact the Office of the Dean of Students if I sense you are in need of additional support which individually I may not be able to provide. You may also share a concern if you or another member of our campus community needs support, is distressed, or exhibits concerning behavior that is interfering with the academic or personal success or the safety of others, by reporting [here](#).

Academic Honesty

Academic Integrity is an expectation of each UW-Stevens Point student. Campus community members are responsible for fostering and upholding an environment in which student learning is fair, just, and honest. Through your studies as a student, **it is essential to exhibit the highest level of personal honesty and respect for the intellectual property of others. Academic misconduct is unacceptable.** It compromises and disrespects the integrity of our university and those who study here. To maintain academic integrity, a student must only claim work which is the authentic work solely of their own, providing correct citations and credit to others as needed. **Cheating, fabrication, plagiarism, unauthorized collaboration, and/or helping others commit these acts are examples of academic misconduct, which can result in disciplinary action.** Failure to understand what constitutes academic misconduct does not exempt responsibility from engaging in it.

UWSP 14.03 Academic misconduct subject to disciplinary action.

(1) Academic misconduct is an act in which a student:

- (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
- (b) Uses unauthorized materials or fabricated data in any academic exercise;
- (c) Forges or falsifies academic documents or records;
- (d) Intentionally impedes or damages the academic work of others;
- (e) Engages in conduct aimed at making false representation of a student's academic performance; or
- f) Assists other students in any of these acts.

(2) Examples of academic misconduct include, but are not limited to:

- Cheating on an examination
- Collaborating with others in work to be presented, contrary to the stated rules of the course
- Submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another
- Submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas
- Stealing examinations or course materials
- Submitting, if contrary to the rules of a course, work previously presented in another course
- Tampering with the laboratory experiment or computer program of another student
- Knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

Students suspected of academic misconduct will be asked to meet with the instructor to discuss the concerns. If academic misconduct is evident, procedures for determining disciplinary sanctions will be followed as outlined in the [University System Administrative Code, Chapter 14](#).

Other Campus Policies

FERPA

The [Family Educational Rights and Privacy Act](#) (FERPA) provides students with a right to protect, review, and correct their student records. Staff of the university with a clear *educational need to know* may also have to access to certain student records. Exceptions to the law include parental notification in cases of alcohol or drug use, and in case of a health or safety concern. FERPA also permits a school to disclose personally identifiable information from a student's education records, without consent, to another school in which the student seeks or intends to enroll.

Title IX

UW-Stevens Point is committed to fostering a safe, productive learning environment. Title IX and institutional policy prohibit discrimination on the basis of sex, which includes harassment, domestic and dating violence, sexual assault, and stalking. In the event that you choose to disclose information about having survived sexual violence, including harassment, rape, sexual assault, dating violence, domestic violence, or stalking, and specify that this violence occurred while a student at UWSP, federal and state laws mandate that I, as your instructor, notify the Title IX Coordinator/Office of the Dean of Students.

Please see the [Title IX page](#) for more information for guidance on making confidential reports of misconduct or interpersonal violence, as well as campus and community resources available to students.

Clery Act

The US Department of Education requires universities to disclose and publish campus crime statistics, security information, and fire safety information annually. Statistics for the three previous calendar years and policy statements are released on or before October 1st in our [Annual Security Report](#). Another requirement of the Clery Act, is that the campus community must be given timely warnings of ongoing safety threats and immediate/emergency notifications. For more information about when and how these notices will be sent out, please see our [Jeanne Clery Act](#) page.

Drug Free Schools and Communities Act

The Drug Free Schools and Communities Act (DFSCA) requires institutions of higher education to establish policies that address unlawful possession, use, or distribution of alcohol and illicit drugs. The DFSCA also requires the establishment of a drug and alcohol prevention program. The Center for Prevention lists information about alcohol and drugs, their effects, and the legal consequences if found in possession of these substances. [Center for Prevention – DFSCA](#)

Copyright infringement

This is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act. Each year students violate these laws and campus policies, putting themselves at risk of federal prosecution. For more information about what to expect if you are caught, or to take preventive measures to keep your computing device clean, visit our [copyright page](#).

TENTATIVE SCHEDULE

| Week | Date | Topic | Chapter(s) |
|------|---|---|------------|
| 1 | Sept. 6 | Syllabus and Introduction to Immunology | 1 |
| | Sept. 8 | Introduction to Immunology | 1 |
| 2 | Sept. 13 | Immune Cells | 2 |
| | Sept. 15 | Immune Organs | 2 |
| 3 | Sept. 20 | Immune Recognition and Response (Receptors) | 3 |
| | Sept. 22 | Immune Recognition and Response (Cytokines) | 3 |
| 4 | Sept. 27 | Innate Immunity | 4 |
| | Sept. 29 | Optional Quiz 1 Available in Canvas Innate Immunity | 4 |
| 5 | Oct. 4 | The Complement System | 5 |
| | Oct. 6 | Lymphocyte Receptor Genes | 6 |
| 6 | Oct. 11 | MHC and Antigen Presentation | 7 |
| | Oct. 13 | EXAM 1 (Tentatively Ch. 1-6) | |
| 7 | Oct. 18 | T Cell Development | 8 |
| | Oct. 20 | T Cell Activation, Differentiation, and Memory | 10 |
| 8 | Oct. 25 | B Cell Development | 9 |
| | Oct. 27 | B Cell Activation, Differentiation, and Memory | 11 |
| 9 | Nov. 1 | B Cell Activation, Differentiation, and Memory | 11 |
| | Nov. 3 | Optional Quiz 2 Available in Canvas T and B Cell Effector Responses | 12 |
| 10 | Nov. 8 | T and B Cell Effector Responses | 12 |
| | Nov. 10 | Barrier Immunity | 13 |
| 11 | Nov. 15 | Barrier Immunity | 13 |
| | Nov. 17 | EXAM 2 (Tentatively Ch. 7-12) | |
| 12 | Nov. 22 | Adaptive Response in Space and Time | 14 |
| | Nov. 24 | THANKSGIVING BREAK – NO CLASS | |
| 13 | Nov. 29 | Allergy, Hypersensitivities, and Chronic Inflammation | 15 |
| | Dec. 1 | Tolerance, Autoimmunity, and Transplantation | 16 |
| 14 | Dec. 6 | Infectious Diseases and Vaccines | 17 |
| | Dec. 8 | Infectious Diseases and Vaccines | 17 |
| 15 | Dec. 13 | Immunodeficiency Disorders | 18 |
| | Dec. 15 | Optional Quiz 3 Available in Canvas Cancer and the Immune System | 19 |
| 16 | FINAL EXAM, Tuesday, Dec. 20, 8:00am-10:00 | | |