Course Syllabus: Immunology

BIOL 4023

General Information:

Course Meetings: MWF (11:00 am – 12:20 pm) Bolin Hall 248
Instructor: James Masuoka, Ph.D.
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Office Hours: TR 9:30 – 11:00 am
WF 1:00 – 2:00 PM
(Other times by appointment)

Course Description:

This course presents fundamentals of cellular and molecular immunology. The course material examines structure, function and genetics of the immune system; regulation of humoral and cell-mediated responses; and the role of the immune system in human disease.

Required Text:

The Immune System by Peter Parham. 5th Edition. Garland Science, 2021.
ISBN 9780393533354

Course Objectives:

- Identify the cellular and humoral components of the human immune system
- Compare and contrast the mechanisms of the innate and adaptive immune responses
- Describe how the innate and adaptive immune responses communicate with each other
- Describe how the immune system responds to and eliminates the various types of pathogens (bacteria, fungi, protozoans, helminthes, viruses)
- Explain the mechanisms that contribute to immune system can fail; in terms of failure to fight infectious disease, of production of autoimmunity, and of over-response leading to hypersensitivity
- Critically evaluate data from the research literature and case studies to answer questions related to immune function and disease.

Classroom expectations and policies:

- Students are expected to be prepared for lecture and lab by: 1) reading the text, lab manual and handouts prior to coming to class; 2) having paper and pen at hand
- Students are expected to arrive a few minutes early in order to mentally prepare. If late arrival is unavoidable, the student should enter the class in a manner that creates as little disruption as possible.
- Points will be deducted from assignments turned in late.
- Student Conduct: Please refer to the MSU Student Handbook: (https:// msutexas.edu/student-life/_assets/files/handbook.pdf) for university policies related to student responsibilities, rights, and activities. For example: valid grounds for an instructor drop (excessive absence, indifferent attitude, disruptive conduct, failure to meet class assignments; p. 79), code of student conduct (p. 10-71), and definitions of academic dishonesty that may be subject to disciplinary action (cheating, plagiarism, and collusion; p. 72). In this class, academic dishonesty on an assignment or exam will minimally result in a score of 0 for that assignment or exam. Depending on the magnitude or frequency of these types of infractions, more severe sanctions – including being dropped from the course – will be imposed.
- Analytical and critical thinking skills in both written and oral communication are part of the learning outcomes of this course. Therefore, all writing assignments and classroom discussion responses should be prepared by the student. Developing strong competencies in this area will prepare you for a competitive workplace. Because of this, AI-generated submissions are not permitted and will be treated as plagiarism (Adapted from Texas Tech University statement).
- **CELL PHONES (and other electronic devices): (READ THIS TWICE, PLEASE)** NO cell phones are permitted to be out in this class. This class, as well as your other classes, requires your engagement, and cell phones serve to detract from that engagement. Additionally, your phone should be not only put away, but on “silent” (NOTE: vibrate is NOT silent). If your phone is out and/or in sight, you will be asked to put it away.
- **Other electronic devices (laptops, tablets and similar devices):** These may be used only if you are using them as “electronic paper”. That is, if you are writing on them with a stylus or some type. The ability to take good notes is a skill that university students must be able to master. Further, classroom studies have shown that taking notes by hand increases engagement in the material. Simply transcribing the lecture word-for-word (as you are tempted to do while typing) is not helpful.
- Students with disabilities: It is the responsibility of the student to first contact Disability Support Services and then the instructor to determine what accommodations might be made for a disability. It will be the responsibility of the student to make arrangements to acquire notes. Any requests for accommodations must be made 2 weeks prior to the first exam.
- The professor considers this classroom to be a place where you will be treated with respect as a human being - regardless of gender, race, ethnicity, national origin, religious affiliation, sexual orientation, political beliefs, age, or ability. Diversity of thought is appreciated and encouraged, provided you can agree to disagree. Guns or other weapons create a coercive environment that is neither safe nor conducive to learning. Therefore weapons of any kind will not be permitted in my classroom. This includes guns, concealed or otherwise, regardless of licensure. Any student bringing a weapon to class or to lab will be immediately dropped from the course. It is the professor's expectation that ALL students consider the classroom a safe environment.

- The instructor reserves the right to amend these rules as needed throughout the term.

E-mail Policy:

I will respond to e-mail during regular school hours (8:30 am – 5:00 pm M-F). I will make every effort to respond to e-mail sent during the week within 24 hours. Those sent over the weekend will be attended to on Monday. Always include a subject line in your e-mail messages. It would be particularly helpful to include in the subject line the course number & section (*i.e.* BIOL 4023). Questions regarding simple matters of class schedule or those that can otherwise be answered from information in this syllabus will be given low priority.

Attendance Policy:

Students are expected to attend all meetings of lecture and lab. Although in general students are graded on intellectual effort and performance rather than attendance, absences lead to lower overall grades and demonstrate a failure to give priority to your studies. Instructor's records will stand as evidence of absences. A student with excessive absences may be dropped from a course by the instructor. The instructor must give the student a verbal or written warning prior to being dropped from the class (Student Handbook, p. 79).

If you feel ill (esp. with signs and symptoms of COVID-19): Stay home and isolate yourself. Inform your instructor of your circumstances.

It is the responsibility of the student to obtain notes or other information covered in class during an absence.

Exam Policies:

- No make-up exams will be given in this course. If you must miss class during a midterm exam period, and it is an excusable absence (see above), then the cumulative portion of the final exam will be used to determine the missed midterm score. You must notify the instructor of problems **prior** to the start of the exam, and provide the appropriate documentation as soon as possible. Only one midterm exam will be substituted for in this manner.

- Exams are not moved for congested midterm or finals schedules.

- **All electronic devices**, including cell phones, **must be completely turned off** during exam periods. I will keep track of time and relay the information to the class. If you must keep track of time yourself, invest in a wristwatch.

Grading:

All exams and assignments count toward your final grade in the course and so it is important to do the best that you can on everything you turn in. If you find yourself having difficulties, please come to me for help early in the semester so that you give yourself time to improve.

This course is not graded on a traditional curve. The course is worth 555 points. Grade categories and equivalent percentages are as indicated: A (90-100%); B (80-89.9%); C (70-79.9%); D (60-69.9%); F (59.9% and below). However, the instructor may make adjustments in the point total as is deemed necessary. Passing requires 60% of the points (unadjusted) for the course, or 360. Fractional percentages will be rounded at the end.

Attendance is not a direct component of your course score. However, continual tardiness – and the subsequent class disruption due to coming in late – will be taken into account and may have an effect on your final points awarded. As stated above, cell phone use distracts from attention in class. Therefore, students who persist in using their mobile devices during class will be marked as absent.

There will be 3 midterm exams, each worth 90 points. Midterm exams will focus on what was covered since the previous exam. However, each exam will be cumulative in that each section of the course builds on what came before. The final exam (180 points) will focus on material from the last portion of the semester, but will also cover material from the entire course. In addition, any material that requires review following an exam (i.e. the vast majority of the class got it wrong) will more than likely show up on the subsequent exam(s).

In addition to the textbook, we will be reading four primary research articles. The papers will be discussed during the class periods indicated. The first paper will be used to introduce the organization, analysis and critiques of primary research articles. Graded reading assignments will be developed from the other two papers (25 points each). In addition, questions on the midterm and final exams may be developed from the information in these articles.

Note:

1) No regrades will be provided for exams done in pencil.
2) Misspelled words and incorrect nomenclature will result in ¼ point deductions for each instance.

Assignment Summary:

Midterm exams:	270 points (3 x 90 points)
Final exam:	180 points
Paper assignments:	50 points
Total:	500 points

Important Dates (Fall 2025):

Classes begin:	**August 25**
Midterm Exam 1:	**September 19**
Midterm Exam 2:	**October 17**
Midterm Exam 3:	**November 12**
Last day to drop with a “W”:	November 24 (4:00 pm)
Thanksgiving Break:	November 26 - 28
Classes end:	December 5
Final Exam:	**December 8 (Monday) (10:30 am – 12:30 pm)**

Tentative Lecture Schedule

Week	Date	Topic (Chapter)	Pages	Assignment
1	Aug 25 – 29	Introduction; Essay Discussion; Overview of Immunity (1)	1 – 33	**Essays (Yong, Wu)**
2	Sept 1	Labor Day: No Class		
2	Sept 3 – 5	Innate – Immediate (2)	35 – 51	
3	Sept 8 – 12	Innate – Immediate (2); Innate – Induced (3)	35 – 51 53 – 95	
4	Sept 15 – 19	Innate – Induced (3); **Paper 0** **Exam 1**;	53 – 95	**Paper 0 Discussion** **Exam 1 (9/19)** **(Ch 1 – 3)**
5	Sept 22 – 26	B-cell Diversity (4); B-Cell Development (6)	97 – 127 163 - 189	
6	Sept 29 – Oct 3	B-Cell Development (6) T-Cell Receptor/MHC (5)	163 – 189 129 – 161	
7	Oct 6 – 10	TCR/MHC (5); T-Cell Development (7)	129 – 161 191 – 211	
8	Oct 13 – 17	**Paper 1;** **Exam 2;** T-cell Immunity (8)	213 – 243	**Paper 1 Discussion** **Exam 2 (10/15)** **(Ch 4, 6, 5)**
9	Oct 20 – 24	T-cell Immunity (8)	213 – 243	**Paper 1** **Assignment** **Due (10/20)**
10	Oct 27 – 29	B-cell Immunity (9)	245 – 279	
10	Oct 31	**Texas ASM Fall meeting**		**TBD**
11	Nov 3 – 7	B-cell Immunity (9) Memory (11)	245 – 279 305 - 337	
12	Nov 10 – 14	**Paper 2;** **Exam 3**; Failures (13);	375 – 409	**Paper 2 Discussion** **Exam 3 (11/12)** **(Ch 7 – 9, 11)**
13	Nov 17 – 21	Failures (13) Allergy (14, 15[parts])	375 – 409 411 – 437	**Paper 2** **Assignment** **Due (11/17)**
14	Nov 24	Allergy (14, 15 [parts])	411 – 437 439 – 448	
14	Nov 26 – 28	**No Class: Thanksgiving Break**		
15	Dec 1 – 5	Allergy (14, 15[parts]) Disruption (16)	411 – 437 439 – 448 475 - 505	
	Dec 8	**Final Exam (Ch 10, 11, 13, 14, 16; Comprehensive)** **(Monday) 10:30 am – 12:30 pm**		