AMBROSE UNIVERSITY COLLEGE | FACULTY OF ARTS & SCIENCE

Bio 445 Immunology (3)
Fall 2013

Course description

The course introduces students to the mammalian immune system. Students will be introduced to the key components of the immune system, as well as the processes of the system that recognize and mount an immune response to ultimately eliminate foreign invaders, which include pathogens and organ grafts.

Further course information

Lectures are planned to introduce students to all aspects of the biology of the human immune system. These will be followed by a series of case studies and discussions to understand what happens when the immune system fails or goes awry. All students are required to attend Bio 445L, which will comprise of wet and dry labs of laboratory techniques most commonly used in Immunology.

Class schedules:

Lectures: A2141. Wednesdays and Fridays, 1:00 – 2:15 pm
Laboratory: A2145. Mondays, 2:30 – 5:00 pm

Instructor Information

Instructor: Jessmi Ling, PhD
Office: A2158
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Course objectives

1. Students will be familiar with cellular and humoral components of the immune system.
2. Students will learn the fundamental processes of the immune system.
3. Students will appreciate the importance of the immune system and its role in immunological diseases.
4. Students will gain experience in critically reviewing papers, as well as presenting case studies in small group discussions.

Course prerequisites: Zoology 263, Biology 231, Biology 241

Required textbook

Kuby Immunology. 7th Edition. Owen J, Punt J and Stranford S. 2013. WH Freeman and Co. New York.

Complimentary Textbooks:

Roitt's Essential Immunology. 12th Edition. Delves PJ, Martin SJ, Burton DR and Roitt IM. 2011. Wiley-Blackwell. West Essex.

Attendance

There are no penalties for non-attendance of lectures. However, attendance is compulsory for all laboratory, tests and exams. Allocated marks will not be awarded if student is absent from any laboratory, tests or exams without notice and sufficient reason.

Tentative schedule for lecture, laboratory and tutorials:

The laboratory component consists of wet lab experiments as well as dry labs which involve tutorials, case studies and journal discussions.

Date	Topic	Chapter
Sept 9	Course introduction – Overview of the immune system. Cells and organs of the immune system.	1 2
Sept 16	Receptors and signaling: B and T receptors. Lab 1: Giemsa stain, microscopy.	3
Sept 23	Receptors and signaling: antibody structure and cytokines. Innate immunity. Lab 2: Antibody preparation.	4 5 20 (p. 654)
Sept 30	The complement system. Lab 3: Agglutination – Immunoprecipitation, Ouchterlony.	6 20 (p. 656-659)
Oct 7	Lymphocyte receptor genes MHC and antigen presentation	7 8
Oct 11	**Friday, Test 1 (Ch 1 – 8)**	
Oct 14	Thanksgiving Day (no classes)	
Oct 16	T-cell development	9
Oct 18	T-cell activation, differentiation and memory	11
Oct 21	B-cell development B-cell activation, differentiation and memory	10 12
Oct 28	Effector responses. Immune responses in time and space.	13 14

	Lab 4: Immunoblot, dotblot and ELISA	20 (p. 659)
Nov 4	**Test II (Ch 9 – 14)** Lab 5: Immunofluorescence, imaging and other assays.	 20 (p. 664-689)
Nov 6	Inflammation: Allergy and hypersensitivities.	15
Nov 8	Autoimmune diseases.	16
Nov 11	Remembrance Day (no classes)	
Nov 13	Tolerance and transplantation.	16
Nov 15	Infectious diseases and vaccines.	17
Nov 18	Immunodeficiency disorders. Cancer and the immune system.	18 19
Nov 25	Case study and paper discussions I	
Dec 2	Case study and paper discussions II	
Dec 9	Case study and paper discussions III	
Dec 14	**Final Exam**. 9 am – noon. TBD.	

Mark distribution:

Tests (2 × 20%)	40%
Assignments	30%
Final exam	30%

Assignments:

- Labs 1 – 5 (30 marks each) 150 marks
- Case studies and paper discussions 300 marks

Tests consist of short answer questions based on topics covered during lectures. The tests are not cumulative. The final exam consists of multiple-choice questions, short and long answer questions. Questions are based on topics covered during lectures and corresponding chapters from the required textbook. The final exam will cover topics from the whole course (cumulative).

Assignments include all assessment for laboratory, paper discussions and case studies. The due date for each assignment will be provided on the assignment sheet. Please hand in all assignments as instructed. Late submissions are not accepted unless sufficient reason is provided for an extension, whereby a written request for extension is supplied to the instructor prior to the due date. Please note that students must earn at least 70% (210 marks) of cumulative assignment marks in order to have the assignment marks added to the final marks for grading.

Grading scheme:

A+	93 – 100%	C+	66 – 69%
A	86 – 92%	C	62 – 65%
A−	82 – 85%	C−	58 – 61%
B+	78 – 81%	D+	54 – 57%
B	74 – 77%	D	50 – 53%
B−	70 – 73%	F	Below 50%

Important dates:

Residence opens: Sunday, September 1.

Fees due: Wednesday, September 4.

Convocation Chapel: Thursday, September 5.

Last day to enter course without permission; last day to withdraw from a course, change to audit, and receive tuition refund: Sunday, September 15.

Spiritual Emphasis Day: Wednesday and Thursday, September 25 – 26.

Graduation application deadline: Friday, October 18

Last day to request revised time for a final exam: Monday, October 28.

Last day to withdraw from courses without academic penalty: Thursday, November 12.

Last day to apply for time extension for coursework: Monday, November 25.

Last day of classes: Monday, December 9.

Residence closes: Friday, December 20.

From the registrar:

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to engage in electronically-enabled activities unrelated to the class during a class session. Please turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Please do not use iPods, MP3 players, or headphones. Do not text, read or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Student Handbook and Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a "Course Extension" from the Registrar's Office. Requests for course extensions or alternative

examination time must be submitted to the Registrar's Office by the appropriate deadline (as listed in the Academic Calendar http://www.ambrose.edu/publications/academiccalendar). Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University College as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to give credit to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar and the Student Handbook that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Students are advised to retain this syllabus for their records.