

**Course Title:** Immunology  
**Course Number:** Biol-341/541  
**Semester:** Fall 2012  
**Location:** HS 57  
**Time:** 8:00-9:30 AM Tue/Thur  
**Instructor:** Dr. Colleen M. McDermott  
**Office:** Nursing Ed 101 (424-1217)  
**E-mail\*:** mcdermot@uwosh.edu

**\*(I will more rapidly return e-mails, than I will phone calls)**

**Office Hours:** Tue/Thur 9:30-10:30 AM  
Mon, Wed, Fri 11:00 AM-12:00 PM

**Required Text:** Goldsby,R.A.,T.J. Kindt, B.A. Osborne, and J. Kuby.  
2007. Immunology, 6th. Edition. W.H. Freeman and  
Co.,New York.

**Grading:** Examinations (100 pts) X 4 = 400  
\*\*Case Study (100 pts) = 100  
500

**\*\* See Case Study Instruction Page for details**

A	=	100-94	*Instructor reserves the right to adjust grades of the entire class if necessary (ie. curve).
A-	=	93-90	
B+	=	89-87	
B	=	86-83	
B-	=	82-80	
C+	=	79-77	
C	=	76-74	
C-	=	73-70	
D+	=	69-67	
D	=	66-64	
D-	=	63-60	
F	=	<60	

**There will be extra credit most weeks of the course. Objective Sheets are provided for topics we will cover and consist of a series of questions pertaining to the topic. As we finish a topic, answers to the questions posed on the Objective Sheets will be due the next class period and will be worth up to 1 extra credit point each (15-20/semester). Extra credit points will be added to the nearest exam following submission of the Objective Sheet answers.**

**Completion of the Objective Sheet questions soon after completion of the topic will allow you to solidify the knowledge you have obtained from that topic. In addition, it will allow you to organize your thought and put them into writing in preparation for exams, forming stronger neural connections in your brain than develop with last minute studying.**

**Likewise, there will be 3 extra credit points awarded to students who make an appointment to come to my office (prior to October 1) to discuss the course, their reasons for taking the course, and their overall interests.**

**IMMUNOLOGY**  
**Biol-341/541**  
**2012**

<u>Period</u>	<u>Date</u>	<u>Topic</u>	<u>Reading</u>
1	Sept. 6	Introduction History Innate vs. adaptive Inflammation Humoral vs. cellular Clonal selection	Ch. 1 p 1-22
2	Sept. 11	Cells & Organs  Hematopoiesis Apoptosis Lymphoid cells Myeloid cells Stromal cells Growth factors/cytokines CSF, interleukins leukemia Mononuclear cells Phagocytosis Antigen-processing Secretions Activation Granulocytic cells Neutrophils Eosinophils Basophils Mast cells Dendritic cells Non-lymphoid Lymphoid	Ch. 2 p 23-30 p 36-40
3	Sept. 13	Cells & Organs, cont. Lymphoid Cells Cluster of differentiation B cells Memory cells Plasma cells T cells CD <sub>4</sub> /T <sub>H</sub> cells CD <sub>8</sub> /T <sub>C</sub> /CTL cells MHC restriction	Ch. 2 p 30-36

**Lymphokines**

**T<sub>s</sub>**

**Null cells**

**NK cells**

**AB-dependent cell-mediated  
cytotoxicity (ADCC)**

<b>4</b>	<b>Sept. 18</b>	<b>Cells &amp; Organs, cont.</b>	<b>Ch. 2 p 40-51 Ch. 13 p 332-338</b>
		<b>Primary Lymphoid Organs</b>	
		<b>Thymus</b>	
		<b>Stromal cells</b>	
		<b>Thymocytes</b>	
		<b>Apoptosis</b>	
		<b>Bone marrow</b>	
		<b>Bursa of Fabricius</b>	
		<b>Secondary Lymphoid Organs</b>	
		<b>Lymph Nodes</b>	
		<b>Spleen</b>	
		<b>Mucosal-associated lymphoid tissue</b>	
		<b>Lymphocyte recirculation</b>	
		<b>High endothelial venules</b>	
		<b>Cell-adhesion molecules</b>	
		<b>Integrin receptors</b>	
		<b>Neutrophil Extravasation</b>	
<b>5</b>	<b>Sept. 20</b>	<b>Innate Immunity</b>	<b>Ch. 3 p.52-75</b>
		<b>Barriers</b>	
		<b>Pattern recognition receptors</b>	
		<b>Soluble molecules</b>	
		<b>Toll-like receptors</b>	
<b>6</b>	<b>Sept. 25</b>	<b>Antigens</b>	<b>Ch. 4 p 76-84</b>
		<b>Immunogenicity</b>	
		<b>Foreignness</b>	
		<b>Molecular size</b>	
		<b>Chemical composition</b>	
		<b>Degradability</b>	
		<b>Genotype of host</b>	
		<b>Dosage and administration</b>	
		<b>Adjuvants</b>	
		<b>Epitopes</b>	
		<b>MHC restriction</b>	
		<b>B-cell epitopes</b>	
		<b>T-cell epitopes</b>	

7	Sept. 27	<b>Antigens, cont.</b> <b>Haptens</b> <b>Viral antigens</b> <b>Bacterial antigens</b> <b>Mitogens</b> <b>Superantigens</b>	<b>Ch.3 p 77-78</b> <b>Ch. 10 p. 260-261</b>
8	Oct. 2	<b>Immunoglobulins</b> <b>Structure</b> <b>Heavy chain</b> <b>Light chain</b> <b>Variable regions</b> <b>Constant regions</b> <b>Hinge region</b>	<b>Ch. 4 p 84-94</b>
9	Oct. 4	<b>Immunoglobulins,cont</b> <b>Allotypes</b> <b>Idiotypes</b> <b>Isotypes</b> <b>IgG</b> <b>IgM</b> <b>IgA</b> <b>IgE</b> <b>IgD</b> <b>Immunoglobulin Superfamily</b>	<b>Ch. 4 p 95-105</b>
	Oct. 3-5	<b><u>EXAMINATION 1-Testing Center</u></b>	
10	Oct. 9	<b>Ag-Ab Interactions</b> <b>Affinity</b> <b>Avidity</b> <b>Cross-reactivity</b> <b>Precipitation and Agglutination</b> <b>Labeled Immunoassays</b> <b>Monoclonal Antibodies</b>	<b>Ch. 6 p 145-167</b> <b>Ch. 4 p 105-110</b>
11	Oct. 11	<b>Ig Genetics</b> <b>Heavy chain multi-gene family</b> <b>Variable region gene rearrangement</b> <b>V-D-J genes</b> <b>Allelic exclusion</b> <b>Class switching</b> <b>Diversity</b>	<b>Ch. 5 p 111-144</b>

12	Oct. 16	MHC	Ch. 8 p 189-222
		MHC I molecules MHC II MHC III Haplotypes MHC and antigen presentation MHC and infectious disease	
13	Oct. 18	No Class- Work on Case Studies	
14	Oct. 23	T-cell Receptor	Ch. 9 p 223-244
		Structure Genetics V-D-J genes Diversity Similarities & Differences with Ig molecules Accessory molecules CD <sub>2</sub> , CD <sub>4</sub> , CD <sub>8</sub> TCR-CD <sub>3</sub> complex Signal transduction	
15	Oct. 25	T-cell Maturation	Ch. 10 p 245-270
		Tolerance Thymic maturation of T-cells T-cell development Superantigens T-cell activation Co-stimulation Subpopulations	
16	Oct. 30	Cytokines	Ch. 12 p 302-326 Ch. 13 p 329-332
		Interleukins Interferons TNFs T-cell activation B-cell activation Cytokines and inflammation Cytokines and disease Chemokines	
17	Nov. 1	Discussion and Review	
18	Nov. 6	Humoral Immune Response	Ch.11 p 289-297
		1° vs. 2° response Affinity maturation	

Class switching  
Hemolytic plaque assay  
Antigen presentation by B-cells

Nov. 7-9

**EXAMINATION 2-Testing Center**

19 Nov. 8

Cell-mediated Immun. Ch. 14 p 351-365  
Direct cytotoxicity  
Sensitization phase  
MLR  
Graft vs. host reactions  
Effector phase  
Mechanisms  
Natural killer cells

20 Nov. 13

Cell-mediated Immun. Ch. 14 p 366-370  
Ch. 15 p. 393-397  
ADCC  
Delayed-type hypersensitivity  
Transplantation Ch. 17 p 425-446  
Graft Rejection  
Transplantation antigens

21 Nov. 15

Complement Ch. 7 p. 168-188  
Components  
Activation  
Classical pathway  
Alternate pathway  
Membrane attack complex  
Regulation  
Biological consequences  
Cell lysis  
Opsonization  
Virus neutralization  
Complement deficiencies

**PRE- READS FOR CASE STUDY ARE DUE!!**

22	Nov. 20	<u>Examination 3-In Class</u>
	Nov. 25	Thanksgiving Day
23	Nov. 27	Hypersensitivity Ch.15 p 371-391 IgE-mediated (Type 1) Antibody-mediated (Type 2)
24	Nov. 29	Hypersensitivity Ch. 15 p 391-400 Immune complex (Type 3) T <sub>DTH</sub> -mediated (Type 4)
25	Dec. 4	Tolerance & Autoimmunity Ch. 16 p 401-424 Central vs. peripheral tolerance Diseases Mechanisms Therapy
26	Dec. 6	Immunodeficiency Ch. 20 p 493-504 Phagocyte deficiencies Humoral deficiencies Cell-mediated deficiencies Combined deficiencies

## Case Study Due

27	Dec. 11	Tumor Immunology Ch. 21 p 525-545 Cancer cells Transformation Oncogenes Tumor antigens NK cells Therapy
28	Dec. 13	<u>FINAL EXAMINATION- In Class</u>

Students needing extra time to complete in class exams must make arrangements with instructor prior to examination period. Students unable to attend in class examinations due to illness or emergency must notify instructor or departmental office (424-1102) prior to the exam.

Exams 1 and 2 will be given at the Testing Center and may be taken at any time the Testing Center is open during the designated three day periods. Photo ID is required to gain entrance to Testing Center.



**Examinations will be graded for scientific content, as well as spelling and grammar. Dictionaries and calculators are permitted during any examination period (No Scientific or Medical Dictionaries, please)**