

MI 822
Immunity, Infection and Disease
Course Syllabus 2008
Course Director,
R. J. Jacob

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* Most of this content is also provided at the course Blackboard site <http://elearning.uky.edu>

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**Immunity, Infection and Disease
MI 822 Block Schedule 2008**

WEEK 1: 8/11 - 8/15

	Mon 8/11	Tues 8/12	Wed 8/13	Thurs 8/14	Fri 8/15
8 A M	Intro. to The Course Jacob	Cells, Organs cell biol. & histo. Cohen	Ag/Antibody (Ab) interaction concepts Cohen	Complement Systems I Cohen	
9 A M	Infectious Diseases: Show & Tell Greenberg	Cells, organs - maturation & recirculation Cohen	Ag/Ab Interaction diag. tools Cohen	Complement Systems II Cohen	Outcomes of acute inflammation/ Chronic inflammation Murphy
10 A M	Immune System Overview and Clinical Manifestations Cohen	Antigens(Ags) & antigenic determs. Kaetzel	Cell & Tissue Injury Murphy	Acute Inflammatory Response I Murphy	
11 A M		Immunoglobulins - struc. & function Kaetzel		Acute Inflammatory Response II Murphy	

WEEK 2: 8/18 - 8/22

	Mon 8/18	Tues 8/19	Wed 8/20	Thurs 8/21	Fri 8/22
8 A M		MHC 1 - struc. & function Cohen	Humoral immune response III Kaetzel	Mucosal Immune Response Kaetzel	Immunological tolerance Cohen
9 A M	Repair & wound healing Murphy	MHC 2 - mol. biol. Cohen	Cellular immune response I Cohen	Transplantation immunology Cohen	Autoimmunity Cohen
10 A M	Ab biochem. & mol. biol. Kaetzel	Humoral immune response I Kaetzel	Cellular immune response II Cohen	Tumor immunity Cohen	Autoimm. pathology Jennings
11 A M	TCR - bioch. & mol. biol. Kaetzel	Humoral immune response II Kaetzel	Innate immunity Kaplan/Kaetzel	Mechs. Immune injury Jennings	

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WEEK 3: 8/25 - 8/29

	Mon 8/25	Tues 8/26	Wed 8/27	Thurs 8/28	Fri 8/29		
8 A M	DC #1: Tissue transplant/ rejection Path./Imm.	Clinical Correlation: TBA	Clinical Cases Women's Health: Autoimmune Inflammatory Rheumatic Diseases Crofford	RNA viruses, gen.; Jacob	For Friday, August 29th ONLY	In Hospital Auditorium H 611	
9 A M		Congen. & acquired Immunodeficiency Cohen		Viral Genetics Telling			Viral Oncology Telling
10 A M	Host response to extracellular pathogens Cohen	DC #2 Autoimmunity	Intro. to Virology Jacob	Prions & Diseases Telling			
11 A M			General Approach to vaccine development Kaetzel	DNA viruses, gen. Jacob			Viral-host interactions: Cohen

Respiratory Viral Pathogens=RVP

WEEK 4: 9/1- 9/5

	Mon 9/1	Tues 9/2	Wed 9/3	Thurs 9/4	Fri 9/5
8 A M	LABOR DAY HOLIDAY	<u>EXAM 1</u> Immunology (Cohen)	EVP: DC #3 Hepatitis	RVP: Influenza and other resp. viruses I J. McCormick	Human Herpeviruses Lecture I Jacob
9 A M				RVP: Influenza and other resp. viruses II J. McCormick	Human Herpesviruses Lecture II Nelson
10 A M		Post-Exam Review	HIV/AIDS I Greenberg	EVP: Enteric viruses I: Gastroenteritis Luo	Clinical Approaches to Viral Interference I Romanelli
11 A M			HIV/AIDS II Patient & Clinical Correlates Greenberg	EVP: Enteric viruses II: Enteroviruses Luo	Clinical Approaches to Viral Interference II Romanelli

Enteric Viral Pathogens=EVP

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WEEK 5: 9/8 - 9/12

	Mon 9/8	Tues 9/9	Wed 9/10	Thurs 9/11	Fri 9/12
8 A M		DC #5 Viral Diseases			
9 A M	Viral Latency & Persistence Jacob				Diagnostic Identification of Bacterial Pathogens Straley
10 A M	DC #4 Viral Diseases	Bacteriology Overview Straley	Bacterial Architecture & Antibiotics II Stevenson	Bacterial Metabolism & Antibiotics I Straley	Bacterial genetics I Stevenson
11 A M		Bacterial Architecture & Antibiotics I Stevenson	Bacterial Growth, Biofilms, and Antibiotics Fetherston	Bacterial Metabolism & Antibiotics II Straley	Bacterial genetics II Stevenson

WEEK 6: 9/15 - 9/19

	Mon 9/15	Tues 9/16	Wed 9/17	Thurs 9/18	Fri 9/19
8 A M	EXAM 2 Virology Jacob		Normal flora/ Pathogenesis concepts I Stevenson	BRP: <i>Staphylococcus I</i> Novak	BRP: Streptococci gen.; group B & endocarditis Novak
9 A M			Normal flora/ Pathogenesis concepts II Stevenson	BRP: <i>Staphylococcus II</i> and <i>C. diphtheriae</i> Novak	BRP: Group A <i>Streptococcus</i> Novak
10 A M	Post-Exam Review	Bacterial genetics III Stevenson	Disinfection,& sterilization Ambrose	BRP: <i>N.meningitidis,</i> <i>H. influenzae</i> Ebersole	BRP: <i>B. pertussis,</i> <i>Mycoplasma</i> Ebersole
11 A M		Drug metabolism and resistance Stevenson	Respiratory Infections Bennett	BRP: <i>S. pneumoniae</i> Ebersole	Clinical Cases Staph., Srep., MRSA Nelson

Bacterial Respiratory Pathogens=BRP

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WEEK 7: 9/22 - 9/26

	Mon 9/22	Tues 9/23	Wed 9/24	Thurs 9/25	Fri 9/26
8 A M	Lab #1 Isolation, Gram Stain, & Microscopy		Lab #2 Gram-positive Microbes	BRP: <i>Legionella</i> Ebersole	Lab #3 Gram-negative Microbes
9 A M		BRP: DC # 6 Pneumonia		BRP: <i>Chlamydia pneumoniae, psittaci</i> Ebersole	
10 A M				BRP: <i>M.tuberculosis</i> Clinical Presentation & Correlations Evans	
11 A M				<i>M. leprae</i> & other mycobacteria Clinical Presentation & Correlations M. McCormick	

Bacterial Respiratory Pathogens=BRP

WEEK 8: 9/29 – 10/3

	Mon 9/29	Tues 9/30	Wed 10/1	Thurs 10/2	Fri 10/3
8 A M	EXAM 3 Bacteriology I Straley	BEP: Opportunistic Infections D’Orazio	Lab #4 Acid Fast Microbes	BEP: Upper GI Tract Infections Straley	BEP: Lower GI Tract Infections Straley
9 A M		BEP: Opportunistic Infections D’Orazio		BEP: Upper GI Tract Infections Straley	BEP: Lower GI Tract Infections Straley
10 A M	Post-Exam Review	DC #7 TB		Immunity to Intracellular Bacteria Kaplan	
11 A M					

Bacterial Enteric Pathogens=BEP

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WEEK 9: 10/6 - 10/10

	Mon 10/6	Tues 10/7	Wed 10/8	Thurs 10/9	Fri 10/10
8 A M	STD's <i>C. trachomatis</i> <i>N. gonorrhoeae</i> Stevenson	BEP: Anaerobes 2: Tissue destruction Ambrose	Lab #5 Enterics, UTI, & Case-Based Unknowns	Zoonoses 1: Anthrax, plague, etc. Ambrose	Lab #6 Case-Based Unknowns (cont.)
9 A M	STD's Spirochetes 1: Syphilis Stevenson	BEP: Anaerobes 3: Clostridial Diseases Ambrose		Zoonoses 2: bioterrorism, etc. Ambrose	
10 A M	Clinical Cases STD's Ribes	Rickettsia RMSF, typhus, etc. Stevenson		BEP: DC #8 Food Poisoning	
11 A M	BEP: Anaerobes 1: Basic biology Ambrose	Spirochetes 2: Lyme dis., etc. Stevenson			

WEEK 10: 10/13 - 10/17

	Mon 10/13	Tues 10/14	Wed 10/15	Thurs 10/16	Fri 10/17
8 A M	Lab #7: Case-Based Unknowns (cont.)	EXAM 4 Bacteriology II Ambrose	Fungal pathogenic mechs. & host responses Goodman/Cohen	Subcutaneous mycoses Goodman	Mycology Exercise TBA
9 A M			Cutaneous mycoses Goodman	Systemic mycoses Goodman	Mycology Exercise TBA
10 A M		Post-Exam Review	Lab #8 Case-Based Unknowns (cont.)	Systemic mycoses, cont. Goodman	DC #10 Mycology Cases (Diagnosis)
11 A M		Basics of Fungi Goodman		Fungal physiology, reprod. & drugs Goodman	

2. Course Description, Objectives, Grading, and Resources

Description of Immunity, Infection, and Disease: Immunity, Infection, and Disease (*IID* = MI 822) is an integrated treatment of Immunology, Microbiology, and related Pathology. You will be instructed regarding mechanisms underlying the normal functioning of the immune system, how the immune system provides defenses against infection and presented with concepts that underlie the development of efficacious vaccines. You will see how various kinds of microbes replicate, undermine our barriers against invasion, and utilize tissues for substrates and metabolism. You will be instructed on how the immunological mechanisms can contribute to disease and how disease manifests itself clinically as tissue damage.

Throughout the course, the focus will be on the training needs of the practicing physician, and you will be relating typical cases or clinical problems to the underlying mechanisms. Lectures and small groups are organized in a coordinated, sequential order leading to a cascade of information. That is to say, integration and knowledge of previous sessions are necessary for complete learning in any particular session. This process of integration **REQUIRES** daily attendance, application of current learning, and active learning at each session. While there is an overall flow to the subject matter, with sub-themes that tie several subject areas together, there also is a secondary organization into the subject areas of immunology, pathology, bacteriology, virology, mycology, and parasitology. This will allow you the opportunity to study these as separate subjects as well as to see how they interrelate. **THE KEY TO SUCCESS IN THIS COURSE IS INTEGRATED AND DISTRIBUTIVE LEARNING.**

Objectives of the course

After successful completion of this course, the student will be able to:

1. Demonstrate an understanding of how the integrated knowledge of Immunology, Microbiology, and Pathology lead to a more complete understanding of the pathogenesis of microorganisms and disease presentation.
2. Demonstrate an understanding of how different microbes (bacteria, virus, yeast, etc.) regulate gene expression, reproduce their genetic information, metabolize crucial substrates and generate exponential populations of progeny.
3. Demonstrate knowledge and understanding of the mechanisms underlying the normal functioning of the immune system and apply that understanding to explain the consequences of genetic and acquired immunological diseases.
4. Explain how the immune system provides defenses against infection.
5. Explain how the immunological mechanisms can contribute to disease, how the diseases manifest themselves clinically as tissue damage, and how damage is repaired.
6. Explain concepts that underlie the development of efficacious vaccines.
7. Demonstrate and explain the thinking behind current approaches to exploit our understanding of the immune system to treat diseases such as cancer, diabetes, and AIDS.
8. Demonstrate an understanding of the way various kinds of microbes have adapted to the body's defenses by developing strategies to undermine our barriers against invasion and utilize tissues for nutrition and growth.
9. Develop and apply skills and habits for self-directed, life-long learning through application of integrated and distributive learning approaches.

Your grade in *IID* MI 822, *IID*, comprises 9 credit hours of your medical training. Your grade will come from your performance in all aspects of the course. **ATTENDANCE IS EXPECTED AND YOU ARE**

RESPONSIBLE FOR ALL MATERIAL COVERED.

Examinations Five examinations will cover material from your required reading, the lectures, and the group learning sessions. In general, these tests will be “Block” tests. There are many situations in which one subject area (e.g., immunology) provides concepts essential for understanding another area (e.g., disease due to staphylococcal super antigens or events that occur in tuberculosis), and for this and other reasons, **TESTS WILL CROSS SUBJECT AREAS**. You will be responsible on examinations for not only knowing material from the current block, but also from previous blocks, as well as their interrelationships. In fact, this integrated understanding is a major benefit that you will have from the course organization. Remember, the key to success in **STUDYING IS INTEGRATED AND DISTRIBUTIVE LEARNING**. A final examination on the last day of the course will be comprehensive and many questions will cover content with a problem-solving or case-solving emphasis. In addition, there will be one “wet lab” practical for pathogenic bacteriology and mycology, that will test key microbiological information encountered in the lab manual and also key lab skills that you will learn and practice during the lab exercises.

Liaison Committee: The liaison committee will be a peer review committee made up of 10 students from IID/IIDSD. It is required that ALL challenges to test questions be submitted to them in writing in a time frame to be specified later (i.e., except for the Comprehensive Final Exam and Lab Practical). They will screen all challenges submitted for relevance, accuracy, and validity and, at the appropriate time, present those selected to the faculty responsible for writing the questions. The Course Director will chair a meeting with the respective faculty and students to review the challenges and make the appropriate changes to the questions, their answers and examination grades. **Students are required to use this mechanism to challenge test questions, and other problems in the course, and should not attempt individual “challenge sessions” with the instructors and question writers (i.e., unless otherwise instructed to by the Course Director).**

The allocation of your grade in *IID* is summarized below:

<u>Block Exams</u>	<u>Date & Time</u>	<u>Rooms</u>	<u>% of final grade</u>
Block Exam 1	Mon. 9/2, 8 - 10 am	*CoN 201	17
Block Exam 2	Mon. 09/15, 8 - 10 am	*CoN 201	10
Block Exam 3	Mon. 9/29, 8 - 10 am	*CoN 201	10
Block Exam 4	Tues. 10/4, 8 - 10 am	*CoN 201	10
Block Exam 5	Mon. 10/27, 8 - 10 am	*CoN 201	10
Lab Practical	Fri. 10/24, 9 - 11 am		10
Discussion Class (DC) (attendance, preparation, & participation—1% each)			3
Bacteriology unknowns		MS233	2
Lab maintenance and care		MS233	1
Comprehensive Final	Fri. 10/31, 8 - 12 am	*CoN 201	27
			= = =
			100%

A final course grade of 70% is required to pass IID; B = 80; A = 91.

If your final grade reads below 80 or 91, do not come for a discussion on getting a “B” or “A,” respectively. All challenges regarding examination grades and tabulations must be resolved by December 15.

Scheduled exams

It is very important to take exams at the scheduled times. Requests to take any of the *IID* exams at times other than those scheduled must first be authorized by Assistant Dean of Students in writing. This includes personal problems and religious holidays. Please see the following excerpt from *Students Rights and Responsibilities* entitled: *Selected Rules of the University Senate Governing Academic Relationships*.

Major Religious Holidays. Students are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class.
Part II, 5.2.4.2D Excused Absences: (US: 11/11/85; 2/9/87)

When the above procedures have been followed, appropriate arrangements can be made with the Course Director of IID/IIDSD, Dr. R. Jacob. The faculty may choose to administer an oral exam in such cases.

Please note:

All examinations used for IID/IIDSD are considered to be **SECURE EXAMINATIONS**. Exam booklets must be returned with students’ scan sheets and they will not be returned to you. **SECURE EXAMINATIONS**, or any part thereof, are not allowed to be used as a study aid by future classes. Reproduction or dissemination of exams, portions of exams, or exam questions will be considered a violation of the College of Medicine’s Honor Code and addressed as such.

During an examination in the College of Medicine, students are not to have electronic devices such as cell phones, pagers, PDAs on them personally. Instead, these devices should be left either in the student's locker or at the front of the classroom in the off position during the exam.

Laboratory In the bacteriology laboratory, MS233, in addition to lab exercises you will be required to identify "unknown" bacteria that will be given to you along with a short case history. A reasonable effort to solve these is required of each student and contributes to your course grade. As noted above, there will be a comprehensive lab practical.

You are responsible for following laboratory rules, and at the end of the course, for returning assigned materials and removing debris from your lab station and completing an evaluation for the lab. THIS IS WORTH 1% OF YOUR FINAL GRADE!

Discussion Classes (DC) There are a several small group learning sessions in bacteriology, immunology, mycology, virology, and pathology. Your attendance, preparation, active participation in DC’s will count toward your total grade in the course and the content will be covered on the block examinations. Excessive absences, poor participation, and preparation will be determined by the course director in consultation with the DC leaders. You will receive all instructions in advance of the group sessions concerning the mechanics of these sessions and your responsibilities. These instructions will be handed out during lecture periods as the course proceeds or may be available on the course web site. **HOWEVER, STUDENTS ARE NOT ALLOWED TO UTILIZE MATERIALS GENERATED OR PREPARED BY PREVIOUS CLASSES OR CASE TUTOR GUIDES, AND NEED TO PREPARE FOR CASE DISCUSSION THEMSELVES. VIOLATIONS OF THIS REQUIREMENT COULD NEGATIVELY IMPACT YOUR GRADE IN THE DISCUSSION CLASSES. REMEMBER, ALWAYS COME TO DC’S PREPARED.**

Learning resources

Philosophy: We believe that if you MANIPULATE CONCEPTS YOURSELF and apply them to simulations of real-life situations like those you will encounter in your future medical practice, you will have a better and more long-lasting understanding than can be achieved solely through passive learning. Accordingly, we will be requiring you to participate actively in the teaching and learning process. You will be teaching yourselves in group learning and D.C.'s that include cases. There will be whole-group discussions and clinical problem solving and you will make microbiological diagnoses in the laboratory. LECTURE SESSIONS WILL DEPEND UPON YOUR HAVING THOUGHTFULLY READ REQUIRED MATERIALS, AS THE LECTURE PERIODS OFTEN WILL PRESUME THE BACKGROUND OF THE ASSIGNED READING AND PREVIOUS LECTURES AS A STARTING POINT FOR DISCUSSIONS. It is essential for you to **come to ALL class events thoroughly prepared**, whether the event is a lecture, lab, group meeting, discussion, or review session. That is to say, your **ATTENDANCE IS EXPECTED AND YOU ARE RESPONSIBLE FOR ALL MATERIAL COVERED**. It's true: you will benefit in proportion to your own efforts.

A. Required Texts

Immunology: *The Immune System*, 2nd Edition, by Parham

Microbiology: *Sherris Medical Microbiology and Infectious Disease* 4th Ed. by Ryan and Falkow

Pathology: *Robbins Pathologic Basis of Disease* 7th Ed. by Cotran, Kumar, and Collins

B. Useful resources in the library

Immunology: *Fundamental Immunology* 3rd Ed. by Paul

Inflammation: basic principles and clinical correlates 2nd Ed. by Gallin, Goldstein, and Snyderman

Microbiology: *Morbidity and Mortality Weekly Report* by Centers for Disease Control

Pathology: *Basic Pathology* by Kumar, Cotran, and Robbins, 5th Ed., Saunders, 1992 (for a shorter, more readable version of the course text; on reserve in the library)

Clinical Laboratory Medicine, 5th Ed. by Revel (on reserve in the library; also available for purchase in Bookstore)

Handbook of Clinical Pathology, Ed. by Sandstad, McKenna, and Keffer, ASCP Press 1992 (on reserve in the library; also available for purchase in Bookstore)

Pathology: Understanding Human Disease 2nd Ed. by Golden, Powell, and Jennings, 2nd Ed., Williams & Wilkins 1985 (on reserve in the library)

C. Computer resources

Microbiology: *MICRO: Computerized Cases in Medical Microbiology and Infectious Diseases* by Twarog, Cronenberger, Gilligan, Smiley, and Shapiro

MacMedVirology Study/Review Program by Minnesota Medical Edu-Ware, Inc.

Pathology: *Slice of Life* videodisc in association with *Keyboard Pathology* (and other programs by Keyboard Publishing)

3. Office Hours and Communications to Instructors

You are encouraged to make use of your liaison committee as much as possible to communicate your ideas and constructive criticisms of the course to Dr. Jacob. This is possible through an IID homepage or web site. Students are directed to the Blackboard site at <http://elearning.uky.edu> for access to "on-line" version of the course and other information as necessary to fulfill requirements. Entrance to this site is via a logon that includes username and password, which you will be assigned. Liaison committee (see page 10) members will be meeting with Dr. Jacob and relevant instructors on a regular basis and as issues arise. It is helpful if you put your challenges to questions and other ideas/criticisms/praise in writing. Dr. Jacob's office hours are Tuesdays and Thursdays from 1:00 P.M. to 2:00 P.M, Rm MN 356 Medical Science Building. It is appropriate to see him about pressing matters concerning the running of the course in general and about issues relating to classes that he conducts. For specific help regarding work in classes or group sessions conducted by another instructor, you should go directly to that instructor. Again, available through the "Online" discussion group mentioned above.

**Immunity, Infection & Disease Instructors
2007**

Name	Address	Phone	Email
Ambrose, Charles MD	MS 683 -Microbio & Immuno	323-6200	cambros@pop.uky.edu
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4. Membership of Small Group Discussion classes.

This information will be provided following the start of lecturing and will also be available on the web.

5. Lecture Objectives:

Please see electronic version found at the course web page at the Blackboard site: <http://elearning.uky.edu>

NOTICE TO ALL:

In cases of conflict between syllabus information provided in written and electronic forms, the written form is to be considered correct and accurate, unless otherwise noted and called to your attention. If you note errors or inconsistencies in the written or electronic syllabus, please call it to the attention of the Course Director, immediately.