IMMUNOLOGY
GENERAL INFORMATION
Spring, 2005

COURSE ITEMS

TITLE & CREDIT: Biol 443, Immunology. 3 semester credits, no laboratory.

DESCRIPTION: Immunology is the study of the immune system and how it provides for maintenance of homeostasis, especially in defense mechanisms that protect vertebrates from infection by pathogenic microorganisms. It is among the most intensely investigated disciplines in all of science over the last three decades. It is a complex interdisciplinary science which has relied upon chemistry and biochemistry, molecular biology and molecular genetics, anatomy, physiology, evolution, developmental biology and pathology, as well as microbiology, for its own development.

OBJECTIVES: We have an ambitious objective in this course. We will investigate, in a rigorous but relaxed academic environment, the discipline of Immunology. My objective in immunology is to convey to you the complexity, logic, importance and beauty of the functioning immune system. Because the discipline of immunology is still young, which means that there are many problems yet to be solved, it is less "factual" and less structured than most disciplines in science. It is also very experimental. We will attempt to understand the functioning immune system by defining the problems of the field, and then working through the experimentation that has led to, or is leading to solving these problems.

PREREQUISITES: Students should have successfully completed 3 years of biology and chemistry (i.e. biochemistry and molecular biology). More important than having completed prerequisite course work is the ability and discipline to work independently in advance of class meetings, and the thoughtfulness and confidence to contribute meaningfully to class discussions. Patience is also a desirable behavior in immunology.

FORMAT: I have no intentions of giving formal lectures on a daily basis. Rather, we will have daily discussion sessions. I will assign readings from our text. I will also give you outlines to follow with items of importance noted so that you have a guide to follow and so that you do not feel responsible for reading every page of every chapter in our text in exquisite detail. Reading and participation in discussions is mandatory, and will be a major factor in determining your overall grade.


INSTRUCTOR ITEMS

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OFFICE HOURS: MWF: 8:30-9:00 am & 10:30-11:20 am.
Other hours: By appointment, or whenever you can catch me in my office.

CONSULTATIONS: It is your responsibility to monitor your own progress in class. I encourage you to visit with me regularly to keep track of your progress, but I cannot precisely predict the grade you will earn in this course.

Remember the words of the famous philosopher Yogi Berra:
"Predicting things is hard, especially about the future."

**EVALUATION ITEMS**

**PROBLEMS:** There will be a daily problem/question that is to be solved in class, and that will be graded. These are designed to ensure that you keep up with the volume of challenging material that we cover. More important, these problems are a mechanism to challenge you to synthesize and utilize the information that you study and that we then cover in class.

**EXAMS:** There will be no formal written examinations. There will be two oral exams: a midterm and a final. I reserve the right to give oral exams in small groups or to give additional oral examinations to students who are less inclined to actively participate in class discussions. You cannot earn an ‘A’ in this course without an excellent performance in the comprehensive final oral exam.

**ASSIGNMENTS:** I reserve the right to make additional reading or writing assignments. Hopefully, we will have the opportunity to read some original literature and write succinct critiques of the research.

**ASSESSMENT:** In this course, competency and academic growth are more important than the ability to do well on a written exam. Grading is therefore based on your demonstration of competency. To do well in this course you must be disciplined in your studies and willing to be thoughtful and expressive during class discussions and oral examinations.

**GRADING:** Grades will be based on attentive attendance, demonstrated comprehension of reading assignments, quality of solutions on the daily problems, and contributions to class discussions, as well as the oral exams. If there are additional assignments, I will also use them when determining your grade. Your continued enrollment in this course constitutes your understanding and acceptance that *grades will be determined at the discretion of the instructor*. There is no fixed grade scale: Grade standards are given below.

**STANDARDS:** My interpretation of the university grading scale is as follows:

- **A = Excellent**  Thorough understanding of all major concepts; and, concepts supported by extensive details.
- **B = Good**  Thorough understanding of most major concepts; and, concepts minimally supported by details.
- **C = Average**  General understanding of most major concepts; but, deficiency of, or errors in, many details.
- **D = Minimally Passing**  Weak grasp of even major concepts; or, extensive errors in concepts and details.
- **F = Failure**  Weak grasp of major concepts and many errors in details.

**ACADEMIC HONESTY:** It is your responsibility to familiarize yourself with the Student Affairs Handbook (in particular Part IX, B.1, Academic Misconduct). All students are expected to adhere to the highest standards of academic honesty and refrain from any action which is dishonorable or unethical. In all exams, papers, labs, etc., students are expected to submit their own work entirely. Cheating or alleged cheating in any manner will result in a grade of ‘F’ for the class.

**CLASS ITEMS**

**TEXT:** *The Immune System*, 2e, Parham, 2005. The text is well organized, nicely illustrated and reasonably easy to read. I have other references available when you need additional information or more detailed explanations of difficult topics.
SCHEDULE: We will cover immunology topics sequentially, as they are presented in the assigned text, with only minor changes. We will attempt to maintain the Schedule of Events, but we will deviate if necessary.

ATTENDANCE: Attendance in class is mandatory. Some absences are understandable, but attentive attendance will be a significant factor in determining your final grade.

READING GUIDE: Use the following as a guide for the intensity of your reading effort:

*Read very carefully* = Read and study hard, even the details. The material is very important and fundamental to basic immunology.

*Read carefully* = Read and study well, even the details. The material is important and will be used at later times in the course.

*Read* = Read and understand the concepts well. The concepts are important but the details are not worth memorizing.

*Review* = Read for background and perspective. The material is valuable, it helps provide insight, but it is not essential to ‘study’ it.

*Summarize* = Read superficially if time permits. The material is interesting or informative, but may not be covered in class.

*Skip* = We will not cover this in class.

DISABILITIES: Students with disabilities should contact Disability Support Services so that appropriate accommodations can be made as quickly as possible.

SUMMARY
RECOMMENDATIONS: I recommend you proceed as follows:

- Prepare for class sessions a day (or more) in advance of class.
- Prepare by reading the assigned material using the guidelines provided.
- Prepare a notebook of your work (i.e. class notes).
- Prepare by learning important concepts first, and then supporting the concepts with technical details.

- Come to class ready to listen...not to take notes.
- Come to class ready to think...not to be lectured to.
- Come to class with answers...not just questions.

EXPECTATIONS: You will be expected to prepare for daily classes and actively participate in class discussions. Each class should require 2-3 hours of preparation. If you are spending more than 4 hours you may be trying to do too much! You will be constantly making decisions about what to study, and to what degree. Frankly, that is what I expect you to do.

RESPONSIBILITY: In summary, I expect you to become an active participant in the learning process. You are responsible for your progress in this class, and I am responsible for guiding you and helping you achieve the goals you set for yourself.
## SCHEDULE OF EVENTS AND COURSE OUTLINE

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Chapter Reference*</th>
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| 1    | 19-21 Jan | Pre-Session: History and Philosophy  
Course Introduction; Historical Considerations | --                  |
| 2    | 24-28  | Session 1 – An Introduction to Immunobiology  
Elements of the Immune System | 1                   |
| 3    | 31-4 Feb | Session 2 – The Recognition of Antigen  
Antibody Structure and the Generation of B-Cell Diversity | 2                   |
| 4    | 3-7    | Antigen Recognition by T Lymphocytes | 3                   |
| 5    | 7-11   | Session 3 – Development of Lymphocyte Repertoires  
The Development of B Lymphocytes | 4                   |
| 6    | 21-25  | The Development of T Lymphocytes  
Monday, 21 Feb is a holiday. | 5                   |
| 7    | 28-4 Mar | Session 4 – The Adaptive Immune Response  
T-Cell Mediated Immunity | 6                   |
| 8    | 7-11   | SPRING BREAK | ---                  |
| 9    | 14-18  | Immunity Mediated by B Cells and Antibodies | 7                   |
| 10   | 21-25  | Session 5 – Immune Defense Mechanisms  
The Body’s Defense Against Infection  
Friday, 25 Mar is a holiday. | 8                   |
| 11   | 28-1 Apr | Failures of the Body’s Defenses | 9                   |
| 12   | 4-8    | Session 6 – Clinical Immunology  
Over-reactions of the Immune System | 10                  |
| 13   | 11-15  | Disruption of Healthy Tissues by the Immune Response | 11                  |
| 14   | 18-22  | Manipulation of the Immune Response | 12                  |
| 15   | 25-29  | Manipulation of the Immune Response (continued)  
Friday, 29 April is a holiday. | 12                  |
| 16   | 2-5 May | Final Exams. |                      |

* Prepare wisely: we will usually try to cover one chapter in your text every week. We may fall behind slightly because of all those messy holidays, but we will finish the entire text! Trust me. Chapters in your text are nicely divided into ‘Parts’. There are two or three ‘Parts’ in each chapter. It would be wise to be one ‘Part’ ahead of where we intend to be in class.