COURSE DESCRIPTION:

PCB 5235 is a comprehensive course in basic immunology designed for graduate students. Emphasis will be placed on fundamental aspects of immunology, and its application to real-world immunological research and concerns. Upon successful completion of the course, students will have a solid immunological information foundation suitable for future educational endeavors in the areas of biomedical research, or human/veterinary clinical applications. In addition, students will have a fundamental understanding of basic immunological experimental design. Student assessments in PCB 5235 will focus heavily on immunological facts, concepts, and problem solving based on the application of concepts. PCB 5235 will be co-taught with PCB 4233.

Prerequisite: MCB 3023 or equivalent. Students lacking prerequisite should consult the instructor prior to enrolling in this course.

INSTRUCTOR  
Dr. Joseph Larkin III  
Microbiology & Cell Science Building, Room 1253  
Phone: 352-392-6884

OFFICE HOURS:  
Mondays and Tuesdays 2:45-3:45  
(Note: Students unable to meet these hours may schedule appointments: email jlarkin3@ufl.edu. I will not be available for scheduled appointments on February 27th or April 3rd)

TAs:  
Dr. Bhagyalaxmi Sukka-Ganesh  
Ms. Zaynab Sidi Mohamed  
Mr. Brandon Lam  
Mr. William Allen  
Phone: 352-392-9676

WEB PAGE:  
E-learning (Sakai): https://lss.at.ufl.edu

LECTURES:  
Monday, Wednesday, and Friday (4th period) 10:40-11:30 MCCA G186. The majority of lectures administered throughout the semester will be posted on the UF mediasite website after their generation, and can be accessed through the Sakai (under heading Lectures 2014).

Camtasia:  
Some lectures will be administered via the program Camtasia and will be accessed through Sakaii
MATERIALS:

REQUIRED TEXTBOOK:


5x7 Notecards: Not for a grade but as a measure of participation- questions will be asked at random in class. The name of the student, UFID, and answer will be placed on the card and turned in.

Also please note the website: [http://www.whfreeman.com/immunology7e](http://www.whfreeman.com/immunology7e). In addition, valuable study tools can also be found at this website.

RECOMMENDED TEXTBOOK:


Please note the website below. Essentially all animations used in class can be found on this website.
[http://www.youtube.com/user/garlandscience](http://www.youtube.com/user/garlandscience)

OUTSIDE ASSIGNED READINGS: The following journal articles will supplement class lectures and are available on class website:


PUNCTUALITY: Class will begin promptly at 10:40 a.m. Please be on time and seated, with your cell phone turned off. Should you arrive late to class, please use the doors located at the rear of the room.
STUDENT LEARNING OUTCOMES: Upon successful completion students will -

- Be able to clearly state the role of the immune system
- Be able to compare and contrast the innate versus adaptive immune systems.
- Be able to articulate the roles of Toll-Like Receptors in the innate and adaptive immune responses and specifically identify select receptors.
- Be able to compare and contrast humoral versus cell-mediated immune responses.
- Be able to distinguish various cell types involved in immune responses and associated functions
- Be able to distinguish and characterize CD4+ T helper cell lineages TH1, TH2, TH17, and regulatory T cell (Treg).
- Be able to distinguish and characterize antibody isotypes, development, and functions.
- Understand the role of cytokines in immunity and immune cell activation; and be able to identify and characterize cytokines of particular immune importance.
- Understand the significance the Major Histocompatibility Complex in terms of immune response and transplantation.
- Be able to describe lymphocyte development and the expression of antigen receptors.
- Be able to characterize processes utilized by the immune system to mediate tolerance to self tissues
- Understand current scientific knowledge related to autoimmune disease etiologies
- Be able to articulate the ramifications of immunodeficiency with particular emphasis on acquired immunodeficiency.

STUDENT EVALUATION:

**Class Attendance**
is strongly encouraged; however recorded lectures will be available through the UF Mediasite.

**Larkin Clause**: Although attendance is not required, should you score below 70% on any exam, active participation in live classes will be evaluated.

Students are expected to read the Chapter in Kuby Immunology corresponding to lecture prior to the lecture. Students attending live lectures will at random be asked to participate in discussions pertaining to prior readings and lectures

**Online Projects**

Online projects will be based on outside readings, the text, and the lectures. Online assessments will involve experimental design and critical review of journal articles. Online projects will be available on the course website in Sakai, with dues dates are listed below. There will be 4 assignments, due at 10pm on their respective due dates. Each Online Project will be worth twenty-five points each for a total of 100 points.

<table>
<thead>
<tr>
<th>Project</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>Tuesday 1/20/15</td>
</tr>
<tr>
<td>Project 2</td>
<td>Tuesday 2/10/15</td>
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<tr>
<td>Project 3</td>
<td>Tuesday 3/17/15</td>
</tr>
<tr>
<td>Project 4</td>
<td>Tuesday 3/31/15</td>
</tr>
</tbody>
</table>

**Discussions**
Peer to Peer interactions play an important role in the learning process. In order to facilitate these interactions, **6 discussions will be assigned**. Discussion entries will be due at 10pm of the dates listed below. Four of these discussions will involve the generation of a practice exam. Significantly, some questions posted on the discussion board will likely be used on the exams. Therefore, it is to the advantage of all students to review the questions posted on the student designed study guides.

<table>
<thead>
<tr>
<th>Discussion #</th>
<th>Date</th>
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<tbody>
<tr>
<td>Discussion #1</td>
<td>Friday 1/16/15</td>
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<tr>
<td>Discussion #2</td>
<td>Friday 1/23/15</td>
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<tr>
<td>Discussion #3</td>
<td>Friday 2/20/15</td>
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<tr>
<td>Discussion #4</td>
<td>Friday 3/20/15</td>
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<tr>
<td>Discussion #5</td>
<td>Friday 3/27/15</td>
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<tr>
<td>Discussion #6</td>
<td>Friday 4/17/15</td>
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</tbody>
</table>

**Pre-Exam**

In preparation for future exams, a 15 question pre-exam, providing the types of questions on exams and an overview of the material covered in the class, must be completed by **Friday, January 9, 2015 at 10pm**. The pre-exam also allows the instructor to gauge pre-knowledge of immunology. Participation in the pre-exam will require accessing pretest in the Sakai website. Preparation for the pretest is not required (or expected) as participation in the pre-exam will result in **10 points** of your final grade.

**Examinations**

Three (3) fifty minute In-Class exams (180 points each for a total of 540 points) will be administered consisting of varied question format. Although each exam will focus on a particular period of instruction, given the nature of the subject matter, all examinations will be cumulative. Questions will be related to all lectures given in the class, including guest lectures. Makeup exams will be given only with advanced written permission, from the instructor, under the most **extreme** circumstances. Only cases of serious illness, bereavement, or activities that fall under the Twelve-Day rule will be considered for makeup. **Makeup exams will be written (no multiple choice)**. You must provide official documentation for all cases. Please note: Professional Schools **will** reschedule interviews, if they conflict with an exam. Take care of conflicts and other problems immediately. The Instructor reserves the right to utilize **Proctor U** for makeup exams at **cost to students**.

A mandatory cumulative final examination (350 points) will be administered on Wednesday, April 29th, 3p.m. -5 p.m. during final exams week. There is no make up for the final.

We also request that students utilize restroom facilities prior to exam sessions so that restroom usage will not occur during examination period.

**PLEASE NOTE THAT EXAMS FOR PCB5235 WILL BE HELD IN THE MICROBIOLOGY BUILDING (to be discussed in more detail)**

**Grading Format:**
Online Projects 4@25 points each 100 points
Pretest 10 points
In-Class Exams 3@180 pts/each 540 points
Final Examination 350 points
Total 1000 points

Final grades will be based on the following performance standard (1000 points total):

920 - 1000 points  =  A
900 - 919 points  =  A-
870 - 899 points  =  B+
830 - 869 points  =  B
800 - 829 points  =  B-
760 - 799 points  =  C+
700 - 759 points  =  C
650 - 699 points  =  D+
600 – 649 points  =  D
Less than 600 points  =  E

For questions regarding University of Florida Grading Policies please consult:

http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

COURSE SCHEDULE:

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Lect. #</th>
<th>Topic</th>
<th>Chapter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 01/07</td>
<td>1</td>
<td>Class Intro/ Historical Perspectives</td>
<td>chapter 1</td>
</tr>
<tr>
<td>F 01/09</td>
<td>2</td>
<td>Introduction to Immunity</td>
<td>ch. 1, ch5 (selected)</td>
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<tr>
<td>Week 2</td>
<td></td>
<td></td>
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<tr>
<td>M 01/12</td>
<td>3</td>
<td>Hematopoiesis</td>
<td>chapter 2</td>
</tr>
<tr>
<td>W 01/14</td>
<td>4</td>
<td>Cells of the immune system</td>
<td>ch. 2 and pp 431-441</td>
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<tr>
<td>F 01/16</td>
<td>5</td>
<td>lymphoid organs and lymphatics</td>
<td>ch. 1, 11,</td>
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<td>Week 3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>W 01/19</td>
<td></td>
<td>No Class (Martin Luther King, Jr. observed)</td>
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<tr>
<td>M 01/21</td>
<td>6</td>
<td>Adaptive immune response</td>
<td>ch 1, 11, 12 (selected)</td>
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<tr>
<td>F 01/23</td>
<td>7</td>
<td>Adaptive immune response</td>
<td>ch 16 (selected)</td>
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<tr>
<td>Week 4</td>
<td></td>
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<tr>
<td>M 01/26</td>
<td></td>
<td>Catch up</td>
<td></td>
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<tr>
<td>W 01/28</td>
<td></td>
<td><strong>Review</strong></td>
<td></td>
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<tr>
<td>F 01/30</td>
<td></td>
<td><strong>Exam 1</strong></td>
<td></td>
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<tr>
<td>Week 5</td>
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<tr>
<td>M 02/02</td>
<td>8</td>
<td>Receptors and Signaling</td>
<td>chapter 3</td>
</tr>
<tr>
<td>W 02/04</td>
<td>9</td>
<td>Structures of antibodies</td>
<td>chapter 3</td>
</tr>
<tr>
<td>F 02/06</td>
<td>10</td>
<td>B and T cell signaling</td>
<td>chapter 3</td>
</tr>
<tr>
<td>Week 6</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M 02/09</td>
<td>11</td>
<td>Cytokines and chemokines</td>
<td>chapter 4</td>
</tr>
<tr>
<td>W 02/11</td>
<td>13</td>
<td>Cytokines and chemokines</td>
<td>chapter 4</td>
</tr>
<tr>
<td>F 02/13</td>
<td>14</td>
<td>Innate immunity</td>
<td>chapter 5</td>
</tr>
</tbody>
</table>
Week 7
M 02/16 16  Innate immunity  chapter 5
W 02/18 17  Introduction to Complement  chapter 6
F 02/20 18  Mechanisms/regulation of complement  chapter 6

Week 8
M 02/23 19  Mechanisms/regulation of complement  chapter 6
W 02/25  Review (chapters 3-6)
F 02/27  Exam 2 (chapters 3-6)

Week 9
M 03/02  No Class
W 03/04  No Class
F 03/06  No Class

Week 10
M 03/09 20  Experimental Techniques  Chapter 20
W 03/11 21  Experimental Techniques II  Chapter 20
F 03/13 22  Organization and expression of Ig genes  Chapter 7

Week 11
M 03/16 23  Immunoglobulin recombination  Chapter 7
W 03/18 24  Antigen Presentation/MHC  Chapter 8
F 03/20 25  Antigen Presentation/MHC  Chapter 8

Week 12
M 03/23 26  Antigen Presentation/MHC  Chapter 8
W 03/25 27  T cell development and function  Chapter 9
F 03/27 28  T cell development and function  Chapter 9

Week 13
M 03/30 29  T cell development and function  Chapter 9
W 04/01 30  T cell maturation/activation/diff  (Chapter 10)
F 04/03  Review

Week 14
M 04/06  Exam 3 (chapter 7-9, 20)
W 04/08 31  catch up/experimental methods
F 04/10 32  Viral Immunology of the Mucosa  Dr. Stephanie Karst

Week 15
M 04/13 33  Mucosal Immunology II  Dr. Volker Mai
W 04/15 34  Viral Immunology  Dr. Mavis Agbandje-Mckenna

F 04/17 35  T cell development and function

Week 16
M 04/20 36  Catch up/review session
W 04/22  Immunity and HIV  Dr. Yamamoto recorded lecture (2012 PCB 5235 lecture April 23, 2012)

Cumulative Final exam: Wednesday, April 29th, 3:00 p.m.-5:00 p.m.
Academic Honesty, Software Use, UF Counseling Services, Services for Students with Disabilities

In 1995 the UF student body enacted a new honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court.

(Source: 2009-2010 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. Both the Counseling Center and Student Mental Health Services provide confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance. The Counseling Center is located at 301 Peabody Hall (next to Criser Hall). Student Mental Health Services is located on the second floor of the Student Health Care Center in the Infirmary.

• University Counseling Center, 301 Peabody Hall, 392-1575, www.counsel.ufl.edu
• Career Resource Center, CR-100 JWRU, 392-1601 ext: 0, www.crc.ufl.edu/
• Student Mental Health Services, Rm. 245 Student Health Care Center, 392-1171, www.shcc.ufl.edu/smhs/
Alcohol and Substance Abuse Program (ASAP)
Attention Deficit Hyperactivity Disorder (ADHD)
Center for Sexual Assault / Abuse Recovery & Education (CARE)
Eating Disorders Program
Employee Assistance Program
Suicide Prevention Program

Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/

Should you have any complaints with your experience in this course please visit http://www.distance.ufl.edu/student-complaints to submit a complaint