IMMUNOLOGY BIOL 4406/BIMS 4406
Department of Life Sciences
Spring 2020

A. COURSE INFORMATION

Course number/section: BIMS 4406.001/BIOL 4406.001
Class meeting time: TR 12:30-1:45 (Lecture)
Class location: Robert Furgason Eng. Bldg. 104 Lecture/ Tidal Hall 210 Labs
Course Website: http://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Gregory W. Buck, Ph.D., Associate Professor
Lab Adjunct: Chunyan Li, M.D., M.Sc.
Office location: Tidal Hall 309D
Office hours: MW 10:00-11:15; TR 2:30-3:45
Telephone: (361) 825-3717
e-mail: Gregory.Buck@tamucc.edu
Appointments: Preferred method is by e-mail

C. COURSE DESCRIPTION

Catalog Course Description
"An overview of immunology with emphasis on current knowledge of the immune system. Detailed examination of the specific cells, cytokines, antibodies, and molecules that comprise the immune system. Laboratory exercises demonstrate the basic principles and techniques used in immunologic studies."

Extended Course Description
This course provides an overview of immunology, the branch of biology that describes how organisms recognize, attack and destroy foreign invaders, and how the organism distinguishes between self and non-self. This course emphasizes the specific components that comprise both innate and adaptive immunity, and the interactions between both branches. The laboratory section is designed to demonstrate some of the basic principles involved in immunology. This course is MANDATORY for students doing Clinical Laboratory Science; it is useful for students wishing to do graduate or professional school. Please note that if you take this course in medical, dental, veterinary or physician assistant programs, you will NOT take it in a 14 week semester, but within 1-3 weeks, it will be more detailed, and not always well-taught. Persons taking the course in graduate school will focus on primary literature, and you will need to teach yourself basic immunology covered in this course. Please note that immunology changes very rapidly, even within a calendar year.
D. PREREQUISITES AND COREQUISITES

Prerequisites
Biol 2421 (Microbiology) mandatory; BIOL 3410 (Cell Biol.) or 3345 (Cell Physiology) recommended.

Corequisites
SMTE 0092—will be taken on-line. See lab schedule for details. You cannot do any other Lab Safety course as a substitute!!

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

A textbook is required! You may choose among these four recommended options—you only need to have one of these texts:

Strongly Recommended:

Recommended


Murphy KW and Weaver CT. 2016. Janeway’s Immunobiology, 9th ed. New York: Garland Science/Taylor & Francis—Parham is the “baby” edition of this book. I like this text, but it is way above the reading level of most undergraduates

Parham P. 2015. The immune system, 4th ed. New York: Garland Science/Taylor & Francis. --My preferred text, but material skips around between chapters and may be at a reading level higher than students desire

Other texts

Supplies: Lab coats, lab notebooks, and safety goggles.

Citation format: Please use Council of Science Editors format. A useful link on this format is available at this URL: http://writing.wisc.edu/Handbook/DocCSE.html

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential
for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:
1. Compare and contrast innate versus adaptive immunity;
2. Assess the role of mononuclear phagocyte in immunity and inflammation;
3. Describe the three branches of complement and describe the roles of their components in immunity and inflammation;
4. Summarize antigen processing and the role of the major histocompatibility complex in immunity;
5. Evaluate the roles of cytokines and other soluble factors in immunity;
6. Describe the roles of cells and soluble factors in the regulation of immune responses;
7. Compare and contrast the types of hypersensitivity reactions;
8. Describe genetic basis of diversity in antigen recognition by B- and T-cells
9. List scientists who have made substantial contributions to immunology.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
My instrumental methods include lecturing but also active learning strategies (Socratic Method, “flipping,” problem-based learning, peer instruction, cooperative learning), and to question you, including sending you to the board, but you have plenty of “lifelines”! I have used case studies previously, but that method will only be used for extra credit if there is time.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Three written exams will mostly consist of multiple-multiple choice (Type K), but may also include a mixture of these plus short answer, essay, multiple choice, multiple-multiple matching, descriptive T/F.

Quizzes will be given at the beginning of class—there are no make-ups for the quizzes. Quiz points can be made up by doing any assigned extra credit.

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>=600 pts</td>
</tr>
<tr>
<td>Attendance</td>
<td>= 50 pts</td>
</tr>
<tr>
<td>Quizzes (5 or 10 pts each)</td>
<td>= 50 pts No make-ups</td>
</tr>
<tr>
<td>3 class exams @ 100 pts. each</td>
<td>= 300 pts</td>
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<tr>
<td>Cumulative final exam</td>
<td>= 200 pts</td>
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</tbody>
</table>

**Extra credit assignments ~40 pts.—To be announced**
(given at prerogative of instructor—include pre- and post-tests)

**Lecture is 66.7% of total grade**
Lab Total = 600 pts
Quizzes (5 or 10 pts each) = extra credit; No make-ups for quizzes
Lab Practical Exam = 200 pts
Lab Reports/Worksheets (50 pts each) = 200 pts
Oral Lab presentation = 200 pts

Lab is 33.3% of total grade
Please see Lab Schedule for specific activities. Labs start week of January **.
Grading scale: A ≥ 90%  B = 80-89.9%  C = 70-79.9%  D = 60-69%  F < 60%

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
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<tbody>
<tr>
<td>Exams</td>
<td>55.5</td>
</tr>
<tr>
<td>Quizzes (lecture)</td>
<td>5.6</td>
</tr>
<tr>
<td>Homework</td>
<td>Extra credit</td>
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<tr>
<td>Presentations (in lab)</td>
<td>11.1</td>
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<tr>
<td>Lab Reports (worksheets)</td>
<td>11.1</td>
</tr>
<tr>
<td>Papers</td>
<td>Not assigned</td>
</tr>
<tr>
<td>Lab Practical Exam</td>
<td>11.1</td>
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</table>

COURSE CONTENT/SCHEDULE  
Texts: Kuby=K  Parham=P  A=Abbas, Lichtman & Pillai

<table>
<thead>
<tr>
<th>Lec #</th>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T Jan 21</td>
<td>Intro: Cells &amp; Organs I</td>
<td>K: Ch. 1, 2; P: Ch. 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>R Jan 23</td>
<td>Intro to Immunology: Cells &amp; Organs II</td>
<td>K: Ch. 1, 2; P: Ch. 1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>T Jan 28</td>
<td>Innate Immunity I</td>
<td>K: Ch. 4; P: Ch 2, 3</td>
<td>Read Methods in Immunol Pwrpt</td>
</tr>
<tr>
<td>4</td>
<td>R Jan 30</td>
<td>Innate Immunity II</td>
<td>K: Ch. 4; P: Ch 2, 3</td>
<td>Read v2 HO E Methods in Immunol Mol Bio</td>
</tr>
<tr>
<td>5</td>
<td>T Feb. 4</td>
<td>Innate Immunity III &amp; Complement</td>
<td>K: Ch. 4, 5; P: Ch. 3</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>R Feb 6</td>
<td>Exam 1</td>
<td>Lectures 1-5 &amp; Methods in Immunol &amp; Mol Biol</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>T Feb 11</td>
<td>Adaptive Immunity I: Ab structure</td>
<td>K: Ch 12; P: Ch. 4, 9</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>R Feb 13</td>
<td>Adaptive Immunity II: Ab function</td>
<td>K: Ch. 12; P: Ch. 4, 6, 9</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Day</td>
<td>Topic</td>
<td>Chapters/Content</td>
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<tr>
<td>8</td>
<td>T Feb 18</td>
<td>Adaptive Immunity III: B cell development and MHC</td>
<td>K: Ch. 6, 7, 9, 11; P: Ch. 4, 6, 9</td>
<td></td>
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<tr>
<td>9</td>
<td>R Feb 20</td>
<td>Adaptive Immunity IV: B cell activation</td>
<td>K: Ch. 6, 7, 9, 11; P: Ch. 4, 6, 9</td>
<td></td>
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<tr>
<td>10</td>
<td>T Feb 25</td>
<td>Adaptive Immunity V: Memory B</td>
<td>K: Ch. 9, 11; P: Ch. 4, 6, 9</td>
<td></td>
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<tr>
<td>11</td>
<td>R Feb 27</td>
<td>T cell mediated immunity I: Receptors</td>
<td>K: Ch. 7, 8, 10; P: Ch. 4, 9</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>T Mar 3</td>
<td>T cell mediated immunity II: Ag presentation</td>
<td>K: Ch. 7, 8, 10; P: Ch. 4, 9; A: Ch 7</td>
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<td></td>
<td>R Mar 5</td>
<td>Exam II</td>
<td>Lectures 6-12</td>
<td></td>
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<td></td>
<td>Mar 9-13</td>
<td>Spring Break</td>
<td>No classes</td>
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<tr>
<td>13</td>
<td>T Mar 17</td>
<td>T cell mediated immunity III: T cell development</td>
<td>K: Ch. 8, 10; P: Ch. 4, 9; A: Ch 7</td>
<td></td>
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<tr>
<td>14</td>
<td>R Mar 19</td>
<td>T cell Immunology IV: Activation &amp; Differentiation</td>
<td>K: Ch. 8, 10; P: Ch. 4, 9; A: Ch 7</td>
<td></td>
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<tr>
<td>15</td>
<td>T Mar 24</td>
<td>T cell mediated immunity V</td>
<td>K: Ch. 8, 10, 12; P: Ch. 4, 9; A: Ch 7</td>
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<tr>
<td>16</td>
<td>R Mar 26</td>
<td>Hypersensitivity I</td>
<td>K: Ch. 15; P: Ch. 7, 8; A: Ch. 19</td>
<td></td>
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<tr>
<td>17</td>
<td>T Mar 31</td>
<td>Hypersensitivity II</td>
<td>K: Ch. 15; P: Ch. 7, 8; A: Ch. 19</td>
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<tr>
<td>18</td>
<td>R Apr 2</td>
<td>Tolerance, Immune Disease, Cell Death I</td>
<td>K: 16; P: Ch. 10</td>
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<tr>
<td>19</td>
<td>T Apr 7</td>
<td>Tolerance, Immune Disease, Cell Death I</td>
<td>K: 16; P: Ch. 10</td>
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<tr>
<td></td>
<td>R Apr 9</td>
<td>Exam III</td>
<td>Lectures 13-19</td>
<td></td>
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<tr>
<td>20</td>
<td>T Apr 14</td>
<td>Autoimmune I</td>
<td>K: Ch. 16; P: Ch. 13, 16; A: Ch 15</td>
<td></td>
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<tr>
<td>21</td>
<td>R Apr 16</td>
<td>Autoimmune II</td>
<td>K: Ch. 16; P: Ch. 13, 16; A: Ch 15</td>
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<tr>
<td>22</td>
<td>T Apr 21</td>
<td>Vaccines</td>
<td>K: Ch. 17; P: Ch. 11</td>
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<tr>
<td>23</td>
<td>R Apr 23</td>
<td>No class</td>
<td></td>
<td></td>
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<tr>
<td>24</td>
<td>T Apr 28</td>
<td>Graduate Student Presentation</td>
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<tr>
<td>25</td>
<td>R Apr 30</td>
<td>Hot topics in Immunology</td>
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<tr>
<td>26</td>
<td>T May 5</td>
<td>Immunodeficiencies</td>
<td>K: Ch. 18; P: Ch. 13; A: Ch. 21</td>
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<tr>
<td></td>
<td>R May 14</td>
<td>Final Exam 11:00 am-1:30 pm</td>
<td>Note different time</td>
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Important dates: R Feb. 6 Exam I R Mar 5 Exam II R Apr 9 Exam III Graduate Student Presentation T Apr 28 Final Exam R May 14 1:00 am-1:30 pm (Note
different time!!)

Handouts
v8 Handout B Autoimmune Diseases Fill-In SP19
v2 Handout D Alarmins SP19
v2 Handout E_Handout D v12 Methods in Immunology_Molecular Biology

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

I. COURSE POLICIES

Attendance/Tardiness
Students are expected to attend every scheduled class meeting and to be on-time. It is the responsibility of the student to obtain any material missed during an absence from his/her classmates. Power Points are not placed in the library and placement on Blackboard will be limited.

Late Work and Make-up Exams
Students will be given a Late Assignment Penalty for tardy work: 10% assignment grade deduction per class day late. However, after the 3rd day, late assignments will not be accepted. In-class late assignments are defined by being turned in after 12:35 pm. Please note that class assignments may be sent to me by e-mail or slid under my office door; tardiness is determined by the time noted on the instructor’s Inbox, but allowances can be made for server problems. Files contaminated by viruses, spyware, and worms will not be accepted. DO NOT ASK THE CUSTODIANS to let you into my office to place an assignment on my desk.

Extra Credit
Some extra credit is assured as pre- and post-test assessments. No make-ups are given for pre- and post-tests. Other extra credit assignments may be given at instructor’s prerogative. Instructor is not obligated to give make-up assignments for extra credit opportunities, whether excused or unexcused. The ONLY possible exception is for students with a university-approved scheduled absence. The make-up (if given) may not be the exact same assignment given to the class.

Cell Phone Use
DO NOT USE CAMERA PHONES IN LECTURE. DO NOT SEND TEXT MESSAGES DURING CLASS. Please turn off all cell phones, beepers, Bluetooth devices, Black Berrys, etc., before entering the classroom, or at least place them on silent mode. I would prefer that earpieces not be worn in lecture. DO NOT TAKE PHOTOS of Power Point slides or videos with your cell phone camera unless
otherwise instructed. Recording of lectures with recorders can only be done with permission of instructor—please see me privately.

Laptop Use
I have no problems with any student using a laptop in class, as long as they are not looking at pornography, anime, videos, etc.

Food in Class
I prefer that you not eat or drink in class, but I will not throw you out or ask you to leave.

Missed Exams
Students have two choices for making up exams due to excused absences. They can do an all-essay make-up exam or doubling the grade on the final exam—usually I take the questions on the final from that section of the course that was tested on the exam the student missed. There is no make-up for missed quizzes, or for missed exams due to unexcused absences. Missed extra credit opportunities may or may not be given make-up assignments, depending upon the nature of the assignment. Please note that instructor determines what is not excused. I define excused absences as emergency visits to the ER or physician or dentist; job, graduate and professional school interviews; death of close family members (siblings, in-laws, parents, aunts or uncles, step-parents, grandparents or great-grandparents, first cousins), or University-approved absences as described in the Catalogue and Student Handbook.

Participation
I expect that all members in the class will participate in the questioning, discussions, and interactions within the lecture. Formal assessment of class participation is not done as part of grade, but I do informally monitor it, and I will note it if you ask me for a letter of recommendation.

Returning Old Exams
Students will have the opportunity to look at their graded exams usually 1-2 weeks after the exams are graded during a “postmortem” held during class. Students are free to write down any questions missed, but not to photograph exam questions using their smart phones or to Xerox the questions. There is no provision for reviewing all of the old exams before the final. This course has a strict policy of not returning or providing exams to students. The rationale is that students would be at a disadvantage if old exams were given back due to student social networks and focus on memorizing old questions rather than learning the material.

J. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or
examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is
the presentation of the work of another as one’s own work.) In this class, academic
misconduct or complicity in an act of academic misconduct on an assignment or test
will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each
individual respect the needs of others to study and learn in a peaceful atmosphere. Under
Article III of the Student Code of Conduct, classroom behavior that interferes with either
(a) the instructor’s ability to conduct the class or (b) the ability of other students to profit
from the instructional program may be considered a breach of the peace and is subject to
disciplinary sanction outlined in article VII of the Student Code of Conduct. Students
engaging in unacceptable behavior may be instructed to leave the classroom. This
prohibition applies to all instructional forums, including classrooms, electronic classrooms,
labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the
population of the state. Our goal is to provide you with a high quality educational
experience that is free from repression. You are responsible for following the rules of the
University, city, state and federal government. We expect that you will behave in a manner
that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial
origin, religious background, sexual orientation or disability. Behaviors that infringe on the
rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events
can sometimes occur that make dropping a course necessary or wise. **Please consult with
your academic advisor, the Financial Aid Office, and me, before you decide to drop this
course.** Should dropping the course be the best course of action, you must initiate the
process to drop the course by going to the Student Services Center and filling out a course
drop form. Just stopping attendance and participation WILL NOT automatically result in
your being dropped from the class. Please consult the Academic Calendar
([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a
student who believes that he or she has not been held to appropriate academic standards
as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading,
may appeal the final grade given in the course. The burden of proof is upon the student to
demonstrate the appropriateness of the appeal. A student with a complaint about a grade
is encouraged to first discuss the matter with the instructor. For complete details,
including the responsibilities of the parties involved in the process and the number of
days allowed for completing the steps in the process, see University Procedure
13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible
through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

**Disability Services**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities (please see [ADA of 1990, plus amendments from 2008 [PL110-325]](http://www.tamucc.edu/provost/university_rules/index.html)). Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

[http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

If you need disability accommodations in this class, please contact the instructor as soon as possible. Disabilities Service Office will provide me an electronic letter stating that you are eligible for such accommodations. For either lecture or lab, if you have mobility problems, are pregnant, or you may have a history of seizures, please notify the instructor PRIVATELY so that assistance can be given in case of fire drills or emergencies.

**Statement of Academic Continuity**

In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**Interrupted Exams**

If an exam is disrupted by situations such as weather, power outages, fire drills, or any event requiring evacuation in the middle of an exam, those persons who have finished their exam before the disruption will not be allowed to do a make-up exam. Those persons who did not finish their exam will have to take an exam the first day of class that faculty, staff and students are allowed to return to the building. The format of this
A short answer, essay, fill-in-the-blank, multiple matching, or all of the above. Students taking their exam with Disability Services do not have this option unless their exam is interrupted in the building where they took their exam.

**Enrollment onto Opportunities List-Serve**

All students are on the Blackboard list serve for the course, and to a second opportunities-list serve. To subscribe, send a separate e-mail to: opportunities-list-request@listserv.tamucc.edu.

Make sure that your e-mail appears in the “From” heading. In the subject heading, type “subscribe,” then send the e-mail. Next, you will receive a second message with a long set of letters and numbers in the subject line. You **must also reply** to that message in order to be subscribed to the list-serve. After the initial message to subscribe, to send items on the list-serve, just type opportunities-list@listserv.tamucc.edu (do NOT add – request after list). You may not receive the messages from the list-serve if your Internet service provider (Yahoo, Hotmail, Excite, Roadrunner, Grande, etc.) keep these messages from being placed in junk-mail. **The University administration prefers that you use the islander.tamucc.edu accounts.** At the end of the course, send an e-mail that contains your e-mail address in the “From” heading to opportunities-list@listserv.tamucc.edu. In the subject heading, type the word “unsubscribe,” then send the e-mail. I hope that students will continue to subscribe to opportunities-list@listserv.tamucc.edu!

**K. OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

- **Citation format**
  Please use Council of Science Editors (CSE) format—do not use APA format! A useful link on CSE format is available at this URL: [http://writing.wisc.edu/Handbook/DocCSE.html](http://writing.wisc.edu/Handbook/DocCSE.html)

- **Hints on doing well in course**
  First, read the syllabus. Second, re-read the syllabus. Third, read the syllabus again. Your goal is to be able to think critically, not just memorize and regurgitate what I give in lecture. Immunology requires learning a different language, and thinking in a different context, which explains the difficulty of the subject matter. The material constantly gets updated and changed from findings in basic science research. I would suggest having study groups, and go over the material before you meet with your study group.
GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.