Immunology (Bio 3413.010)  Fall 2018

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Attendance: Roll is taken at each class meeting & factors into your grade as described below


Course format: Classic lecture style supplemented with transparencies. Students will be provided with a detailed topic outline and a packet of supplemental reading material. The format of the laboratory accompanying the lecture is described below. This course is designed for upper level science majors particularly those with health professions interests.

Course goals: The goals of this course are to: [1] provide students with factual knowledge about the field of immunology; [2] to introduce fundamental principles of the field. These represent progress points 1 & 2 on the IDEA course evaluation form to be filled out at the end of the semester.

Student learning objective: For departmental, university, state and accreditation purposes this course will assess learning objective: BIOLG2 which states that the student will "demonstrate comprehensive, specialized knowledge in the biological sciences”. This course imparts specialized knowledge in the field of immunology.

Expected outcome (A student completing this course should be able to) 
- name the important cells of the immune system and be able to describe and/or recognize their role in immunity
- distinguish the differences in innate and adaptive immunity
- distinguish between the cell mediated adaptive response and the humoral mediated adaptive response
- distinguish/understand the clinical consequences of a normal and an abnormally functioning immune system
- understand how an immune reaction is initiated, perpetuated and terminated
- understand the similarities & differences in the self/non-self model of immunity as compared to the danger model

Assessment: Embedded in the final exam will be a set of questions addressing one or more of the topics outlined above under "expected outcome". These questions will be identified as such on the exam & your performance on that section of the exam will be evaluated apart from your grade on the overall exam. Your performance will not impact your grade in the class. Rather, it is meant to accumulate data as to how well students in this course are attaining the knowledge necessary to meet the course learning objective.

Laboratory component of the course: (see schedule next page)
There will be videotape sessions consisting of video programs that are either specific lectures presented by immunologists and/or other health professionals or they are public television type programs discussing immunological history and/or current updates in the field. Most viewings will be 50-75 minutes long. You are encouraged to take written notes during the programs (voice/visual recordings are not permitted). Immediately following the video, the instructor will solicit and/or answer questions. A quiz covering the information presented in the video will conclude the lab. During the quiz, you can use any handwritten notes taken while viewing the video and/or during the question and answer session. Each quiz is composed of 20 multiple choice questions worth 0.5 points each (i.e. 10 pts total). Maximum possible points = 60 (6 quizzes X 10 pts).
Four "hands-on" lab exercises are scheduled. Handouts will give you the background, the experimental procedures and a set of questions to answer after completing each exercise. Each exercise will require that you report your results and answer the handout questions. The instructor will announce the due date for reports. Each report is worth 10 points max: A maximum of 3 points for complete results and 7 points for quality of answers to handout questions. Maximum possible points = 40 (4 write-ups X 10 pts max for each).

If you miss a lab, the following week’s lab score will count double unless it is an exam day in which case, the lab following the exam will count double. Missing more than one lab will lead to a zero for that day's exercise unless previous arrangements have been made with the instructor.

### LAB SCHEDULE:

- **Aug 29**: Videotape #1
- **Sept 5**: Videotape #2
- **Sept 12**: Videotape #3
- **Sept 19**: Lecture exam #1
- **Sept 26**: Videotape #4
- **Oct 3**: Videotape #5
- **Oct 10**: Videotape #6
- **Oct 17**: Lecture exam #2
- **Oct 24**: Hands-on lab: Histology
- **Oct 31**: Hands-on lab: Antigens and Antibodies
- **Nov 7**: Hands-on lab: ELISA
- **Nov 14**: Lecture exam #3
- **Nov 21**: Thanksgiving holiday
- **Nov 28**: Hands-on lab: RPLA and latex agglutination
- **Dec 5**: Lecture 2-3:50
- **Dec 13**: Final Exam (10:30-12:30)

### Lecture Schedule:

- **Week one**: Course introduction; comparison of natural & acquired immunity (humoral vs cell mediated)
- **Week two**: Characteristics of an antigen (epitopes, immunogenicity, cryptic, sequestered, haptens)
- **Week three**: MHC (genetics and natural functions)
- **Week four**: MHC (practical aspects including transplants, role in autoimmunity, tissue typing)
- **Week five**: MHC (practical aspects continued)
- **Week six**: Cells of the immune system (interactions; TLRs & PAMPs, first and second signal)
- **Week seven**: Cells of the immune system (properties of antigen presenting cells, lymphocytes, NK cells)
- **Week eight**: Tissues of the immune system / Positive and negative selection
- **Week nine**: Tissues of the immune system (continued)
- **Week ten**: Antigen receptors (Abs & TCRS); Complement fixation
- **Week eleven**: Primary & secondary immune response; vaccines; monoclonal antibodies
- **Week twelve**: Cytokine role in the immune response (tolerance, autoimmunity, Th1 & Th2 responses, sepsis)
- **Week thirteen**: Cytokine role (continued)
- **Week fourteen**: Hypersensitivities (Type II and III)
- **Week fifteen**: Hypersensitivities (Type I and IV)

### Exams:  
On exam days, bring blank paper & a pen or pencil. No electronic devices, including calculators, are permitted on desktops during exams. 4 exams are scheduled including the final. The low score of the first three exams will be dropped. Each regular exam is scheduled from 2-3:50 PM on lab day (see lab schedule above). The regular exams are not comprehensive (but you are expected to know the terminology and apply the information presented earlier in the semester). Exams cover lecture material, assigned readings & hands-on lab material (but nothing directly from videotape labs). No make-up exams will be administered. Each exam is worth 100 pts. Sample exams are attached to this syllabus. Maximum possible points = 200 (2 exams X 100 pts).

The final exam will include questions (but not necessarily the same questions) from the three previous exams & new information covered since exam #3 including relevant hands-on experiments & reading assignments. There will also be 1-2 questions testing your grasp of the student learning objectives. The final exam is worth 100 points, is mandatory & counts towards the final grade. Maximum possible points = 100 (1 final exam X 100 pts).
Final Grade:

- A = 360 (+) pts
- B = 320-359
- C = 280-319
- D = 200-279
- F = less than 200

**University Honor Code Statement.** “Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook”.

**University Disability Policy.** “Persons with disabilities which may warrant academic accommodations must contact the Student Life Office, University Center, in order to request and to implement academic accommodations.”

**Religious Holy Day:** “A student who intends to observe a religious holy day during the semester should make that intention known in writing to the instructor during the first week of the semester and one week prior to the absence. If this submission is completed, a student who is absent from classes for the observance of a religious holy day shall be allowed to take make up missed exams or assignments scheduled for that day in accordance with syllabus policy.”