# Immunobiology, BIOL 537
Spring 2005

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Assigned Textbook: Immunology, 5th Edition
Author: Richard Goldsby, Thomas Kindt, Barbara Osborne, and Janis Kuby

Course Description: Immunobiology is a course geared for the advanced upper level Junior/Senior and Graduate student. The student will be expected to have a background in concepts learned from Microbiology, Cell Biology, and Genetics. When the student completes the course in Immunobiology they will be able to read and understand peer evaluated articles in prestigious journals. The student will be current in their knowledge of immunology and immunological concepts and techniques. The course will cover and in depth description of antigen recognition and clearance, interactions between APC’s, and T and B lymphocytes, developmental and activation processes involved in immune cell responses, discussion of AIDS, Cancer and Transplantation research, and how the immune system relates to health and disease.
Course Grading: There will be 5 exams, based on 500 percentage points. These exams will be made up of multiple choice, true-false, matching and short answer essay questions. The questions will attempt to examine the student’s level of understanding rather than ability to memorize the important concepts presented. Thus, the student will have to be able to interpret and synthesize and put together the ideas presented. While each exam will cover the material presented since the previous exam, since an understanding of the new material that is presented is based on a strong foundation of previous material learned, the exams will often cover some of the material from earlier exams.

In addition to the exams, each student (or groups of two students each??) will write and present a relevant and recent research topic in immunology. This research paper will be a *powerpoint* presentation given to the class towards the end of the semester. The assignments will be given within the first three weeks of class. The presentation will be worth 75 points, and will be graded on the following criteria: amount of research done (at least two recent articles should be reviewed), the presentation of the material in a clear manner, the student’s understanding of the material, the ability of the student to demonstrate relevance of the material to understanding immunology, a description of up-to-date technology used in the research, and the powerpoint slide program itself.

The course will also employ, at times, a FORUM DISCUSSION and/or WebCT format on the IPFW network. Each student will be expected to, ON A BI-WEEKLY BASIS, turn in a title and abstract from a journal that is related to a topic in immunology. Each student will be graded on their participation in the Forum discussion on each question presented. Participation is worth 50 points.

Class attendance and class participation (I will call on you when least expected 😄😄😄) will be required of all class members. If an exam has to be made up the student MUST inform the professor PRIOR to the exam and the make up will be composed strictly of essay questions. The exam must be made up within two class meetings of when the exam was scheduled. The professor can be reached either through e-mail or direct voice contact (PHONE for those used to the old fashioned way of communicating!!), or direct eye contact (person-to-person together in the same room). I have found that despite having either someone else’s notes or powerpoint notes, that much is missed in overall understanding when students are not in class.
Week 1: January 11th –
Introduction to the Laboratory in Immunobiology
Organization of the Labs
Tour of the Facilities: Lab, Lab in SB 302, Labs in LSRC, animal rooms in LSRC

Week 2: January 18th –
Cells and Organs of the Immune System
Dissection:
  - Bone marrow cell isolation
  - Spleen cell isolation
  - Thymus cell isolation
  - Wright’s Stain

Week 3: January 25th –
Cell counting (hemocytometer, Coulter Counter)
B cell isolation & purification (Nylon wool & Ficoll Hypaque)
T cell isolation & purification (Nylon wool & Ficoll Hypaque)
Macrophage enrichment (Thioglycollate injection IP)
Phagocytosis

Week 4: February 1st –
Preparation of Sterile Cell Cultures- Proliferation with mitogens (MTT)
Preparation of Brain Homogenate for Western Blot

Week 5: February 8th –
Complement inhibition assays

Week 6: February 15th –
Precipitation assays (Ochterlony)
Forensics Ochterlony test

Week 7: February 22th –
Immunoelectrophoresis

Week 8: March 1st –
PAGE and Western Blots

March 8th – Spring Break
Week 9: March 15th – PAGE and Western Blots

Week 10: March 22rd – ELISA assays (Plate Preparation)

Week 11: March 29th – ELISA assays

Week 12: April 5th – Jerne Plaque Assay

Week 13: April 12th – Mixed Lymphocyte Reaction (MLR) HLA compatibility

Week 14: April 19th – Make-up Day

Week 15: April 26th – Make-up Day

There will be no lab book for this course. The student should purchase a lab note book and keep a daily/weekly journal of the experiments, the protocol, and observations that are made. Your lab note book will be collected at the end of the semester and graded. You may pick up the lab book at the end of the grading period if you want it back.

The grade that you receive will be determined by lab reports that you write and turn in after each experiment. These reports should completely describe the general protocol used, the experimental design, and the results observed. It should be written so that a person coming to you for advice on how to run an experiment will be able to perform that experiment by referring only to your lab book! WRITE EVERYTHING DOWN IN AN ORGANIZED MANNER 😊😊😊