Assessment Data is from what semester? __Spring 2014__________________________

Faculty Name(s): __Deepal Pandya_____________________

1. Course Name and Number:
Immunology, BIOT117

2. List all Course SLOs from the Course Outline of Record:
The student will:
2. List and describe the diseases and conditions associated with immunological failure or malfunction.
3. Demonstrate cell typing, including RBC typing.
4. Demonstrate the applications of antibody biotechnology in laboratory settings.
5. Demonstrate immunological assay methods such as ELISA and EIA.

3. Specific Course SLO(s) assessed as part of this project:
SLO#1: Introduced a lecture on Variable gene rearrangement so that students understand the concept of diversity in the acquired immune system.
SLO#4: Introduced antibody purification lab as its one of the most important skills to possess in biotechnology industry.

4. Is this course on GE Plan A? _____Yes  __X__ No (See Catalog pages 49-51 & page 55)
If Yes, identify what area. (All GE course assessments count as GE assessments.)
___Area I Natural Sciences
___Area II Social and Behavioral Sciences
___Area III Fine Arts/Humanities
___Area IV Language and Rationality
___Area V Physical Education/Wellness
___Area VI Intercultural/International Studies
___Area VII Information Competency

5. How did you assess the SLO(s)? (Attach any related documents at end of form.)
SLO 1: 9 total Lectures were given in order to cover major aspects of Immune system (divided into Innate and Acquired Immunity). Previous lecture reviews were done prior to each new lecture not only to maintain continuity but also to ensure understanding by students. Students were tested on their understanding of major concepts of Immunity. Relevant research articles pertaining to a topic of Immunology were discussed during lectures. (one of the abstracts is attached)
SLO 2: One lecture was dedicated to Autoimmune diseases. Students were tested on cause and mechanism of action of certain organ specific and systemic autoimmune diseases in the final exam.
SLO 3: Blood typing lab was included, a lecture was given on principles of antibody, RBC type A/B antigen interaction.
SLO 4: Major laboratory skills used in today’s biotech industry were included with focus on antigen-antibody interactions which included Western blot, Immunoblot, ELISA, antibody purification using affinity chromatography, cancer diagnostic test. Pre and post lab assignments were given for each experiment to test the students for their understanding of the principle and significance of each step of the protocol.

SLO 5: Concept of immunoassay was introduced by including both qualitative and quantitative ELISA methods (emphasis on calculations, serial dilutions) Immunoblot method. Students were asked questions in mid-term and final exam such as how they would design their own ELISA experiment based on given parameters. (Example question asked in the final exam attached)

6. Results and analysis of the data. (Attach any related documents at end of form.)

SLO 1: Most of the students understood the concepts of Immunology as 10 out of 11 students earned B or higher grade. The most important matter is the curiosity most of the students showed during and after lectures to learn more by asking several Immunology related questions. I thoroughly enjoyed teaching this course since students were showing interest in Immunology.

SLO 2: Almost all the students understood the concept of Autoimmunity as they answered the questions in final exam satisfactorily.

SLO 3: Most of the students produced correct result and interpreted data logically during blood typing lab.

SLO 4: Most of the students performed Western blot, antibody purification and other experiments very diligently. 10 out of 11 students understood the significance of each step of the protocols rather than just performing experiments mechanically. They all mostly scored full points in the pre and post lab assignments. (example of lab assignment attached)

SLO 5: 9 out of 11 students could calculate and perform serial dilutions for quantitative ELISA correctly, while others needed assistance. 10 out of 11 students could design their own experiment (theoretically) logically.

7. What are you going to do based on the results of the data? (Any planned revisions?)

Include the new lecture (Variable gene rearrangement) and new lab (Antibody purification by affinity chromatography) as part of next semester’s syllabus.

Make my presentation slides less busy so that it encourages more discussion in the class.

Please save your finished document in the following format. (Date should be for the semester in which data was collected; same date should be listed at top of this form.)

`yyyysemester-sloa-courseid.doc`

Example: 2014spring-sloa-engl101c.doc
Research article abstract:

Basophils as APC in Th2 response in allergic inflammation and parasite infection
Current Opinion in Immunology, Volume 22, Issue 6, December 2010, Pages 814–820

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Basophils are important effector cells, which contribute to protection against helminths and execute proinflammatory effector function during allergic inflammation. Basophils are also regulators of Th2 responses in helminth-infected hosts and in allergen-injected animals. Recently, three groups using different experimental systems have shown that basophils are antigen-presenting cells (APC), which induce Th2 cells both in vitro and in vivo. Basophils express MHC class II and CD80/86, have the potential to take-up and process protein antigen (Ag), particularly Ag-IgE complexes, and to present peptide with MHC class II and produce IL-4. However, relevance of basophils as Th2 cell-inducing APC in vivo has been challenged by several recent reports that favor the concept that basophils and DC cooperate or basophils merely amplify DC-driven Th2 cell differentiation. In this review, I summarize and discuss the data on the role of basophils as Th2 cell-inducing APC in allergy and parasite infection.

Example question from Mid-term asking students to design their own experiment:

A new employee in a Biotech research lab was infected with Hepatitis B about 5 years back. A Biotechnology student has been asked to design an ELISA to look for the presence of Hepatitis B virus in a patient sample. Answer the following:

a) The student should set-up a direct or indirect ELISA? Explain why: (2)

b) Draw a schematic diagram or describe how the student may set-up this experiment using 96-well plate.(2)
Clinical Diagnostic Immunoblot Post-Lab Assignment (10 points)
DUE: Monday, May 5th (at the beginning of laboratory)

1. How do proteins bind to nylon membranes? (2)

2. Why does the membrane have to be “blocked” after the application of samples? (2)

3. What are the similarities and differences between this technique and the enzyme-linked Immunosorbent assays (ELISA) you performed? (3)

4. Describe the “sandwich” that is built on the membrane if the molecule you are looking for is present in the sample (i.e. the order the molecules bind): (3)