Course Number: Biomed 644

Course Title: Bioanalytic Methods in Clinical Research

Course Credit: 2 credits

Prerequisite: Permission of Instructor

Placement in Curriculum: Second Year of Program

Course Description:
This course will provide training in concepts and techniques in molecular biology and molecular genetics. Topics will include an introduction to the molecular genetics of human diseases, methods to identify and map candidate genes, approaches to the analysis of mutations and the use of markers to study polymorphisms, evaluations of gene and protein expression using Northern, RT-PCR, real time PCR assays and Western blots. Bioanalytic Methods will also cover methods for collection, preparation and analysis of representative tissue and body fluid specimens, including the extraction of DNA, RNA and proteins. Potential applications of patient skin fibroblast cell cultures will be evaluated. Special emphasis will be given to qualitative and quantitative analysis

Learning Outcomes:
At the conclusion of the course student will be able to:

Apply selected concepts and techniques in molecular biology to the investigation of clinical research problems
Apply concepts from molecular genetics to the investigation of clinical problems
Evaluate the application of fibroblast cell cultures to the investigation of clinical research problems.

Topical Outline:
The molecular genetics of human diseases
Identification and mapping of candidate genes
Approaches to the analysis of mutations and the use of markers to study polymorphisms
Evaluation of gene and protein expression using Northern, RT-PCR, real time PCR assays and Western blots
Methods for collection, preparation and analysis of representative tissue and body fluid specimens, including the extraction of DNA, RNA and proteins
Required Text:
Assignments will be made from the serials literature dependent on searches reflecting the student individual area of inquiry

Learning Experiences:
Lecture, discussion, practicum

Evaluation
Examination  30%
Project  70%