

**Program:** Molecular Biology and Genetics

**Course Name:** Molecular Biology of Signal Transduction

**Course Number:** 509

**Course Director:** Danny Dhanasekaran, Ph.D., Room 556 AHB, Tel. 2-1941, email danny001@temple.edu

**Credits:** 3

**Semester:** Spring, even years

**Times:** Meets Twice weekly for 1.5 hours

**Location:** AHB 310

**Prerequisites:** All students are required to have a background in Biochemistry, Cell Biology, and Molecular Biology.

**Description:** Main goals of this course are to provide an understanding of the different mechanisms of cell signaling and the molecular lesions in these pathways that can lead to different diseases. Students will gain an in-depth understanding of the current state of knowledge through active discussions on the course materials and the recently published research papers. The area to be studied include:

1. Introduction to cell signaling
2. GPCRs and G proteins
3. Receptor and Non-receptor tyrosine kinases
4. Cytokine receptors
5. Integrin receptors
6. Small GTPases
7. MAP-kinases
8. Lipid signaling
9. TGFbeta-signaling
10. Wnt and Hedgehog signaling
11. TNF and Fas-L signaling
12. Nuclear receptors

**Textbook & Readings:** General outline of the course will be based on the Cell Communication chapter in the “Molecular Biology of the Cell” by Alberts et al. (4<sup>th</sup> Edition). In addition, the course will use recent research articles and review papers. Papers and handouts relevant to the course will be distributed as needed. Each instructor will provide an outline and handouts for his or her lecture.

**Exams & Grades:** Three exams are prescheduled as presented in the course schedule. Student evaluations will also include the presentation, analysis, and discussion of assigned research papers. Class attendance is required. The grade in the course will take into account all three exams, class participation and the oral presentations.

**Office Hours:** The Course Director as well as the other instructors will be available during the normal work-day hours.