Course Syllabus – BIOEN/PHYSIOL 6004

The goal of this class is to provide an intermediate level overview of electrophysiology and biophysics at the level of the membrane and cell to students with special interest in cardiology and neurosciences. We will develop the structural and functional characteristics at each scale with emphasis on integration across the scales. We will try to emphasize common elements of structure, function, and control that arise across the cardiovascular and nervous systems and also across species and also identify differentiating features. The approach will be a combination of qualitative explanations, quantitative analysis, laboratory experience, and mathematical simulation. The class format will include didactic lectures, group discussion of primary literature, quantitative problem solving exercises, writing assignments, and laboratory exercise. The prerequisite for the course are Bioengineering 6000, 6010, 6430, or equivalent or permission of the instructor and knowledge of university undergraduate level calculus and physics. Homework assignments will require the use of computational software and familiarity with internet based transfer of computer files. All course materials will be available through the University of Utah canvas software and the class will communicate by means of an electronic mailing list.