BME 504: Numerical Methods in Bioengineering
3 Credits
Students study numerical methods applied to Bioengineering applications through computations. The course is designed to teach numerical methods and computational techniques for modeling physiological systems and medical devices. Topics include differentiation equations, finite difference methods and finite element methods. Finite element modeling software will be covered. Examples include physiological systems at the organ and cellular levels, physio-chemical analysis of biological systems, and transport phenomena in engineered devices. Computing programming experience is required to be successful in this course.

BME 590: Colloquium
1-3 Credits/Maximum of 3
Continuing seminars which consist of a series of individual lectures by faculty, students, or outside speakers.
Prerequisite: BME 590

BME 591: Bioengineering Ethics and Professional Development
1 Credits/Maximum of 999
Problem solving methods in ethical decision making, best practices in research communication, and strategies for professional development. This course will cover the main philosophical underpinnings of bioengineering ethics. It will then assist in developing methods for ethical decision making in the main areas of bioengineering professional practice. These areas include data collection, management and presentation, animal and human experimentation, peer review and authorship, and social implications of bioengineering research. The course will then assist in the professional development of students by instruction in tools for effective acquisition of discipline-specific conceptual knowledge, research skill development, communication, management, leadership.

BME 594: Research Topics
1-2 Credits/Maximum of 6
Supervised student activities on research projects identified on an individual or small-group basis.

BME 596: Individual Studies
1-9 Credits/Maximum of 9
Creative projects, including nonthesis research, which are supervised on an individual basis and which fall outside the scope of formal courses.

BME 597: Special Topics
1-9 Credits/Maximum of 9
Formal courses given on a topical or special interest subject which may be offered infrequently; several different topics may be taught in one year or term.