

**NON-TECHNICAL ABSTRACT:** *(State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project for California.)*

This project is specifically targeted toward the development of an innovative cross-disciplinary curriculum.

The rapid pace of development of bioengineering fields has resulted in a wide variety of inter-disciplinary careers for which there is a shortage of educated/cross-trained professionals. The course, *Introduction to Bioengineering*, a junior-level engineering class, will be offered in the lecture/laboratory mode for the first time. The inclusion of the laboratory element is aimed at giving students hands-on experience in the following five emerging areas of bioengineering: a) Biomaterials and Biomedical Devices, b) Drug Delivery and Artificial Cells, c) Micro-fluidics and Bio-MEMS, d) Bio-Imaging and Bio-Instrumentation, and e) Genomics and Bioinformatics. In addition, students will acquire analytical skills enhanced by applying mathematical modeling and statistical analysis in the interpretation of experimental data. Given the fact that approximately 85% of the California biomedical industry work force is recruited by the biomedical devices, bio-pharmaceutical, diagnostics and research sub-sectors, knowledge of hands-on experimentation in the above-mentioned fields is an emerging need for the State.