

MEDITEC

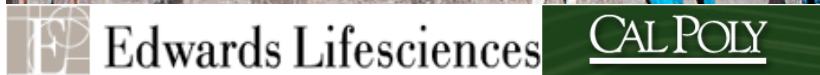
*Medical Engineering Development &
Integrated Technology Enhancement Consortium*



(Logo)

Mission Statement:

MEDITEC is a multidisciplinary industry/academic consortium providing the forum and mechanism to enhance biomedical research and design through collaborative partnerships, improving health and quality of life while educating the next generation of industry-ready engineers.



Providing University with...

- Academic & curricular development
- Applied research opportunities
- Funding for BME program development
- Capability enhancement

Providing Industry with...

- Access to Cal Poly resources
- Continuing education
- Technology development capabilities
- Peer interaction & networking opportunities

Center of Competence



MEDITEC (Medical Engineering Development and Integrated Technology Enhancement Consortium) is an industry/academic partnership that matches multidisciplinary teams of undergraduate and masters-level engineering students with the project needs of biomedical device developers and provides the firewalled infrastructure to simultaneously work on the confidential projects of competing companies.

Facilities



ENGINEERING III (Bldg 41) / ENGINEERING IV

Engineering III/IV, a 41,000 sq. ft. \$10 million project, will house state-of-the-art facilities for Biomedical Engineering including laboratories for simulation, wet labs, and reconfigurable student project space.



BONDERSON STUDENT PROJECTS CENTER

The Bonderson Student Projects Center will allow students to benefit from collaboration across disciplines. As a part of the new Engineering Plaza, it will foster an environment that promotes communication and interdisciplinary cooperation.



ADVANCED TECHNOLOGY LAB: ST. JUDE BIOENGINEERING LABORATORY

The St. Jude Bioengineering Lab, housed in the Advanced Technologies Lab, allows students to research, design, build, and test instruments for direct clinical and commercial applications. Key thrust areas include medical devices, biomaterials, and biomechanics.

Key Personnel



- Robert Crockett, Ph.D., Assistant Professor, Biomedical Engineering
MEDITEC Director
 - Technology Management
 - Advanced Materials and Manufacturing Processes
 - Rapid Prototyping



- Daniel Walsh, Ph.D., Associate Dean, College of Engineering
 - Biologically-Induced Corrosion
 - Metals Joining



- Lanny Griffin, Ph.D., Professor, Biomedical Engineering
 - Biomaterials
 - Biomechanics

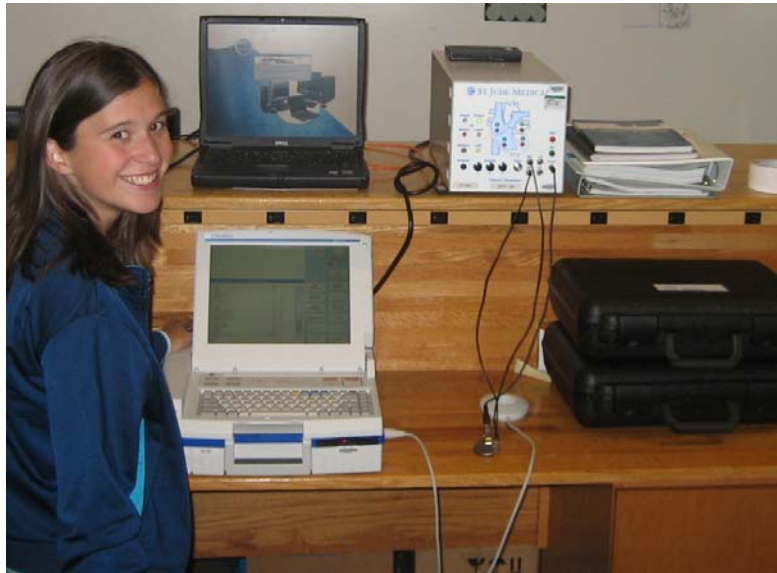
- Rob Slavik, Ph.D., Assistant Professor, Biomedical Engineering
 - Neural Simulation, Electrical Engineering

- Martin Koch, Lecturer/Technician, Industrial & Manufacturing Engineering Department
 - Prototyping, Manufacturing Processes

Example Projects



- **Literature Assessments: Mechanical Properties of the Heart, Carbon Nanotube Biocompatibility**
- **Database Development: MS Access, parsing delimited data on legacy systems**
- **Automation: Automated Medical Adhesive Dispenser, Motion Controller, Internet Control of Computer Peripherals**
- **Statistics & Research Data Analysis: Evaluating research data for trends, etc.**
- **Materials Evaluation: Cytotoxicity / Aging Study for new material system**
- **Development of Surgical Tools: Solid Modeling + Design & Prototyping**
- **Physical Simulation Systems: Heart Motion Simulation, Therapy Simulator, Lead's Testbed, Computer Simulation of Arrhythmia Signals**
 - Jr, Sr, Masters, Returning CO-OPs
 - ME/EE/IME/CS/BMED/CPE



Benefits (in the words of our pilot member)



MEDITEC Provides Companies With:

- *Multidisciplinary Research Projects*
 - Design Class Topics
 - Senior Projects/Thesis
- *Company Focused Consortium Meetings & Seminars*
 - Professional Development
 - Networking
 - Collaboration
- *Access to Cal Poly Expertise*
 - Students
 - Faculty
 - Facilities
- *Access to Consortium Equipment & Proprietary Development*
- *Recruiting Mechanism*

- **Co-ops and SJM funding of Senior Projects have been a great success.**
 - *Additional resource for SJM engineering projects.*
 - *Support training goals of recruiting by providing real-world challenges to potential employees.*
- **More work done for less cost.**
- **Allow SJM to utilize students to supplement heavy peak loads.**
- **Identify and recruit promising candidates early.**
- **Head start on training, reduced training requirements by providing experiences that immerse students in company challenges while still in school.**
- **Opportunity for expanded SJM projects on Cal Poly campus in the form of a University/Industry Consortium.**
 - *Provide the infrastructure and continuity for more complex, longer-term, multi-disciplinary projects.*
 - *Supply the mechanism for resource pooling among companies to create a world-class multidisciplinary “student project center” in dedicated campus space.*

Pipeline for Strategic Recruiting



Combination of opportunities can create up to two-year package of industrial training and experience before students begin full time employment.

- Early Design Classes → Co-op → Funded Sr. Project → Full Time Employment → Distance Learning Masters Degree***
- Students could continue Co-op projects beyond 6-mo. by returning to Cal Poly and working part time in Consortium facilities.***

Motivation: Limitations of current process for identifying, requesting, tracking, and funding projects



- *Sr. Projects topics have been kept limited in scope, because of the difficulties involved in working with remote teams and/or multiple advisors.*
- *Projects with the potential for high-impact often are not identified by industry as candidates for Cal Poly Sr. Projects, because of a lack of exchange opportunities.*
 - *Industry simply does not know the capabilities at Cal Poly, and Cal Poly faculty do not know enough about current specific industrial challenges to suggest project opportunities.*
- *The current mechanism whereby industry pays for projects on a case-by-case basis is cumbersome, requires significant overhead, and does not fit well with most company's internal requisition cycles.*
- *Cal Poly faculty advisors are identified in an ad-hoc manner, and there is a lack of accountability for deliverables.*
- *The lack of continuity between classes of students as they graduate limits the length of current candidate projects.*

Consortium Value Proposition



- ***Applied Research Projects.***
 - *Dedicated space on campus for longer-term projects*
- ***Professional Development Seminars.***
 - *Innovation & Creativity*
 - *Regulatory Issues*
 - *Medical devices in rest of world & 3rd world countries*
- ***Consortium Meetings.***
 - *Consortium Guidance (Spending/Direction/etc)*
 - *Subject Matter Experts / Invited Vendors*
 - *Networking Among Companies*
- ***Mechanism for access to Cal Poly expertise & resources.***
- ***Flat \$50K annual donation provides “unlimited” student project opportunities.***
- ***IP issues have already been resolved as part of an earlier agreement.***

MEDITEC Funding Track Record



- ***Pilot Program: 2005-2006***
 - ***Single Company (St. Jude Medical CRMD, Sylmar, CA)***
 - ***Results:***
 - ***34 SJM identified projects***
 - ***19 student-selected projects (BMED, ME, EE, CS, IME)***
 - ***16 highly successful completed projects***
- ***Currently have three Consortium Members committed at the \$50K/yr annual membership.***
 - ***Expect nominally 100 potential projects***
 - ***Will support nominally 30-35 projects over all engineering disciplines***