



Fall 2000

Department of Biomedical Engineering

Tulane University

Recent Departmental Enhancement Initiatives:

- \$1,000,000 Special Opportunity Award received from the Whitaker Foundation, "Establishing Excellence in Computational Tissue Mechanics," 1998.
- \$152,000 award received from the Louisiana Educational Support Fund, "Integrating Laboratory Experiments into Research and Learning," 2000.
- *Pending*: "Implementing Experiential Learning in Biomedical Engineering," \$199,000 requested from the National Science Foundation.
- *Pending*: "Educating for Leadership in Biomedical Engineering," \$13,800,000 requested from the Whitaker Foundation.

Letter from the Chair

Dear Biomedical Engineering Alumni:

I am writing to let you know about some of our recent activities in Biomedical Engineering and to request your help with our efforts aimed at re-accreditation by the Accreditation Board for Engineering and Technology (ABET). In particular, I hope that you will take a few minutes to complete and return the enclosed, short questionnaire. We will analyze the responses with an eye toward making changes to our program and/or for reinforcing current practices. The results will be summarized for inclusion as part of re-accreditation process.

In the past few years, we have vigorously sought support from external sources to enhance our department (highlighted at left). These collaborative proposals have involved nearly the entire BMEN faculty. Tulane University has provided substantial matching funds, allowing us to develop these new initiatives. A forthcoming (Spring 2001) newsletter will provide an update on our progress.

Many recent departmental initiatives and improvements, including a new BMEN computer cluster, were made in response to feedback from



New BMEN Computer Cluster. 12 workstations (PC and Mac), a scanner, a printer, and a computer-display SMARTboard were recently installed on the fifth floor of the Lindy Boggs Center for the exclusive use of BMEN students. Photo: Kenny Kuhn.

our students. We now look forward to gaining the perspectives of our alumni. Thank you—in advance—for your willingness to share your opinions as we assess our past and plan for our future!
Sincerely yours,

Richard T. Hart, Ph.D.
Department Chair

Inside this issue:

Letter from the Chair	1
Evolution of the Department	1
ABET Accreditation: "Engineering Criteria 2000"	2
Departmental Vision and Mission Statements	2
Educational and Instructional Objectives	3
Undergraduate Curriculum Overview	4
Alumni Survey	5

Evolution of the Department

Some of you may recall 'bootstrapping' from our beginnings in mechanical engineering to establishing a full department offering B.S., M.S., and Ph.D. degrees in 1977. The initial facilities on the 3rd and 4th floors of Stanley Thomas Hall were soon seen as inadequate for our teaching and research activities, and in 1988 we moved to the newly constructed Lindy Boggs Center. We have expanded our teaching and research activities

and grown from a faculty of eight to our current size of 12 faculty members. We have maintained our fundamental commitments to quality teaching and research and currently have classes and active research projects in biomechanics, biomaterials, bioelectricity and bioelectronics, design, and cell and tissue engineering. Some recent developments in our educational program are highlighted in this newsletter. (page 2)

ABET Accreditation: “Engineering Criteria 2000”

The Accreditation Board for Engineering and Technology, or ABET, periodically examines engineering programs nationwide and has been doing so since 1932. Naturally, the criteria for determining whether an engineering program is doing an adequate job in preparing students for a career in engineering has evolved over the years. Most recently, ABET has formulated new accreditation criteria, ‘EC 2000,’ to be used nationwide this year.

Previously, ABET accreditation visitors were interested in checking to see whether the departmental ‘input’ was appropriate—that the number of credit hours in math, science, engineering sci-

ence, etc. were being delivered by the curriculum. In sharp contrast, the new measures for accreditation are based on ‘outcomes’ rather than input. Each accredited engineering program must now state its objectives, put together a curriculum that is designed to achieve the stated objectives, assess whether the outcomes match the objectives, and take steps to improve the outcomes. Of critical importance to our re-accreditation is the implementation of a process for the cycle of assessment and improvements. In addition to assessment of our current students, we would also like to assess the experiences of our graduates—hence the enclosed alumni survey.

More information about ABET accreditation can be found at <http://www.abet.org>

“Of critical importance to our re-accreditation is the implementation of a process for the cycle of assessment and improvements.”

Evolution of the Department—*continued*

Following a series of strategic planning sessions, and in response to feedback from our recent students, last year we began implementation of a ‘re-invented’ undergraduate curriculum (see page 4). Part of the motivation for the new curriculum was to spread biomedical engineering content more evenly throughout the undergraduate years.

Other examples of department improvement in response to student feedback include: upgrading of our department and building computing network;

upgrading of the bioelectronics teaching laboratory equipment; installation of new physiology teaching laboratory stations; installation of a materials testing machine for undergraduate student use in new biomechanics courses, and the new computer laboratory/classroom pictured on page 1.

For other current information about the department, please feel free to contact us via email (bmen@tulane.edu), or, visit our web pages at <http://www.bmen.tulane.edu>

Departmental Vision

The Department of Biomedical Engineering is committed to being a global leader in biomedical engineering scholarship. Our faculty, staff and students are all important parts of the team that will complete our missions of: excellence in undergraduate and graduate education, meaningful and innovative research; and service dedicated to advancing the field of Biomedical Engineering.

Departmental Mission Statement

The faculty and staff of the Department of Biomedical Engineering strive to provide the highest quality education and research opportunities for our students. We expect and value excellence in teaching undergraduate and graduate courses, conducting research, and training students to participate in research activities and professional practice.

We accomplish our Departmental Mission and we evince the core values of Tulane University as follows:

- Through the scholarship of discovery, we develop, integrate, and apply new ideas through innovative, interdisciplinary research approaches.
- Through the scholarship of learning, we develop the knowledge and skills necessary to participate in biomedical engineering analysis, design and research.
- Through the scholarship of service, we share knowledge to advance the opportunities and the significance of biomedical engineering in efforts that ultimately improve health and quality of life.

Department Educational Objectives

To fulfill our Departmental Mission and Vision, we endeavor to achieve a set of objectives that can be classified in three broad, interrelated categories: Program Instruction, Faculty, and Facilities and Support. Our educational objectives are constructed to yield an environment where students take active control of, and exhibit pride in their education; view the department, the School of

Engineering, and Tulane University as learning-oriented communities and themselves as integral parts of that community; develop the broad base of critical thinking abilities, technical knowledge, and engineering skills crucial to professional practice in Biomedical Engineering and related careers.



Lindy Boggs Center. The Biomedical Engineering Department currently occupies over 25,000 square feet of office and laboratory space in the Boggs Center. Photo: Richard T. Hart.

Undergraduate Instructional Objectives

We give our students strong foundations in engineering, mathematics, and the life and basic sciences, in a coherent and coordinated curriculum. We provide our students with unique opportunities to conduct focused research or design projects in areas of individual interest, and we prepare our students for a successful transition to advanced study and professional careers. Specifically, students who obtain a bachelor's degree from our department will be able to:

1. Understand and apply principles and tools of mathematics, science, and engineering to formulate and analyze problems, specializing in issues found at the interface between biological and technological systems.
2. Compose and test hypotheses, and interpret resulting data.
3. Design systems, devices and processes to meet designated specifications or open-ended objectives; evaluate and justify the resulting designs within contemporary cultural and broad societal contexts.
4. Work effectively in multidisciplinary teams.
5. Exemplify professionally and ethically responsible conduct.
6. Seek and value opportunities for extracurricular and post-graduate education and development.
7. Communicate the short- and long-term challenges and opportunities inherent in the field of Biomedical Engineering to both technical colleagues and the general public.

Graduate Program Instructional Objectives

We enhance the academic preparation of our graduate students in engineering, mathematics, and the life and basic sciences. Our graduate students are our junior colleagues, and we furnish them with the advanced and current coursework, professional guidance, and equipment/facilities which are critical to their participation in

biomedical engineering research and scholarship. We coach our students as they conduct independent research and pursue careers related to one of the major themes of biomedical engineering (e.g., bioelectronics, biomaterials, biomechanics, cell/tissue engineering, or instrumentation).

“We expect and value excellence in teaching undergraduate and graduate courses, conducting research, and training students to participate in research activities and professional practice.”

*Department of Biomedical
Engineering
Tulane University*
Lindy Boggs Center, Suite 500

Phone: 504-865-5897
Fax: 504-862-8779
Email: bmen@tulane.edu
Web: <http://www.bmen.tulane.edu>

