



## Chemical Engineering

A department in the College of Engineering offering the B.S., M.S. and Ph.D. in Chemical Engineering.

### ■ The Review Process

This was a standard AQAD review. Reviewers were:

Thomas F. Edgar (University of Texas, Austin)

Carol K. Hall (North Carolina State University)

Deborah E. Leckband (University of Illinois, Urbana-Champaign)

### ■ Main Issues

The visiting team praised the department's "long, distinguished history of strength," its success in hiring and developing high quality faculty, its "very strong" research productivity, and its "solid, quality programs" at both the undergraduate and graduate levels. Most of the team's comments focused on several concerns related to the department's capacity to achieve its stated goal of "being and being recognized as a top ten chemical engineering department in the nation."

- The team found that the department's faculty size is "currently unstable." Faculty turnover and the extended financial pressure within the University have brought faculty numbers below the level the team believes necessary to meet curricular requirements and become more competitive in research and scholarship. They found it "vital" to bring the size of the faculty to 18 FTE.
- High faculty turnover has had several negative consequences: lower external rankings, high start-up costs for replacement faculty, erosion of departmental morale, and inability to offer a full range of specialized technical courses. The team found that "faculty losses over the past decade have had a devastating impact" on the department, placing it in a "very unstable situation that could degrade rapidly."
- To address the problem of faculty turnover the team recommended development of a business plan for faculty recruitment and retention that would highlight the costs incurred when faculty depart. Such a plan would also include more timely and more generous financial incentives for faculty members in whom other institutions have expressed an interest; more competitive start-up packages; more generous University support for spousal hiring; and fundraising for endowed professorships. The team also called for "new facilities that would locate faculty together in one building."
- In addition to the growth of the faculty, the team argued for higher resource allocations to the department in a number of areas: increased support for basic operations, funds for temporary lecturers while new faculty are being added, and more first-year support for graduate students. The team proposed development of a departmental endowment to "buffer against state cuts and salary freezes." The University's policies for distributing indirect overhead revenue and funding faculty start-up costs were characterized as "unbalanced and unfair to departments with strong research programs."

- The team noted that the department had had generally good success in mentoring junior faculty, but that these efforts tended to be informal and should be systematized.
- To address many of the specific issues it identified, the team recommended that the department develop a “clear strategic plan for moving ... into the top ten.” This plan would address the growth of faculty to 18, recruitment of senior as well as junior faculty, and benchmarking against other Chemical Engineering programs in terms of salaries, operating budget, staff support, and start-up packages. The team felt it would be important to “improve transparency and communication regarding what the institutional commitments to the Department are, and how they are being honored.” The department was also encouraged to expand the size and mission of its advisory board and continue to strengthen its alumni relations efforts.

### ■ **Results of the Review**

The Dean concurred with the “urgent need to increase the faculty size” and to pursue the “closely related matter of strategic planning.” The Dean found the recommendations regarding faculty retention, TA support, facilities, and spousal career support to be important, with solutions likely to “derive from a convincing and specific plan for growth.” The dean found the target of 18 faculty to be “appropriate and reachable” if supported by a compelling strategic plan.

The Dean pointed to progress already made, including appointment of a new department head and a new assistant professor, and new collaborative efforts in bioengineering.