

# The Senate of Michigan Technological University

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## PROPOSAL 3-84

### PH.D. IN ENGINEERING

#### BACKGROUND:

Many institutions of higher learning have nondepartmental doctoral degree programs. For the most part, these have resulted from recent recognition that traditional departments and disciplines are not necessarily the best vehicles to service many currently important areas of research and education. It is also expected that the significance and extent of such efforts will increase in the future.

#### PROPOSAL:

The proposed Ph.D. in Engineering program is a nondepartmental one centered on program areas. The program areas may be both interdepartmental and interdisciplinary (e.g. environment engineering) or it is conceivable that a program area could be contained solely within one of the traditional departments (e.g. absent an existing Ph.D. in metallurgy, materials processing would be an example of such). This nondepartmental degree program will be administered through the Graduate School Office. This will be the unit with primary responsibility for quality control and general administration of the program. The Graduate School Office will be aided in this respect by appropriate committees as described in the following section.

#### Institutional Governance

Each program will have an advisory graduate committee composed of participating faculty. This committee will function in much the same manner as does a graduate committee in a traditional department. For example, it will be charged with development and administration of comprehensive examinations, recommendation to the Graduate School of Ph.D. committee members and similar matters. Overseeing individual program area programs will be a university nondepartmental studies committee. It will be composed of three elected members from the graduate council, two faculty appointed by the Deans of the Graduate School and College of Engineering with ex-officio membership granted to the Dean of the Graduate School and the Dean of the College of Engineering. The functions of this committee will include evaluating new program areas, as described below and it will further act, as it deems necessary, to insure the quality of all programs. Such activity will include, but not be restricted to, formal review on a periodic basis.

#### Criteria for Program Area Eligibility

Several general criteria for an area to be considered eligible for inclusion in the Ph.D. in Engineering program have been developed. It is expected that any area proposed for the degree will clearly satisfy most of the conditions described below.

The first, faculty quality, is a necessity for any area to be eligible for the nondepartmental degree. By this, it is meant demonstrated evidence that faculty involved in the area possess the necessary expertise for Ph.D. instruction and supervision. This is typically demonstrated by the faculty's research, as evidenced by scholarly publications, and by the ability to secure the

external funding usually necessary to support graduate education in engineering. There must also be sufficient number of faculty involved in the area of study.

The faculty quality criterion is related closely to the second, program viability. By this is meant previously demonstrated strengths in research and education on the part of the area faculty and clear evidence of the attractiveness of the program for students. To some degree, this criterion can be considered fulfilled by an extant M.S. program marked by a reasonable student enrollment and student and faculty productivity. For nondepartmental areas, extant M.S. programs will typically exist within one or more of the traditional departments.

Thirdly, it is expected that any area considered for this degree possesses some unique aspects. Examples of this would be providing an educational experience different from that currently offered at other institutions or utilizing unique attributes of the faculty.

To insure that these conditions are essentially met and to provide a balanced judgment in this regard requires coordination between the Academic Vice President, the Dean of the Graduate School and College of Engineering, the graduate council, and the participating faculty.

Prior to addition of new program areas under this degree plan, these proposed programs will be subject to the procedures outlined here. Subsequent to conception of a new program, the faculty members concerned will prepare an appropriate document for review by the university graduate council and the university nondepartmental studies committee. If both of these groups sanction the proposed program area, it is submitted to the Vice President for Academic Affairs. Acting with the advice and consent of the University Senate, the VPAA will either recommend the study area as currently proposed or decline to approve the study area as currently proposed. The declination can be either definitive or one in which the study area can be reconsidered for approval subject to improvements and modifications. It is important that the criteria described above be considered at all levels of deliberation. This "series" procedure, involving as it does several levels of university governance, should insure the educational viability of any study areas selected for the nondepartmental degree.

**Adopted by Senate: 2 May 1984**

**Supported by President: 3 May 1984**

**BOC Approval: 18 January 1985**

**Ph.D. in Engineering: Environmental Engineering: Adopted 12 December 1984**

**Ph.D. in Engineering: Structural Engineering: Adopted 27 March 1985**