

A Study of the Graduate Student Academic Environment at MIT



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(The following report was favorably received by the Committee on Graduate School Policy which recommended that it be distributed to the Graduate Student Council and to department heads for comment. The suggestions received have been incorporated in the report which is reprinted here for distribution and use by the MIT community. Copies of the report will be available in the Graduate School Office, Rm 3-136, or in the Undergraduate Academic Support Office, Rm 7-103.)

At a presentation made to a meeting of the women faculty in February 1980, a group of women graduate students, on behalf of all graduate students, indicated their concern for their academic environment. These students felt that in many departments graduate students are not really aware of departmental policies and procedures for successful completion of their graduate degree programs. These concerns led the group to ask the question: What treatment is most likely to encourage completion of graduate degrees and a satisfactory start to a successful career for graduate students in general, and women in particular?

A task force of women faculty, graduate students and staff was formed to discuss this issue and make recommendations, which are presented in the following report. The concerns voiced are grouped into several focal areas, including orientation procedures, financial support, advising, evaluation of student performance, career counseling and specific concerns of women graduate students.

The recurring theme of this report is the improvement of communication between graduate students and their departments. Although many departments do provide very specific information and help to their students, in other instances students receive minimal counseling and advice. Certainly, requirements and procedures for graduate degree programs must necessarily differ from one department to another. There may be no ideal model. However, an understanding of students' perceptions of the strong and weak features of graduate training can help alleviate some problems. Most of the recommendations in this report are based on procedures that have been found effective in several departments at MIT. We believe that thoughtful attention to, and improvement of present procedures can bring considerable benefit to both departments and graduate students with only modest additional effort and expense.

I. Orientation and Financial Support

Department Letters to Incoming Students

Once students have accepted admission to Graduate School at MIT, it is important that they be provided with general information about the Institute and their departments. Early in the summer, letters should be written to incoming students welcoming them to MIT and providing them with information on things they need to know before they come to

the Institute and on what to do when they arrive. Information should include a summary of faculty research interests, which would give students an opportunity to explore the various research interests in the department and the names of faculty to contact for information about specific research areas.

RECOMMENDATIONS:

1.) A letter should be sent to each incoming student informing the student of the date of Registration, his/her Registration Officer/Counselor, and procedures to be carried out on Registration Day.

2.) A brochure with a brief description of "Interests of Department Faculty" should be included with the letter to incoming students.

Research Departmental Orientation Programs

Departments should hold an open orientation meeting before Registration Day to welcome new students and to acquaint them with the department. Presentations should be made on the programs in general, degree requirements, and financial support possibilities, and tours of the labs should be given. Faculty should give briefings on the formal subject offerings and prerequisites and requirements in the departmental areas. Each area within the department should have a research orientation program in which faculty give presentations on their area of research. Written research interests of the faculty should be available, along with descriptions of the research work carried out in the area. Existing student organization(s) within the department would probably be happy to help organize orientation sessions and could contribute valuable ideas.

RECOMMENDATION:

To inform incoming students adequately about the graduate program, departments should set up orientation programs a few days prior to Registration or, if necessary, within the first weeks of classes.

Continuing Orientation

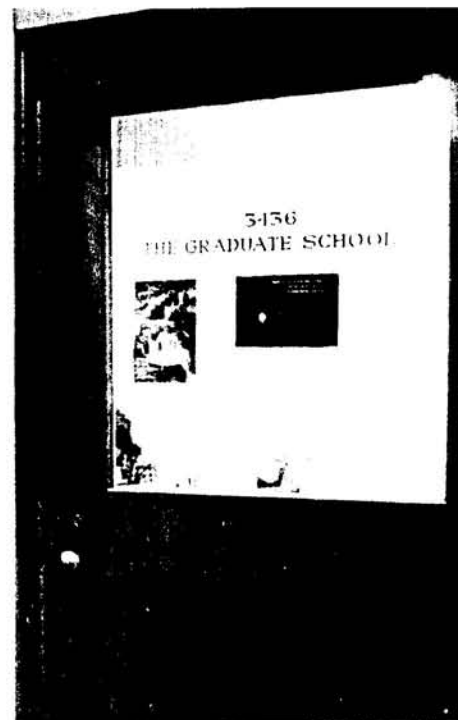
Continuing orientation can be extremely helpful to students in reducing frustration and providing them with the information necessary to pursue their graduate programs more productively. Regular department sponsorship of meetings to help continuing students establish academic goals, select appropriate subject sequences, and arrange thesis supervision is very helpful. (January IAP period would be a useful time for these orientations.)

RECOMMENDATION:

Departments should regularly organize question and answer sessions on subject offerings, departmental requirements, research opportunities, the mechanisms established to facilitate selecting a research advisor, and other pertinent topics.

Types of Financial Support

Most departments work very hard to find support for as many incoming graduate students as possible. Nevertheless, some departments do not have written information describing financial support systems; consequently, students are not adequately informed on what is available, how to apply



for it, and what the advantages and restrictions are for each form of support. Some financial support issues are summarized below.

The process by which Teaching Assistantships are appointed and assigned should be clearly documented by each department. Once appointed, students should be informed precisely of their assignment, what is expected of them, and what restrictions there are; i.e., whether they are part-time or full-time TAs, the number of hours they are expected to work and the number of subjects they are allowed to take. A teaching orientation program should be scheduled for new TAs with instructions and guidelines relevant to their teaching responsibilities.

Information on Research Assistantships should be available from the departments, not only on how students apply for RAs, but also on the restrictions connected with such appointments, i.e., number of hours the student is expected to work, number of subjects the student is allowed to take per term, etc.

Fellowship students should be aware of departmental and/or Institute policies on fellowships, insofar as these policies restrict fellowship students to a certain amount of supplementary income. Full fellowship students should be made aware that normally they are not allowed to accept teaching or research appointments while holding fellowships.

Graduate students should be made aware of the College Work-Study Program. If students are eligible, up to 80 per cent of their salaries for work done at MIT or for outside organizations may be paid to the employer by a Federal grant. Students should also be informed about loans that are available as a means for financing graduate education.

RECOMMENDATIONS:

1.) It is most important that departments

have written information available describing each of the support categories (TAs, RAs and fellowships), their requirements and restrictions, and how to apply for them.

2.) Financial information should be sent to students when admitted so that they can realistically see what might be available throughout their graduate careers.

3.) Offers of financial support to incoming students should be made in writing.

II. Advising, Evaluating and Career Counseling

The Academic Advisor

The structure of a department's academic advising for graduate students can have a profound effect on their environment. Graduate students benefit greatly from being part of a formal advising system from the very beginning of their graduate careers. At the start, students need an academic advisor or registration officer *who is not necessarily their research advisor*, but who will pay specific attention to their individual backgrounds and guide them in selecting subjects which will best enable them to achieve their academic and career goals. Students without an MIT background or a similarly broad undergraduate training in the theoretical and technical aspects of science and engineering may be at a disadvantage. Therefore, the academic advisor should encourage such students to take subjects, graduate or undergraduate, to make up whatever deficiencies in prior training they may have.

RECOMMENDATIONS:

1.) Prior to, or immediately upon, their arrival, students should be assigned a registration officer or academic advisor whose responsibility should be to guide them in selecting courses, making up deficiencies and developing a reasonable research-oriented degree program.

2.) This officer or advisor will not necessarily be the student's research advisor, but he/she should be active in helping the student find a research advisor.

The Research/Thesis Advisor

Students should receive guidelines on the department's procedure for the timing and methods of selection of research advisors for supervision of their theses. Although some students are ready to begin their research as soon as they start graduate school, others could benefit from a semester to consider research opportunities and programs available in the department. In addition, they may often need guidance on how to establish a satisfactory relationship with their advisors, and to understand their responsibilities for maintaining this rapport. The ongoing orientation sessions suggested in Part I may be a good place to provide this guidance.

RECOMMENDATION:

Graduate students should be given systematic advice on the process for selecting a thesis advisor and establishing a good working relationship with the advisor. They should not be compelled to choose a thesis advisor before or during their first semester at MIT.

Thesis Committee

The establishment and use of a thesis committee should be encouraged as soon as the student has chosen a research topic or

picked a research advisor. The reasons for this are many: through regular meetings with such a committee, students receive the benefit of collegial interaction with several faculty members and, from an early stage, become accustomed to explaining their projects to those who can best help them. Evaluation of the research by individuals on the thesis committee provides a source for help, advice and perspective. The thesis committee can help students to put their research in the context of other work in the field. Thesis committee members from outside the department can provide a valuable complement and resource for both thesis topics and students. This close cooperation between student and thesis committee will result in contacts who can provide resources for job opportunities. The student will be seeing his or her advisor frequently and should also be encouraged to have informal meetings with members of the committee to accomplish the above goals.

At committee meetings the members can review the work of the student and advise him or her on remaining requirements. The thesis committee can also help a student if friction develops between the student and his/her advisor, or between members of the committee over expectations for the student. Regular meetings with the whole committee can allow such differences to become apparent and be resolved.

RECOMMENDATION:

A formal thesis committee for each student should be established early and should meet with the students frequently but at least once a year. The student should feel free to convene the committee more frequently if problems develop.

Changing Advisors

If such friction develops between student and advisor that productive interaction becomes difficult, the student may find it necessary to change advisors. As this can be a painful process for both parties, the department should establish procedures to make this process as smooth as possible. The atmosphere should be such that the student will feel free to go to members of the thesis committee for help and advice in this matter.

RECOMMENDATION:

Flexible procedures for changing academic or research advisors should be specified and available to students from the outset of the advisor selection process.

Review of Progress

In order for departments to guide an individual effectively through a program of graduate study and research, communications to the students concerning fulfillment of departmental requirements should be made in writing.

Communication to graduate students concerning their progress must also be a regular procedure. Departmental graduate committees (or other appropriate bodies) should review the progress of each student at the end of each term. Graduate registration officers, faculty research or academic advisors, or the thesis committee should present the results of this department review to students, both in written form and in conference. Constructive suggestions should be made to the student on ways to achieve departmental expectations and on remedial work that might be undertaken. This conference should include the development of a schedule for completing degree requirements, e.g., for turning in the thesis

proposal or progress reports or completion of required subjects. Continued inadequate progress may be indicative of underlying problems and an effort should be made to find this out and to take steps to remedy the problem(s). Students who are doing adequate or superior work should also be informed of their strengths.

RECOMMENDATIONS:

1.) Departments should make available to students written information on degree requirements, including a reasonable timetable of expectations for completing them.

2.) Departmental graduate committees should review the progress of each student at the end of each term. All students, whether performing marginally or at a superior level, should receive both a written report and have a conference in which his or her progress is discussed.

Examinations

Most departments evaluate the academic performance and promise of students in Ph.D. programs through qualifying or general examinations. Written information should be available to students on the sequence of examinations and on rules about whether a student will be able to take the exam, or parts of it, again if he or she is not successful in the first effort.

General information concerning the format, timing, scope and purpose of each exam should be made known to the students, e.g., whether it is the intent of the exam to test problem-solving ability or specific knowledge of certain areas. Copies of previous exams are helpful and should be made available.

The department should review its own examination structure and content periodically. It is often useful to ask students who have already taken the exams to participate in this review.

A student's performance on an examination should be discussed with him or her and should be evaluated in light of the rest of his or her academic performance. Constructive criticism and frank advice, including substantive suggestions for improving areas of weakness are important. The student should also receive an evaluation of his or her performance in writing.

RECOMMENDATIONS:

1.) Departments should ensure that information about both the exam sequence and the purpose and scope of each exam is available to students. Periodic departmental review (including student input) of the exam structure and content helps ensure the validity of this form of student evaluation.

2.) The department should prepare a written evaluation of the student's performance on the examination(s). These evaluations should be discussed with the student in conference and suggestions made for improving areas of weakness.

Career Counseling

Students will need encouragement and help in the establishment of long-term professional goals. Career counseling, in the form of advice from professors, alumni of the department, and professionals in related fields, should be an integral part of students' training and professional growth. Students should be helped by their advisors and thesis committees to make individual contact with professionals in the research field both within the department and outside the university, not only for career purposes but also because

such professionals can help students to evaluate their research work from a broader perspective and relate their efforts to the professional community.

Departments should regularly offer career planning sessions. These sessions should include information on MIT resources such as the Career Planning and Placement Office, appropriate alumni of the department, and other professionals within or outside of MIT. Care should be taken to provide information about less typical, as well as standard, career patterns in the field.

Students should be encouraged to present research papers at group and department seminars and at professional society meetings as part of their professional development.

RECOMMENDATIONS:

1.) Career counseling should be an integral part of students' training and professional growth. They should be helped to make contact with professionals in the department, in the university, in the field outside the university, and with alumni of the department.

2.) Departments should regularly offer career planning assistance.

3.) Opportunities should be provided for students to present their research work at national scientific meetings, as well as at group or department seminars.

III. Consideration of Specific Concern to Women

Women represented 18 per cent of the graduate students enrolled at MIT in the fall term of 1980. While many of their problems and concerns are the same as those of their male peers, women graduate students may experience additional difficulties in this predominantly male environment.

Role Models and Support Groups

The transition into an engineering, scientific or management academic environment dominated by men is often difficult for women. Female students frequently need not only encouragement and support, especially from other women, but also female professionals as role models. However, because there are fewer women graduate students and faculty than men at MIT, women graduate students are frequently isolated from one another and from women faculty. Women students also need the support of women in top administrative posts.

RECOMMENDATIONS:

1.) MIT must continue its search for qualified women faculty to increase the percentage of women faculty members, particularly in those departments where they are under-represented, and for women in top administrative posts.

2.) Women students and/or department management should be encouraged to set up support groups for women graduate students to discuss their particular concerns. These groups may be peer groups of women students or groups with both students and women faculty within the department. Informal discussions between individual students and women faculty are also useful.

Financial Support

MIT has stated a firm commitment to the education of women, and has encouraged the admission of increasing numbers of female

scholars. Yet fewer than half of the graduate women admitted in 1979 actually enrolled. The number of women enrolling seems to be proportional to the number of women offered financial support. Women, once admitted, must be encouraged to come, through stressing equal opportunity in departmental financial support for women.

In the School of Engineering it is often true that women who have been admitted into a department have received less undergraduate training in the specific field than have men. This often makes it difficult for these women to be supported with an RA. Alternative support for a long period of time as a TA can substantially delay the commencement of research. Departments might consider ways of overcoming this initial difficulty by counseling the student to make up any deficiency immediately or by partially supporting such students as RAs with departmental funds.

RECOMMENDATION:

Since financial support is a critical factor in the enrollment and matriculation of women at MIT, departments, especially those in which women are underrepresented, should give particular attention to providing equal opportunity for financial aid to the women they admit. In addition to the usual forms of departmental support--TAs, RAs, fellowships--departments should explore sources of scholarship and training funds specifically earmarked for women.

Professional Support and Counseling

Significant numbers of women graduate students have difficulty finding and becoming part of a research group. Often less aggressive than their male colleagues in approaching faculty and their peers about research interests, they can be isolated and feel left out.

Women graduate students are more likely to be timid about speaking out in seminars, meetings and research and professional discussions than their male colleagues, and they are more likely to be ignored when they do speak. It is difficult for some to take an active part in certain research groups. Yet aggressive, active participation will be crucial to the success of the student not only in graduate school, but also in professional life.

A significantly lower percentage of women than men stay on past the Master's for a PhD, especially in the School of Engineering. Often their aspirations are lower than their talents would support, as a PhD would probably help them in careers, both in industry and academia.

RECOMMENDATIONS:

1.) Departments should explore ways to ease integration of women into research groups in areas where problems appear to exist.

2.) Special efforts should be made to encourage women to engage in discussions and seminars.

Faculty Attitudes

Unfortunately, some women graduate students still sense discriminatory attitudes towards them. A few feel they are looked down upon intellectually and are not considered as "potential colleagues." A few women also believe that some research supervisors are reluctant to include them in their research groups because they are women. Equally damaging, however, is the attitude of the faculty member who, in trying to be

supportive of his women graduate students, mistakes the withholding of constructive criticism for kindness.

RECOMMENDATION:

Departments should find out from women graduate students (through a survey or some other means) what specific faculty attitudes and practices make things difficult for them. The department should pass on this information to the faculty for discussion.

Graduate Students with Family Responsibilities

It seems likely that the percentage of women who enter graduate school with children or who become pregnant will increase as more women choose to pursue academic or other professional careers. At present, some departments discourage these women from continuing their studies. Women with children should not feel forced by their departments to choose either career or family.

In addition, while caring for and raising children has traditionally been considered the responsibility of women, it is becoming more and more the responsibility of men, too. It is likely that increasing numbers of male students will be affected by the changing values of society in this area.

RECOMMENDATION:

Graduate students with family responsibilities should be encouraged to continue their graduate studies, and departments should be encouraged to help such students find ways to continue.

Committee Members

(as of January 1981)

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Detailed information about graduate school policies and procedures can be found in the *Graduate School Manual* or the *M.I.T. Bulletin, Courses and Degree Programs* issue. Specific questions concerning individual graduate programs should be directed to departments of registration or faculty advisors.