



Education Guidelines for Faculty and Teaching Staff
Department of Physics
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Massachusetts Institute of Technology
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The following guidelines summarize some of the departmental policies on education issues and the services and support that faculty and teaching staff can expect to receive from the Department and the Academic Programs Office. This is an extensive resource for those who teach and/or advise at the undergraduate and graduate levels. It is intended to be used together with two other important documents: The Academic Guide for Undergraduates and Their Advisors (web.mit.edu/academic-guide), and the Guidelines for Physics Doctoral Candidates. If questions remain after consulting these three resources, faculty members and teaching staff are encouraged to contact Academic Programs at 3-4841 (undergraduate) or 3-4851 (graduate).

The policies contained in this document are determined by the Department of Physics Education Committee, with oversight from Physics Council and the Department's faculty as a whole. The 2008-2009 Education Committee members are:

Professor Thomas Greytak, Associate Department Head for Education, Chair
Professor J. David Litster, Career Counselor
Professor Edward Farhi, First Year Coordinator
Professor John Negele, General Examination and Requirements Coordinator
Professor Krishna Rajagopal, Graduate Admissions Officer
Professor Richard Yamamoto, Graduate Appointments Coordinator
Professor Ray Ashoori, Graduate Student Coordinator
Professor Gunther Roland, Junior Lab Faculty Head
Professor John Belcher, New Technologies Coordinator
Professor Paul Schechter, Subject Coordinator
Dr. Peter Dourmashkin, Training and Support Coordinator
Professor David Pritchard, Undergraduate Major Coordinator
Professor Edmund Bertschinger, Department Head, Ex Officio
Dr. Sean Robinson, Academic Administrator, Scribe
Sarah Smith, Administrative Officer

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Teaching

Class Lists and Student Pictures

Lecturers can access class lists and student pictures via WebSIS (student.mit.edu). Recitation Instructors can contact the course lecturer or assigned Course Manager to obtain recitation lists and/or student pictures.

Copying

Academic Programs, in cooperation with the Institute's copying partner, CopyTech, can reproduce documents for Physics courses under the following guidelines:

- Course Information, Syllabus and Calendar: On the web, optional paper distribution.
- Current Exams and Quizzes: Paper
- Solutions to Homework and Exams: On the web and not distributed on paper.
- Sample Problems and Solutions: On the web and not distributed on paper.
- Problem Sets: Preferably on the web and not distributed on paper. If the problem set write-ups are short and it is important that students have a paper copy in front of them, then we can determine week to week how many paper copies are produced and adjust our printing accordingly.
- Lecture Notes: On the web, or paper copies paid for by the students. If your notes are already complete, they can be printed ahead of time by MIT's copy service, CopyTech. Students pick up the packet and pay for it at CopyTech.
- Chapters From Books: Paper copies paid for by the students through CopyTech.
- Large Blocks Of Subsidiary Material, Including Instructions For Experiments: On the web or paid for by the students through CopyTech.
- Teaching staff are asked to adhere to the copy deadlines except in RARE cases. CopyTech visits Academic Programs at three distinct pick-up/delivery times each day. They are:
 - 9:30 AM
 - Noon
 - 4:30 PM

Our agreement with CopyTech stipulates that if a job is picked up at one time, it is returned within 24 hours. Most requests can be accommodated by the next pick-up time, although large documents may take longer. It is VERY difficult to deviate from this schedule due to CopyTech's daily demands. We are one of many clients. They plan their work based on the volumes that are collected at each pick-up time. In most cases, they are able to accommodate "rush" jobs, but only if requests are made infrequently.

Course Books

Course material is maintained each term for each subject. Course syllabi, problem sets, exams, solutions, and grade sheets are examples of material which is stored. Materials from previous term course books are not to be released or distributed without the permission of the course lecturer or the Associate Department Head for Education. The only exception to this is the subsequent lecturer of a course.

Course Evaluations

The Department strongly encourages lecturers to distribute two evaluations during each term. The first evaluation is provided by the Department at mid-term. It is designed to give the lecturer and other teaching staff feedback for review and improvement as appropriate. The results of this evaluation are not recorded by the Department and have no implications regarding the faculty member's teaching record.

At the end of each term, the Department asks that each faculty member conduct an evaluation of each subject. Lecturers will be notified by Academic Programs when the evaluation forms are ready for distribution. Due to the sensitivity of this data, lecturers are required to pick up the evaluation forms from Academic Programs. The numerical statistics based on these evaluations will be recorded by the Department and posted by the Institute at <https://mit.edu/acadinfo/sse/courses/course8.html>. This information is intended primarily for students, but is accessible to anyone in the MIT community with a digital certificate. Summaries of the written comments will be maintained in Academic Programs. These results are used by the Department in promotion, tenure and other evaluation processes.

Faculty and teaching staff are invited to review evaluation results AFTER complete grade sheets have been submitted to Academic Programs. This policy is in effect to maintain the integrity of the evaluation process.

The completed course evaluation sheets are forwarded to the Office of the Dean for Undergraduate Education for tabulation. One copy will be kept in Academic Programs for limited use by the Department and our faculty. This copy cannot leave Academic Programs and additional copies will not be made.

The Department Head, Associate Department Head, Subject Coordinator and the Division Heads will have complete access to the course evaluation material.

Lecturers will have access to all the evaluations relevant to the subject they have lectured. Recitation instructors (faculty and TA's) will have access to their own evaluations only. The Training and Support Coordinator will have access to evaluations of graduate student teaching assistants. Academic Programs staff will have access to the course evaluation material for the purpose of gathering statistical information for the Associate Department Head. Evaluation data can be viewed within Academic Programs, but cannot be removed.

Course Records

The Course Managers are trained to maintain many course records. In the past, they have entered test data, sent rosters, and/or assisted in calculating some grades.

For those courses with recitation sections, the Course Managers are unable to support individual recitation sections and their associated grades (i.e., specific HW, problem sets, and quiz grades). Recitation instructors should be charged with record keeping throughout the semester. The Academic Programs staff can advise teaching staff on formats which will simplify the process of merging this data in the larger course database. The Course Managers can accept/enter mid-term and/or final recitation grades. But, they cannot serve as the record keeper for individual recitation sections.

Exam and Tutor Space

Academic Programs maintains numerous rooms for tutoring and disabilities exams. Teaching staff are asked to work with the Course Managers regarding any needs that emerge. The Academic Programs staff will schedule these rooms to maximize their utilization.

Due to multiple requests that are received for disability accommodations (as approved by the Disabilities Office), the Academic Programs staff are UNABLE to proctor conflict exams. If a lecturer approves a conflict exam for a student, it is subsequently his/her responsibility to arrange for space and/or proctoring. The Course Managers may be able to assist with finding space, depending on their workload at the time. But, they are unable to proctor individual exams. This is particularly true for evening exams as they typically result in numerous legitimate conflicts.

Final Exams

Final Exam policies can be found in the [Term Rules and Regulations](#). Lecturers will be solicited during the previous term regarding their desire to have a final exam. This information is forwarded to the Registrar's Office for scheduling.

Grades & Graded Work (i.e. exam, homework) Distribution

Due to the volume of subjects and the number of students each term, the Academic Programs staff is unable to distribute grades or graded work. If lecturers would like to distribute graded exams or homework problems, they should make arrangements either in class or during office hours. All teaching faculty and staff should be aware of the privacy guidelines that are listed in the [Term Rules and Regulations](#). Posting grades or leaving graded work in a public space (i.e., hallway) is not permitted under the [Student Information Policy](#).

Final exams are subject to special rules. Lecturers have the option of storing final exams in Academic Programs. If this option is chosen, students can access their exams by coming to Academic Programs with the lecturer or a recitation instructor. Students are not permitted to review final exams without an instructor present.

Homework

Academic Programs maintains "lockable" homework bins on the 3rd floor of building 8 at the juncture of building 16. As the beginning of the term approaches, the Course Managers will solicit each lecturer's homework bin requests. Once all requests have been collected, the staff will assess how the bins can be utilized in the most efficient way possible while meeting as many needs as possible. In most terms, not all specific requests can be accommodated. Therefore, lecturers are asked to cooperate in attaining compromise solutions as needed.

Teaching staff are asked that homework assignments be due NO LATER THAN 4:00 PM on any given day, especially on Friday. Administratively, the Course Managers frequently need to stay beyond the time at which homework is due. Allowing one hour of “buffer” time between the homework deadline and the end of the day will assist tremendously in managing the process.

Lecturer assistance in encouraging students to identify any submitted homework with their name, course work and recitation section is appreciated. This becomes a major issue as unidentified homework collects in Academic Programs throughout the semester.

New Subjects

Any new subject proposal (description, syllabus, units, level, books etc.) must be submitted to the Physics Education Committee for consideration and potential approval prior to submission to the Institute's Committee on Curricula. Subjects should be submitted in the fall term PRIOR to the academic year of desired first offering. Submissions after the fall term may not be reviewed by the Institute's Committee on Curricula depending on the volume of requests at the Institute level.

Scheduling

Initial scheduling of subject times and locations are completed in April for the subsequent fall term and October for the spring term. If changes to the schedule are needed after this date, teaching staff can contact Academic Programs. Once the term begins, the Course Managers can assist in making scheduling changes and/or making new reservations for events such as review sessions, grading sessions, exams, etc.

Teaching and TA Assignments

Faculty Teaching Assignments

The Subject Coordinator (a member of the Education Committee) and Associate Department Head for Education will have final discretion on the staffing of subjects each semester based on staffing levels and other teaching requirements. The following priorities are utilized when assignments are made:

- Highest Priority: Freshman lecturers, administrators for 8.01 and 8.02, lecturers for required undergraduate subjects, Junior Lab staff, lecturers for the general graduate courses (8.311, 8.312, 8.321, 8.322, 8.333 and 8.334).
- Second Priority: Lecturers for specialty-required graduate subjects and undergraduate electives.
- Third Priority: Lecturers for small specialized graduate subjects, Freshmen recitations and recitations in required undergraduate subjects.
- Fourth Priority: Recitations in graduate subjects.

[NOTES: If the enrollment in an undergraduate elective or a small specialized graduate elective falls below a certain cutoff, lecturing that subject does not completely satisfy a faculty member's teaching responsibility for the term. Under normal conditions recitation sections in small undergraduate subjects will be done by the lecturer.]

TA Assignments

TA Assignments are made by the Graduate Appointments Coordinator of the Education Committee. The following priorities are used in the appointment process:

- Highest Priority: Freshman recitation sections, sections in required undergraduate subjects including the Junior Lab, and general graduate subjects.
- Second Priority: Tutoring and non-grading utility work.
- Third Priority: Grading

Assignments are made using these guidelines based on past precedence, requests from lecturers, and availability of Teaching Assistants.

Uniform Compensation For Postdoctoral Fellows Who Teach

All postdoctoral fellows who teach will be compensated by the Department. We will increase their take-home salary and we will assume a fraction of the normal salary that is paid by a research group. The exact financial arrangements will be determined by the Department Head each year. The cost to the Department for a fellow teaching 2 recitation sections for a term will be roughly equivalent to supporting a TA for a term; the cost will be split about evenly between compensation to the fellow and to the research contract.

Teaching Commitment

Faculty will earn teaching credit for the following:

- Lecturing any Physics subject with adequate enrollment (see below)
- Junior Faculty, teaching 2 recitation sections
- Senior Faculty, teaching 3 recitation sections

POLICY ON LOW ENROLLMENT SUBJECTS

Subjects already listed in the Bulletin will generally not be considered as counting toward a faculty member's teaching commitment if

- a) The subject was offered in the previous year and awarded fewer than 9 grades,
- b) The subject was not offered in the previous year, but fails to have at least 12 students officially registered for credit by the end of the first week of classes.

POLICY ON DOUBLE TEACHING LOADS

In general, the Department does not believe that double teaching is in the best interests of the faculty member or the students. Thus it should be allowed only under special circumstances.

The opportunities for faculty to double teach must be consistent with the schedule of normally offered subjects and traditional staffing levels.

Only junior faculty will be permitted to double teach and then only once.

A faculty member on a leave earned by double teaching will not be exempted from other Institute or Departmental responsibilities.

To be eligible for double teaching a faculty member must

- a) be working on an experiment at a distant location, where a substantial portion of time must be spent on site,
- b) have an established record of teaching scores at or above the average for the sort of subjects taught,
- c) if the double teaching is done in a single subject, be responsible for finding a graduate student who will contribute to the grading, proctoring, and other administrative tasks that would otherwise place an undue burden on the other faculty in the subject. The Department will provide the funds for a half-time TA for that student.
- d) be willing to accept teaching assignments outside of earlier determined teaching trajectories.

Teaching Relief

Faculty can obtain relief from teaching for the following:

- 1) Fulfill an assignment which is considered larger than normal as determined by the Education Committee. Examples include serving as Graduate Admissions Coordinator or developing a major teaching initiative such as TEAL.
- 2) Request a leave of absence, research leave, or sabbatical from the Department Head.
- 3) Fulfill an administrative assignment such as Department Head, Institute Office, or major Laboratory Head.
- 4) Other arrangements as negotiated with the Department Head and Associate Department Head for Education.

Term Rules and Regulations

Faculty and teaching staff are responsible for compliance with the Term Regulations as published at <http://web.mit.edu/faculty/termregs/>. These term regulations and examination policies derive from Rules and Regulations of the Faculty and apply to academic exercises during the fall and spring terms. Exceptions to the term regulations and examinations policies must be approved by the Faculty Chair. Asking students to vote on some deviation from the rules is not permissible. Instructors should contact exam-termregs@mit.edu with questions of interpretation or requests for exceptions to the regulations.

Textbook Ordering

The Academic Administrator will send a request for textbook orders during the term prior to the teaching assignment. Textbook orders are sent to the assigned lecturer for each course. Lecturers are asked to return the completed forms as soon as possible to facilitate availability for students at the start of the term.

Undergraduate Program

Advisor Assignments

The Undergraduate Coordinator on the Education Committee, in conjunction with the Associate Department Head for Education, identifies faculty members to advise the incoming sophomore majors each year. The academic advisors keep this group of students for three years, or until their last advisee graduates. Once the group of advisors has been selected for a given class, the Undergraduate Coordinator matches the students with the faculty.

Registration packets are prepared for advisors just prior to Registration Day each term. Advisors will be notified when the packets are available. Due to the volume of traffic that Academic Programs experiences prior to and on Registration Day, we are unable to deliver packets to faculty.

Advisors who will be unavailable for a portion, or all, of Registration Day must make arrangements for a substitute and should notify advisees of the change. Because the Department believes in the value of faculty-student interaction, students should NOT be directed to the Academic Programs staff for registration. Instructions regarding registration are included in the registration packets.

Advising Resources & WebSIS

Comprehensive advising resources are available at <http://web.mit.edu/faculty/advising.html>. Perhaps the most useful document is “The Academic Guide for Undergraduates and Their Advisors”.

WebSIS provides advisors with individual advisee information such as grade reports, audits, pictures and other information.

CAP

The Committee on Academic Performance (CAP) is charged with reviewing undergraduate students who are not making sufficient academic progress. The Departmental Undergraduate Coordinator will convene a meeting of academic advisors who have students that are flagged by CAP at the conclusion of each term. Depending on any recommended action, the advisor may be asked to attend a CAP meeting to address the deficiencies in the students’ performance.

S.B. Degrees

Currently, there are two tracks to the degree of S.B. in Physics: the focused option and the flexible option. Specific information can be found at <http://web.mit.edu/physics/undergrad/majors/degereqs.html>.

Students interested in the flexible option should be directed to the Associate Department Head for Education to discuss the focus subjects, lab requirement, etc.

Undergraduate Audits/Student Pictures

Undergraduate audits, student pictures, grade reports and other information are available for each advisor's students at WebSIS.

Graduate Program

Admissions Process for the Graduate Program

The Graduate Admissions Officer, a member of the Education Committee, must approve any offer of admission into the Ph.D. or Masters programs. Only officers of the US military are admitted into the Masters program. With the assistance of faculty readers from each Division, each application is reviewed and graded at least twice, once from the Graduate Admissions Officer, and a second time by the division reader(s). The Graduate Admissions Officer will solicit nominations for fellowships from the readers and call a meeting to discuss the nominees. Final fellowship decisions are made by the Associate Department Head for Education in consultation with the Department Head. Teaching Assistantship and Research Assistantship decisions must be approved by the Graduate Admissions Officer in consultation with the Associate Department Head for Education.

If a faculty member wants to admit a student about whom the Admissions Officer has doubts, the case will be reviewed by three other members of the graduate part of the Education Committee. If the faculty member is unsatisfied with their decision, s/he may, as a last recourse, appeal to the Associate Department Head for Education.

Students who are admitted with an RA offer will have the option of a TA for one year if a) they are rated A or better by the readers, and b) there is a reasonable expectation that they are fluent in English.

Advisor Assignments

The Graduate Coordinator on the Education Committee, in conjunction with the Division Heads, identifies faculty members to act as academic advisors and then assigns graduate students to them. If a student subsequently chooses that person as a research supervisor, another faculty member will assume the role of academic advisor.

Registration packets are prepared for advisors just prior to Registration Day each term. Advisors will be notified when the packets are available. Due to the volume of traffic that Academic Programs experiences prior to and on Registration Day, we are unable to deliver packets to faculty.

Advisors who will be unavailable for a portion, or all, of Registration Day must make arrangements for a substitute and should notify advisees of the change. Because the Department believes in the value of faculty/student interaction, students should NOT be directed to the Academic Programs staff for registration. Instructions regarding registration are included in the registration packets.

Advising Resources & WebSIS

Comprehensive advising resources are available at <http://web.mit.edu/faculty/teaching/>.

WebSIS provides advisors with individual advisee information such as grade reports, audits, pictures and other information.

Doctoral Guidelines

The Guidelines for Physics Doctoral Candidates publication contains the policies and procedures for graduate students. As such, graduate advisors are encouraged to become familiar with its contents. Most questions that emerge regarding graduate students can be answered in the Guidelines.

General Exams

Availability of Results

Academic advisors and research supervisors can obtain General Exam results for their students from the Academic Administrator.

Students who desire to review their graded Part I and II General Exams can do so in the Academic Programs office.

Part III Oral Exams

The oral exam committee consists of the chairperson and two other faculty members. Each research field (there may be several within a given division) will appoint one committee each year to examine all students within that field. If a student's research supervisor is a member of the standing committee, he or she will be replaced by an alternate faculty member for that exam only. The research supervisor may observe the exam and provide input if solicited by committee members. The supervisor and student will be asked to leave when the final decision is discussed.

The purpose of the oral portion of the general exam is to test the student's broad general knowledge within their specialty. There have been many examples of students who received good grades in the subjects required in their graduate specialty and who were doing quite well on their research projects, yet displayed an alarming lack of understanding of the basic concepts within their specialty.

The scope of the material covered is most easily defined by the specialties for which exam committees are formed:

- Astrophysics
- Atomic and Optical Physics
- Biophysics
- Condensed Matter Experiment
- Condensed Matter Theory
- Nuclear and Particle Experiment
- Nuclear and Particle Theory
- Quantum Information
- Plasma Physics

Study guides prepared by the faculty listing the topics a student should know in each of these specialty areas are available in Academic Programs. The exam should not focus on the student's specific research area. A student working on neutron stars could be asked basic questions about our solar system, galactic dynamics, or the early universe. A student working on high temperature superconductivity should know the fundamental concepts in semiconductors and quantum fluids as well. Our current practice of having the same committee examine all the

students in a given specialty in any term should help insure that the Part III students have a firm grasp of concepts across their specialty.

It has become common practice for the student to be given a question to be prepared before hand. This helps put the student at ease as the exam begins, and starts the discussion on a topic with which the student should be quite familiar. However, this is meant to be only a fraction of the entire exam, typically about one third, certainly never more than a half. Either the committee asks questions which gradually lead away from the prepared topic into new ground, or the committee is satisfied with the prepared response and jumps to a new topic entirely. Typically an exam lasts one and a half to two hours.

Special Oral Exams for Parts I and II

If a student fails Part I or Part II at the final attempt, the exam committee for the applicable Part gives the student a special oral exam on the material normally covered on that exam (non-faculty teaching staff such as Research Scientists, and non-Departmental faculty are NOT eligible for these committees). The student's research supervisor may attend but will not participate. This special oral is given during the same semester and is generally scheduled within a few weeks after notification of failure.

It is the committee's responsibility to determine whether the student's performance on the written exam was an accurate indication of his/her mastery of the material. Therefore, it is inappropriate to take into consideration performance in graduate subjects, other parts of the graduate exam, or special research problems. If the committee thinks that extenuating circumstances may have influenced the student's performance, they should bring those concerns to the attention of the Associate Department Head for Education who will take them to the Education Committee for consideration.

The committee should keep in mind that a student who fails to pass our general exam requirements may do a Master's thesis, and is then allowed to reapply to the Ph.D. program.

RA Termination Policies

Research supervisors should consult the Guidelines for Physics Doctoral Candidates for the policy on terminating a Research Assistantship. Supervisors should be aware that termination is the end of a long, detailed, and writing-intensive process of communication with the student. Supervisors are strongly encouraged to consult the Guidelines and/or the Academic Administrator early if performance issues emerge.

Research Supervision

Prior to Thesis

Graduate special problems that are completed in the Department—that is, graduate research—may be officially supervised only by current and retired physics faculty and senior research scientists who have or had appointments in the Physics Department.

Special problems in graduate physics completed under the supervision of a faculty member in another department must have a current Physics faculty member as a co-supervisor.

Thesis Supervision

Ph.D. and S.M. theses may be supervised and signed only by current and retired Physics faculty and senior research scientists who have or had appointments in the Physics Department.

In some cases, students find a thesis supervisor who is a faculty member in another department or university. In those cases, students are required to find a current physics faculty member to serve as a co-supervisor. The responsibility of the co-supervisor is to assure that the student's research is founded in physics. The co-supervisor is expected to be an active member of the thesis committee and, ultimately, sign the thesis with the primary supervisor. Additional details can be found in the Guidelines for Physics Doctoral Candidates.

Statement Regarding Under-Represented Minority Graduate Students

The MIT Department of Physics is dedicated to providing equal opportunity to its graduate student population and is dedicated to helping its students succeed and thrive. The Department of Physics ranks among the best in the nation for its rate of graduating under-represented minority students. The Department achieves this goal in many ways.

First of all, the Department strongly recruits under-represented minority students to its program. For example, during the application process, the applications of identified under-represented minority students are given careful consideration, including review by the Department Head and/or Associate Head. Applications are scrutinized both for traditional measures of achievement as well as for strengths that may appear outside of the traditional indicators.

While at MIT, under-represented minority students are given tools to succeed. Under-represented minorities who are accepted and remain in good standing are presently eligible for a generous package of financial assistance throughout their graduate studies. Details regarding funding may be obtained by contacting the Academic Administrator.

Additionally, the Department provides a faculty member to serve as an under-represented minority student advisor. This advisor plays a pro-active role in monitoring the progress and well-being of under-represented minority students throughout their MIT experience. Advisees are encouraged to bring problems or concerns to the advisor at any time.

Under-represented minority applicants are strongly encouraged to contact Academic Programs (physics-grad@mit.edu) with any questions they may have about the program.