

Peterson's

Graduate Programs in
ENGINEERING
& APPLIED
SCIENCES 1985

**Covers some
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and Canada.**



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highlight research facilities,
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more.**

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Peterson's

Annual Guides/Graduate Study: Book 5



Graduate Programs in Engineering and Applied Sciences 1985

Nineteenth Edition

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PETERSON'S GUIDES
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The colleges and universities represented in this book recognize that federal laws, where applicable, require compliance with Title IX (Education Amendments of 1972), Title VII (Civil Rights Act of 1964), and Section 504 of the Rehabilitation Act of 1973 as amended, prohibiting discrimination on the basis of sex, race, color, handicap, or national or ethnic origin in their educational programs and activities, including admissions and employment.

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at the back of this volume.

education rather than training in a certain discipline or preparation for a specific career. In the Education section, two directories have been added: Bilingual Education/Teaching English as a Second Language and Religious Education. Two new directories have also been created in the Psychology/Behavioral Sciences section; these are Developmental Psychology and Industrial/Organizational Psychology.

Also in Book 2, a new section called Health, Physical Education, and Recreation has been developed from three directories formerly in the Education section. The creation of this section reflects recent trends toward establishing schools in this field that are independent of an institution's school of education and toward developing new areas of specialization that fall outside the traditional scope of schools of education. The latter trend is also reflected in the renaming of the Physical Education directory, which is now called Physical Education/Human Movement Studies and which contains profiles of many programs that emphasize such fields of specialization as exercise physiology and movement sciences.

One new directory, Astrophysics, has been added to Book 4; it appears with the Astronomy directory in the newly renamed Astronomy and Astrophysics section.

In all of the books, the opening sections have been expanded to include more information of interest to those who are thinking of applying to graduate school, as well as those who advise them. The section called The Graduate Adviser contains two new essays: one advising applicants on matters related to the choice of a graduate program and the application process, written by the Assistant Director of the Career Center at Cornell University, and one on financial aid for graduate and professional education, written by the Assistant Dean for Admissions and Financial Aid at Harvard University. These essays provide not only specific information of enormous value to all prospective graduate students but also professional advice of the highest quality.

Data Collection and Editorial Procedures

DIRECTORIES AND PROFILES

The information published in the profiles of all of the books, as well as the directories of Book 1, is collected through Peterson's Annual Survey of Higher Education, a series of questionnaires sent each spring and summer to the more than 1,350 accredited institutions in the United States and Canada offering postbaccalaureate degree programs. Deans and other administrators complete these surveys, providing information on programs in the 256 academic and professional fields covered in the Guides. Peterson's editorial staff then carefully goes over each returned survey and verifies or revises responses after further research and discussion with administrators or department heads. Extensive files on past responses are kept from year to year.

While every effort has been made to ensure the accuracy and completeness of the data, information is sometimes unavailable or changes occur after publication deadlines.

The reader is urged to keep in mind the following points when consulting the profiles:

Incomplete Listings. All usable information received in time for publication has been included. The omission of any particular

item from a directory or profile signifies either that the item is not applicable to the institution or program or that information was not available. Profiles of programs scheduled to begin during the 1984-85 academic year cannot, obviously, include statistics on enrollment or, in many cases, the number of faculty members. If no usable data were submitted by an institution, its name, address, and program name where appropriate nonetheless appear in order to indicate the existence of graduate work.

Expenses. Tuition and fee schedules are given, wherever possible, for the 1984-85 academic year. If the 1984-85 rates had not been set at publication time by the university or state legislature, estimates were used or figures from 1983-84 were printed. These figures should be taken as a reasonable projection of expenses at an institution; for exact costs at any given time, readers should contact schools and programs directly. Readers should also keep in mind that the tuition of Canadian institutions is usually given in Canadian dollars.

Professional Accreditation. Profiles indicate whether a program is professionally accredited. However, because it is possible for a program to receive or lose professional accreditation at any time, students entering fields in which accreditation is important to a career should verify the status of programs by contacting either the chairperson or the appropriate accrediting association (see Accreditation and Accrediting Agencies).

Restricted and Suspended Admissions. Some programs admit only certain groups (such as students who were undergraduates at the institution), and other programs have suspended or permanently terminated admissions. Notes to this effect are printed in the profiles after the list of degrees offered by the program. Institutions that have restricted admission are often unable to handle queries, and some have requested that Peterson's Guides discourage applicants from writing directly to them; readers are advised, therefore, to write only if they qualify for admission under the stated restrictions. In many cases programs with suspended admissions still have students completing degrees; enrollment figures as well as degree requirements are printed here in order to give an accurate reflection of each program's current status. Interested students should contact the unit head or dean to determine when and if admissions will be resumed.

ANNOUNCEMENTS AND TWO-PAGE DESCRIPTIONS

While the profiles represent the result of Peterson's annual research project on American and Canadian graduate education, covering some 25,000 programs at over 1,350 institutions and forming a database as complete as possible, the announcements and two-page descriptions are supplementary insertions submitted by deans and chairpersons who wish to make an additional, more individualized statement to readers. Those who have written these special messages are responsible for the accuracy of the content, but Peterson's editors have reserved the right to delete irrelevant material or questionable self-appraisals. Statements regarding a university's objectives and accomplishments are a reflection of its faculty's beliefs and are not the opinions of the editors. Since inclusion of announcements and descriptions is voluntary, their presence or absence in the Guides should not be taken as an indication of status, quality, or approval.

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Applying to Graduate and Professional Schools

The decision to attend graduate school and the choice of an institution and degree program require serious consideration. The time, money, and energy you will expend doing graduate work are significant, and you will want to analyze your options carefully. Before you begin filing applications, you should evaluate your interests and goals, know what programs are available, and be clear about your reasons for pursuing a particular degree.

There are two excellent reasons for attending graduate school, and if your decision is based on one of these, you probably have made the right choice. There are careers such as medicine, law, and college and university teaching that require specialized training and, therefore, necessitate advanced education. Another motivation for attending graduate school is to specialize in a particular discipline—to broaden your expertise in that area, to do research, and to specialize in a subject that you have decided is of great importance, either for career goals or for personal satisfaction.

Degrees

Traditionally, graduate education has involved acquiring and communicating knowledge gained through original research in a particular academic field. The highest earned academic degree, which requires the pursuit of original research, is the Doctor of Philosophy (Ph.D.). In contrast, professional training stresses the practical application of knowledge and skills; this is true, for example, in the fields of business, law, and medicine. At the doctoral level, degrees in these areas include the Doctor of Business Administration (D.B.A.), the Doctor of Jurisprudence (J.D.), and the Doctor of Medicine (M.D.).

Master's degrees are offered in most fields and may also be academic or professional in orientation. In many fields, the master's degree may be the only professional degree needed for employment. This is the case, for example, in fine arts (M.F.A.), library science (M.L.S.), and social work (M.S.W.). (For a list of the graduate and professional degrees currently being offered in the United States and Canada, readers may refer to the appendix of degree abbreviations at the back of each volume of these Guides.)

Some people decide to earn a master's degree at one institution and then select a different university or a somewhat different program of study for doctoral work. This can be a way of acquiring a broad background: you can choose a master's program with one emphasis or orientation and a doctoral program with another. The total period of graduate study may be somewhat lengthened by proceeding this way, but probably not by much.

In recent years, the distinctions between traditional academic programs and professional programs have become blurred. The course of graduate education has changed direction in the last twenty-five years, and many programs have redefined their shape and focus. There are centers and institutes for research, many graduate programs are now interdepartmental and interdisciplinary, off-campus graduate programs have multiplied, part-time graduate programs have increased, and the demand for graduate education is clearly on the rise. Colleges and universities have also established combined-degree programs, in many cases in order to enable students to combine academic and professional studies; for example, they might earn an academic master's degree and an M.B.A. As a result of such changes, you now have considerable freedom in determining the program best suited to your current needs as well as your long-term goals.

Choosing a Specialization and Researching Programs

There are several sources of information you should make use of in choosing a specialization and a program. A good way to begin is to consult the appropriate directories of these Guides, which will tell you what programs exist in the field or fields you are

interested in and, for each one, will give you information on degrees, research facilities, the faculty, financial aid resources, tuition and other costs, and application requirements.

Talk with your college adviser and professors about your areas of interest and ask for their advice about the best programs to research. Besides being very well informed themselves, these faculty members may have colleagues at institutions you are investigating, and they can give you inside information about individual programs and the kind of background they seek in candidates for admission.

The valuable perspective of educators should not be overlooked. If the faculty members you know through your courses are not involved in your field of interest, do not hesitate to contact other appropriate professors at your institution or neighboring institutions to ask for advice on programs that might suit your goals. In addition, talk to graduate students studying in your field of interest; their advice can be very valuable also.

Your decision about a field of study may be determined by your research interests or, if you choose to enter a professional school, by the appeal of a particular career. In either case, as you attempt to limit the number of institutions you will apply to, you will want to familiarize yourself with publications describing current research in your discipline. Find related professional journals and note who is publishing in the areas of specialization that interest you, as well as where they are teaching. Take note of the institutions represented on the publications' editorial boards also (they are usually listed on the inside cover); such representation usually reflects strength in the discipline.

Being aware of who the top people are and where they are will pay off in a number of ways. A graduate department's reputation rests heavily on the reputation of its faculty, and in some disciplines it is more important to study under someone of note than it is to study at a college or university with a prestigious name. In addition, in certain fields graduate funds are often tied to a particular research project and, as a result, to the faculty member directing that project. Finally, most Ph.D. candidates (and nonprofessional master's degree candidates) must pick an adviser and one or more other faculty members who form a committee that directs and approves their work. Many times this choice must be made during the first semester, so it is important to learn as much as you can about faculty members before you begin your studies. As you research the faculties of various departments, keep in mind the following questions: What is their academic training? What are their research activities? What kind of concern do they have for teaching and student development?

There are other important factors to consider in judging the educational quality of a program. First, what kind of students enroll in the program? What are their academic abilities, achievements, skills, geographical representation, and level of professional success upon completion of the program? Second, what are the program's resources? What kind of financial support does it have? How complete is the library? What laboratory equipment and computer facilities are available? And third, what does the program have to offer in terms of both curriculum and services? What are its purposes, its course offerings, and its job-placement and student-advisement services? What is the student-faculty ratio, and what kind of interaction is there between students and professors? What internships, assistantships, and other experiential education opportunities are available?

When evaluating a particular institution's reputation in a given field, you may also want to look at published graduate program ratings. There is no single rating that is universally accepted, so you are advised to read several and not place too much importance on any one. Most consist of what are known as "peer ratings"; that is, they are the results of polls of respected scholars who are asked to rate graduate departments in their field of expertise. Many academicians feel that these ratings are too heavily based upon traditional concepts of what constitutes quality—such as the publications of the faculty—and that they perpetuate the notion of a research-oriented department as the only model of excellence in graduate education. Depending on whether your own goals are research-oriented, you may want to attribute more or less importance to this type of rating.

If possible, visit the institutions that interest you and talk with faculty members and currently enrolled students. Be sure,

however, to write or call the admissions office a week in advance to give the person in charge a chance to set up appointments for you with faculty members and students.

The Application Process

TIMETABLE

It is important to start gathering information early in order to be able to complete your applications on time. Most people should start the process a full year and a half before their anticipated date of matriculation. There are, however, some exceptions to this rule. The time frame will be different if you are applying for national scholarships or if your undergraduate institution has an evaluation committee through which you are applying to a health-care program or law school. In such a situation, you may have to begin the process two years before your date of matriculation in order to take your graduate admission test and arrange for letters of recommendation early enough to meet deadlines.

Application deadlines may range from August (before your senior year) for early decision programs of medical schools using the American Medical College Application Service (AMCAS) to late spring or summer (after your senior year) for a few programs with rolling admissions. Most deadlines for the fall's entering class are between January and March. You should in all cases plan to meet formal deadlines; beyond this, you should be aware of the fact that many schools with rolling admissions encourage and act upon early applications. Applying early to a school with rolling admissions is usually advantageous, as it shows your enthusiasm for the program and gives admissions committees more time to evaluate the subjective components of your application, rather than just the "numbers." Applicants are not rejected early unless they are clearly below an institution's standards.

The timetable that appears below represents the ideal for most students.

Junior Year, Fall and Spring

- research areas of interest, institutions, and programs
- talk to advisers about application requirements
- register and prepare for appropriate graduate admission tests
- investigate national scholarships
- if appropriate, obtain letters of recommendation

Junior Year, Summer

- take required graduate admission test
- write for application materials
- visit institutions of interest if possible
- write application essay
- check on application deadlines and rolling admissions policies
- for medical, dental, osteopathy, podiatry, or law school, you may need to register for the national application, or data assembly service most programs use

Senior Year, Fall

- obtain letters of recommendation
- take graduate admission test if you haven't already
- send in completed applications
- register for Graduate and Professional Schools Financial Aid Service (GAPSAS) if required

Senior Year, Spring

- check with all institutions before the deadline to make sure your file is complete
- visit institutions that accept you
- send deposit to institution of choice
- notify other colleges and universities that accepted you of your decision so that they may admit students on their waiting list
- send thank-you notes to people who wrote your recommendation letters, informing them of your success

You may not be able to adhere to this timetable if your application deadlines are very early, as is the case with medical schools, or if you decide to attend graduate school at the last minute. In any case, keep in mind the various application requirements and be sure to meet all deadlines. If deadlines are impossible to meet, call the institution to see if a late application will be considered.

OBTAINING APPLICATION FORMS AND INFORMATION

To obtain the materials you need, a neatly typed or handwritten postcard requesting an application, bulletin, and financial aid information is all that is necessary. However, you may want to request an application by writing a formal letter in which you briefly describe your training, experience, and specialized research interests. Either type of request should be sent to the admissions office directly. If you want to write to a particular faculty member about your background and interests in order to explore the possibility of an assistantship, you should also feel free to do so. However, do not ask a faculty member for an application, as this may cause a significant delay in your receiving the forms.

NATIONAL APPLICATION SERVICES

In a few professional fields, there are national services that provide assistance with some part of the application process. These services are the Law School Data Assembly Service (LSDAS), American Medical College Application Service (AMCAS), American Association of Colleges of Osteopathic Medicine Application Service (AACOMAS), American Association of Colleges of Podiatric Medicine Application Service (AACPMAS), and American Association of Dental Schools Application Service (AADSAS). Many programs require applicants to use these services because they simplify the application process for both the professional program's admissions committee and the applicant. The role these services play varies from one field to another. The LSDAS, for example, analyzes your transcript(s) and submits the analysis to the law schools to which you are applying, while the other services provide a more complete application service. More information and applications for these services can be obtained from your undergraduate institution.

MEETING APPLICATION REQUIREMENTS

Requirements vary from one field to another and from one institution to another. Read each program's requirements carefully; the importance of this cannot be overemphasized!

Graduate Admission Tests

Colleges and universities usually require a specific graduate admission test, and departments sometimes have their own requirements as well. Scores are used in evaluating the likelihood of your success in a particular program (based upon the success rate of past students with similar scores). Most programs will not accept scores more than three to five years old. The various tests are described a little later in this book.

Transcripts

Admissions committees require official transcripts of your grades in order to evaluate your academic preparation for graduate study. Grade point averages are important but are not examined in isolation; the rigor of the courses you have taken, your course load, and the reputation of the undergraduate institution you have attended are also scrutinized. To have your college transcript sent to graduate institutions, contact your college registrar.

Letters of Recommendation

Choosing people to write recommendations can be difficult, and most graduate schools require two or three letters. While recommendations from faculty members are essential for academically oriented programs, professional programs may seriously consider nonacademic recommendations from

professionals in the field. Indeed, often these nonacademic recommendations are as respected as those from faculty members.

To begin the process of choosing references, identify likely candidates from among those you know through your classes, extracurricular activities, and jobs. A good reference will meet several of the following criteria: he or she has a high opinion of you; knows you well in more than one area of your life; is familiar with the institutions to which you are applying as well as the kind of study you are pursuing; has taught or worked with a large number of students and can make a favorable comparison of you with your peers; is known by the admissions committee and is regarded as someone whose judgment should be given weight; and has good written communication skills. No one person is likely to satisfy all these criteria, so choose those people who come closest to the ideal.

If you are returning to school after working for several years, you may not be able to find professors at your undergraduate institution who remember you. If this is the case, contact the graduate schools you are applying to and see what their policies are regarding your situation. They may waive the requirement of recommendation letters, allow you to substitute letters from employment supervisors, or suggest you enroll in relevant courses at a neighboring institution and obtain letters from professors upon completion of the course work. Programs vary considerably in their policies, so it is best to check with each institution.

Once you have decided whom to ask for letters, you may wonder how to approach them. Ask them if they think they know you well enough to write a meaningful letter. Be aware that the later in the semester you ask, the more likely they are to hesitate because of time constraints; ask early in the fall semester of your senior year. Once those you ask to write letters agree in a suitably enthusiastic manner, make an appointment to talk with them. Go to the appointment with recommendation forms in hand, being sure to include addressed, stamped envelopes for their convenience. In addition, give them other supporting materials that will assist them in writing a good, detailed letter on your behalf. Such documents as transcripts, a résumé, a copy of your application essay, and a copy of a research paper can help them write a thorough recommendation.

On the recommendation form, you will be asked to indicate whether you wish to waive or retain the right to see the recommendation. Before you decide, discuss the confidentiality of the letter with each writer. Many faculty members will not write a letter unless it is confidential. This does not necessarily mean that they will write a negative letter but, rather, that they believe it will carry more weight as part of your application if it is confidential. Waiving the right to see a letter does, in fact, usually increase its validity.

Application Essays

Writing an essay, or personal statement, is often the most difficult part of the application process. Requirements vary widely in this regard. Some programs request only one or two paragraphs about why you want to pursue graduate study, while others require five or six separate essays in which you are expected to write at length about your motivation for graduate study, your strengths and weaknesses, your greatest achievements, and solutions to hypothetical problems. Business schools are notorious for requiring several time-consuming essays.

An essay or personal statement for an application should be essentially a statement of your ideas and goals. Usually it includes a certain amount of personal history, but, unless an institution specifically requests autobiographical information, you do not have to supply any. Even when the requirement is a "personal statement," the possibilities are almost unlimited. There is no set formula to follow, and, if you do write an autobiographical piece, it does not have to be arranged chronologically. Your aim should be a clear, succinct statement showing that you have a definite sense of what you want to do and enthusiasm for the field of study you have chosen. Your essay should reflect your writing abilities; more important, it should reveal the clarity, the focus, and the depth of your thinking.

Before writing anything, stop and consider what your reader might be looking for; the general directions or other parts of the application may give you an indication of this. Admissions committees may be trying to evaluate a number of things from your statement, including your

- motivation and commitment to a field of study
- expectations with regard to the program and career opportunities
- writing ability
- major areas of interest
- research and/or work experience
- educational background
- immediate and long-term goals
- reasons for deciding to pursue graduate education in a particular field and at a particular institution
- maturity
- personal uniqueness—what you would add to the diversity of the entering class

There are two main approaches to organizing an essay. You can outline the points you want to cover and then expand on them, or you can put your ideas down on paper as they come to you, going over them, eliminating certain sentences, and moving others around until you achieve a logical sequence. Making an outline will probably lead to a well-organized essay, whereas writing spontaneously may yield a more inspired piece of writing. Use the approach you feel most comfortable with. Whichever approach you use, you will want someone to critique your essay. Your adviser and those who write your letters of recommendation may be very helpful to you in this regard. If they are in the field you plan to pursue, they will be able to tell you what things to stress and what things to keep brief. Do not be surprised, however, if you get differing opinions on the content of your essay. In the end, only you can decide on the best way of presenting yourself.

If there is information in your application that might reflect badly on you, such as poor grades or a low admission test score, it is better not to deal with it in your essay unless you are asked to. Keep your essay positive. You will need to explain anything that could be construed as negative in your application, however, as failure to do so may eliminate you from consideration. You can do this on a separate sheet entitled "Addendum," which you attach to the application, or in a cover letter that you enclose. In either form, your explanation should be short and to the point, avoiding long, tedious excuses. In addition to supplying your own explanation, you may find it appropriate to ask one or more of your recommenders to address the issue in their recommendation letter. Ask them to do this only if they are already familiar with your problem and could talk about it from a positive perspective.

In every case essays should be typed. It is usually acceptable to attach pages to your application if the space provided is insufficient. Neatness, spelling, and grammar are important.

Interviews, Portfolios, and Auditions

Some graduate programs will require you to appear for an interview. In certain fields, you will have to submit a portfolio of your work or schedule an audition.

Interviews. Interviews are usually required by medical schools and often required or suggested by business schools and other programs. An interview can be a very important opportunity for you to convince an institution's admissions officer or committee that you would be an excellent doctor, dentist, manager, etc.

Interviewers will be interested in the way you think and approach problems and will probably concentrate on questions that enable them to assess your thinking skills, rather than those that call upon your grasp of technical knowledge. Some interviewers will ask controversial questions, such as "What is your viewpoint on abortion?", or give you a hypothetical situation and ask how you would handle it. Bear in mind that the interviewer is more interested in *how* you think than *what* you think. As in your essay, you may be asked to address such topics as your motivation for graduate study, personal philosophy, career goals, related research and work experience, and areas of interest.

You should prepare for a graduate school interview as you would for a job interview. Think about the questions you are likely to be asked and practice verbalizing your answers. Think too about what you want interviewers to know about you so that you can present this information when the opportunity is given. Dress as you would for an employment interview.

Portfolios. Many graduate programs in art, architecture, journalism, environmental design, and other fields involving

visual creativity may require a portfolio as part of the application. The function of the portfolio is to show your skills and ability to do further work in a particular field, and it should reflect the scope of your cumulative training and experience. If you are applying to a program in graphic design, you may be required to submit a portfolio showing advertisements, posters, pamphlets, and illustrations you have prepared. In fine arts, applicants must submit a portfolio with pieces related to their proposed major.

Individual programs have very specific requirements regarding what your portfolio should contain and how it should be arranged and labeled. Many programs request an interview and ask you to present your portfolio at that time. They may not want you to send the portfolio in advance or leave it with them after the interview, as they are not insured against its loss. If you do send it, you usually do so at your own risk, and you should label all pieces with your name and address.

Auditions. Like a portfolio, the audition is a demonstration of your skills and talent, and it is often required by programs in music, theater, and dance. Although all programs require a reasonable level of proficiency, standards vary according to the field of study. In a nonperformance area like music education, you need only show that you have attained the level of proficiency normally acquired through an undergraduate program in that field. For a performance major, however, the audition is the most important element of the graduate application. Programs set specific requirements as to what material is appropriate, how long the performance should be, whether it should be memorized, and so on. The audition may be live or taped, but a live performance is usually preferred. In the case of performance students, a committee of professional musicians will view the audition and evaluate it according to prescribed standards.

MAILING COMPLETED APPLICATIONS

Graduate schools have established a wide variety of procedures for filing applications, so read each institution's instructions carefully. Some may request that you send all application materials in one package (including letters of recommendation). Others—medical schools, for example—may have a two-step application process. This system requires the applicant to file a preliminary application; if this is reviewed favorably, he or she submits a second set of documents and a second application fee. Pay close attention to each school's instructions.

Graduate schools generally require an application fee. Sometimes this fee may be waived if you meet certain financial criteria. Check with your undergraduate financial aid office and the graduate schools to which you are applying to see if you qualify.

ADMISSION DECISIONS

At most institutions, once the graduate school office has received all of your application materials, your file is sent directly to the academic department. A faculty committee (or the department chairperson) then makes a recommendation to the chief graduate school officer (usually a graduate dean or vice-president), who is responsible for the final admission decision. Professional schools at most institutions act independently of the graduate school office; applications are submitted to them directly, and they make their own admission decisions.

Usually a student's grade point average, graduate admission test scores, and letters of recommendation are the primary factors considered by admissions committees. The appropriateness of the undergraduate degree, an interview, and evidence of creative talent may also be taken into account. Normally the student's total record is examined closely, and the weight assigned to specific factors fluctuates from program to program. Few, if any, institutions base their decisions purely on numbers, that is, admission test scores and grade point average.

Some of the common reasons applicants are rejected for admission to graduate schools are: inappropriate undergraduate curriculum; poor grades or lack of academic prerequisites; low admission test scores; weak or ineffective recommendation letters; a poor interview, portfolio, or audition; and lack of extracurricular activities, volunteer experience, or research activities. To give yourself the best chances of being admitted where you apply, try to make a realistic assessment of an institution's admission standards and your own qualifications.

Remember, too, that missing deadlines and filing an incomplete application can also be a cause for rejection; be sure that your transcripts and recommendation letters are received on time.

Returning Students

Many graduate programs not only accept the older, returning student but actually prefer these "seasoned" candidates. Programs in business administration, social work, law, and other professional fields value mature applicants with work experience, for they have found that these students often show a higher level of motivation and commitment and work harder than 21-year-olds. Many programs also seek the diversity older students bring to the student body, as differences in perspective and experience make for interesting—and often intense—class discussions. Nonprofessional programs also view older students favorably if their academic and experiential preparation is recent enough and sufficient for the proposed fields of study.

Many institutions have programs designed to make the transition to academic life easier for the returning student. Such programs include low-cost child-care centers, emotional support programs for both the returning student and his or her spouse, and review courses of various kinds.

Other than making the necessary changes in their life-style, older students report that the most difficult aspect of returning to school is recovering, or developing, appropriate study habits. Initially, older students often feel at a disadvantage compared to students fresh out of an undergraduate program and accustomed to preparing research papers and taking tests. This feeling can be overcome by taking advantage of noncredit courses in study skills and time management and review courses in math and writing, as well as by taking a tour of the library and becoming thoroughly familiar with it. By the end of the graduate program, most returning students feel that their life experience gave them an edge, because they could use concrete experiences to help them understand academic theory.

If you choose to go back to school, you are not alone. One out of 5 adults is currently enrolled in some kind of educational program in order to make his or her life or career more rewarding.

Part-Time Students

As graduate education has changed over the past twenty-five years, part-time graduate programs have increased. Traditionally, graduate programs were completed by full-time students. Graduate schools instituted residence requirements, demanding that students take a full course load for a certain number of consecutive semesters, because it was felt that total immersion in the field of study and extensive interaction with the faculty were necessary in order to achieve mastery of an academic area.

In most academic Ph.D. programs as well as many health-care fields, this is still the only approach. However, many other programs now admit part-time students or allow a portion of the requirements to be completed on a part-time basis. Professional schools are more likely to allow part-time study because many students work full-time in the field and pursue their degree in order to enhance their career credentials. Other applicants choose part-time study because of financial considerations. By continuing to work full-time while attending school, they take fewer economic risks.

Part-time programs vary considerably in quality and admissions standards. When evaluating a part-time program, use the same criteria you would use in judging the reputation of any graduate program. Some schools use more adjunct faculty members with weaker academic training for their night and weekend courses, and this could lower the quality of the program; however, adjunct lecturers often have excellent experiential knowledge. Admissions standards may be lower for a part-time program than for an equivalent full-time program at the same school, but, again, your fellow students in the part-time program may be practicing in the field and have much to add to class discussions. Another concern is placement opportunities upon completion of the program. Some schools may not offer placement services to part-time students, and many employers do not value part-time training as highly as a full-time education. However, if a part-time program is the best option for you, do not

hesitate to enroll after carefully researching available programs. There are many excellent, well-respected part-time graduate programs from which to choose. The best source of information to consult is *Who Offers Part-Time Degree Programs?*, published by Peterson's Guides. This book lists over 2,000 colleges and universities in the United States that offer part-time degree programs. Sections are devoted to schools offering evening, weekend, summer, and external programs. There is also an index to the colleges, with information on enrollment and costs at the individual institutions.

Foreign Students

If you are a foreign student, you will follow the same application procedures as other graduate school applicants. However, there are additional requirements you will have to meet in order to study in the United States.

Since your success as a graduate student will depend on your ability to understand, write, read, and speak English, you will be required to take the Test of English as a Foreign Language (TOEFL), or a similar test, if English is not your native language. Some schools will waive the language test requirement, however, if you have a degree from a college or university in a country where the native language is English or if you have studied two or more years in an undergraduate or graduate program in a country where the native language is English. As for all other tests, score requirements vary, but some schools admit students with lower scores on condition that they enroll in an intensive English program before or during their graduate study. Some programs may also be willing to accept the TOEFL score as a substitute for that of the normally required graduate admission test. You should ask each school about its policies.

In addition to your English test, or proof of competence in English, your formal application must be accompanied by a certified English translation of your academic transcripts. You may also be required to submit certain health certificates and documented evidence of financial support at the time of application. However, since you may apply for financial assistance from graduate schools as well as other sources, some institutions require evidence of financial support only as the last step in your formal admittance and may grant you conditional acceptance first.

Once you have been formally admitted into a graduate program, the school will send you Form I-20, Certificate of Eligibility for Non-Immigrant Student Status. You must present this document, along with a passport from your own government and certain health certificates, to a U.S. embassy or consulate in order to obtain a foreign student visa.

Your own government may have other requirements you must meet in order to study in the United States. Be sure to investigate those requirements as well.

Once all the paperwork has been completed and approved, you are ready to make your travel arrangements. If you will be arriving at a major port of entry, such as New York, Washington, Boston, Chicago, Miami, Los Angeles, San Francisco, or Seattle, you can arrange to be met by a representative from International Student Service (ISS). This person, at no cost, will help you through customs, assist you in finding temporary housing, and, if needed, make travel arrangements for you. If you are interested in this assistance, write to International Student Service, 236 East 47th Street, New York, New York 10017. You may also send a cable to FORSTUDENT, NEW YORK. Be sure to give the date of your arrival and the name of your ship or your airline and flight number.

When you arrive on your American college campus, you will want to contact the foreign student adviser. This person's job is to help international students in their academic and social adjustment. The foreign student adviser often coordinates special orientation programs for new foreign students, which may consist of lectures on American culture, intensive language instruction, campus tours, academic placement examinations, and visits to places of cultural interest in the community. The foreign student adviser will also help you with immigration and financial concerns.

For more detailed information on international education, foreign students are advised to write to the Institute of International Education for a publication list. This not-for-profit organization provides excellent booklets free of charge, or at a nominal cost, on subjects and services related to international education. The address is Information Services Division, Institute of International Education, 809 United Nations Plaza, New York, New York 10017.

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Financial Aid for Graduate and Professional Education

General Remarks

"In a world of increasing danger, greater complexity, and more difficult national and international problems—of larger risks and opportunities—graduate education is essential for securing the well-being of the nation."

"The health of the graduate education and research enterprise is one of the most significant educational issues this society faces."

These statements are from a report entitled "Signs of Trouble and Erosion: A Report on Graduate Education in America," submitted to President Reagan in December 1983 by the National Commission on Student Financial Assistance. The report, prepared by the commission's Graduate Education Subcommittee, chaired by Dr. John Brademus, president of New York University, calls for significant expansion of graduate financial aid programs and is evidence of new national attention being focused on graduate and professional education. It reflects the recognition that the nation's economy, diplomatic and defense capabilities, and social and cultural life all depend on men and women with graduate-level preparation, as well as the fact that talented individuals are being dissuaded from pursuing graduate study by cost considerations and concern about the growing levels of student indebtedness.

The Brademus Report, as it is called, suggests that the federal government appropriate funding for a new fellowship program, the National Graduate Fellows program, which will provide over 200 merit-based fellowships that recipients will be able to use at the graduate school of their choice. Targeted areas of study will be the arts, humanities, and social sciences. In addition, during the past year Congress has discussed several proposals that will benefit graduate and professional education. The largest of these has been extending the Pell Grant Program, now limited to undergraduate study, to provide funds for the first year of full-time graduate study.

Thus, although financial aid for graduate and professional education is limited, and although there have been threats of federal cutbacks in recent years, the prospects for the future are looking brighter. Moreover, even without the programs proposed by the Brademus Report and others, there is federal support for graduate students available right now, and state governments, private foundations, national fellowship programs, and universities are all good sources of aid. If you are seriously interested in graduate study, you should not allow a personal lack of funds to discourage you; rather, you should energetically investigate and apply for all the types of aid for which you are eligible.

How and When to Apply

If, after you have estimated your expenses at the graduate institutions that interest you, you conclude that you will need some help in meeting these costs, apply for financial aid. Don't write off any school as too expensive until you have learned what kind of financial aid it can offer.

Because every institution has its own application process, as well as its own system for allotting aid, you should communicate directly with each school that interests you. You should also read school applications, brochures, and catalogs for information about financial aid.

The process of applying for aid can be confusing and time-consuming, especially to the first-time applicant. You can increase your chances of getting aid by doing the following:

- Apply for financial aid even if you think you will not qualify. Do not assume that you are not needy.
- Apply to as many sources as you can find.
- Make sure you have all of the necessary forms for each institution. Many schools use a needs analysis document such as that of the Graduate and Professional School Financial Aid Service (GAPSFAS) or the Financial Aid Form (FAF), provided by the College Scholarship Service (CSS). Other schools use different needs analysis systems. Be sure you complete the correct forms.

- Complete all forms legibly and accurately. Errors and omissions cause delays.
- Follow up on all forms you submit if you have no response within a reasonable period of time.
- Keep copies of all forms in case of loss.
- Apply for aid every year.
- In investigating financial aid, make sure you are aware that programs may change from year to year. It is up to you to find out if any changes have occurred.

Determining Financial Need

Most federal, state, and college or university aid is awarded on the basis of need. Need is normally defined as the difference between a student's basic educational budget—the cost of education including tuition and living expenses—and his or her resources. Resources may include such things as parents' contribution, summer savings, earnings during the school year, spouses' earnings, and savings.

To be eligible for loan and work-study programs funded under Title IV of the Higher Education Act you must establish your dependency status. You are considered dependent if during the current year or last year you were claimed as a dependent by your parents for federal income tax purposes, lived in your parents' home for more than six weeks, or received more than \$750 in support from your parents. If none of these conditions applies to you, then you are considered an independent student.

Keep in mind, however, that while some schools do not view parents of graduate students as a source of financial support, others require parental information even from independent students. Moreover, most schools expect the spouse of a married student to provide at least living expenses.

As noted above, many graduate institutions make use of the GAPSFAS and FAF. Both of these forms require that you provide information about your income, assets, and debts. Once you have submitted the appropriate form, the financial aid service performs a needs analysis and sends the information to the schools you have designated. The individual schools then make financial aid awards according to their own standards. (Neither GAPSFAS nor CSS award financial aid.)

Types of Aid Available

The range of financial assistance available at the graduate level is very broad. There are three basic types of aid—grants, work programs, and loans—and various sources—the federal government, state governments, educational institutions, foundations, corporations, and other private organizations such as unions and professional associations.

GRANTS AND FELLOWSHIPS

These are outright awards that require no service in return. Often they provide the cost of tuition and fees plus a stipend to cover living expenses. Some are based exclusively on financial need, some exclusively on academic merit, and some on a combination of need and merit.

The meaning of the terms is often misunderstood. As a rule, grants are awarded to those with financial need, although they may require expertise in a certain field. The term "fellowship" (sometimes used interchangeably with "scholarship") connotes selectivity based on ability. A fellowship is a prestigious award and is an indication of excellence that is important to a student's total career. Financial need is usually not a factor in awarding fellowships.

State Support

No precise data are available on state graduate scholarship programs, although several states do offer support for graduate study. California, for example, every year offers 800 graduate fellowships averaging \$3500 per award. This year the

Commonwealth of Massachusetts conducted a pilot program to finance graduate student scholarships, allocating \$750,000 to eligible institutions for disbursement to needy first- and second-year graduate students.

In order to qualify for state aid, you must be a resident of the state. Residency is established in most states by living there for at least twelve consecutive months. Most state awards are based on financial need; however, there are some merit-based awards.

Corporate Aid

Corporations may provide financial support for their employees, usually so that they may attend school part-time while remaining employed. Most students who receive this type of aid study at the master's level or take courses without enrolling in a particular degree program. Business and industry seldom support doctoral students. According to the report of the National Commission on Student Financial Assistance, only 1 percent of the students awarded doctoral degrees in 1981 received their primary support from corporations, and only 3.1 percent received any corporate support while attending graduate school. It should be noted that most of these students were studying in the physical sciences and engineering.

Aid from Foundations

But what about those who want to study architecture, theology, education, law, or biological sciences? Foundations provide some support in all of these fields although principally in the humanities. For example, the Woodrow Wilson Foundation offers the Mellon Fellowship in the Humanities, an award that provides the cost of tuition and a stipend of \$7500 for the first two years of graduate study. Although the fellowship does not extend to the third and fourth years, recipients may be funded for their fifth year if they are able to complete the dissertation within this time frame.

One way to find out about funding provided by foundations is to contact an agency such as Associated Grantmakers of Massachusetts, Inc. (294 Washington Street, Suite 417, Boston, Massachusetts 02108, 617-426-2606), which maintains a library with microfiche copies of every foundation's IRS Form 990, which must be filed annually. This form includes information about the foundations' finances, the names of its trustees, and listings of its contributions. Persons interested in using this library must first participate in an orientation session. Because of space limitations, you should schedule an appointment.

Researching Grants and Fellowships

The books listed below are good sources of information on grant and fellowship support for graduate education.

Annual Register of Grant Support 1983-84. 16th ed. Chicago: Marquis Academic Media, 1982. A comprehensive guide to grants and awards from government agencies, foundations, and business and professional organizations.

College Blue Book: Scholarships, Fellowships, Grants and Loans. 19th ed. Edited by Lorraine M. Mathies. New York: Macmillan, 1983. Lists awards made by federal and state agencies, corporations, unions, foundations, and professional societies.

Corporate Foundation Profiles. 3rd ed. New York: The Foundation Center, 1983. An in-depth, analytical profile of 234 of the largest company-sponsored foundations in the United States. Brief descriptions of all 701 company-sponsored foundations having assets of \$1-million or more or total annual giving of \$100,000 or more are also included. There is an index of subjects, types of support, and geographical locations.

The Foundation Directory. 9th ed. Edited by Marianna O. Lewis. New York: The Foundation Center, 1982. Gives detailed information on U.S. foundations, with brief descriptions of their purpose and activities.

The Grants Register 1983-85. 8th ed. Edited by Craig Alan Lerner and Roland Turner. New York: St. Martin's, 1982. Lists granting agencies alphabetically and gives information on awards available to graduate students, young professionals, and scholars for study and research.

Scholarships, Fellowships and Loans. Volume VII. Edited by S. Norman Feingold. Arlington, Massachusetts: Bellman Publishing Co., 1982. Lists U.S. foundations and agencies offering financial support for undergraduate and graduate research and study. Sources are primarily for U.S. citizens, although some of the information may be helpful to foreign nationals.

As far as private aid programs are concerned, no single source lists them all. However, there are a number of publications that can be quite valuable. One of these is the American Legion's *Need a Lift?* The 1983 edition is available from the American Legion, P.O. Box 1055, Indianapolis, Indiana 46206. *Corporate Tuition Aid Program: A Directory of College Financial Aid for Employees at America's Largest Corporations*, by Joseph O'Neill (Conference University Press, Box 24, Princeton, New Jersey 08542), contains information about the employee educational benefits of 650 companies. *The AFL-CIO Guide to Union-Sponsored Scholarships and Awards* describes union benefit programs. It is available free for union members and at a cost of \$3 for others; it may be obtained from the Department of Education, AFL-CIO, 815 16th Street, NW, Washington, D.C. 20006.

Graduate schools sometimes publish listings of support sources in their catalogs, and some provide separate publications, such as the *Graduate Guide to Grants*, compiled by the Office of Admissions and Financial Aid at the Harvard Graduate School of Arts and Sciences.

WORK PROGRAMS

Certain types of aid, such as teaching, research, and administrative assistantships, require recipients to perform a service for the university in exchange for a salary or stipend; sometimes tuition is also reimbursed. Resident assistantships involve living in an undergraduate dormitory in exchange for free room and board. The responsibilities of assistantships vary from school to school and from department to department.

Teaching Assistantships

If you pursue an advanced degree in a subject that is also offered on the undergraduate level—for example, in the arts and sciences—you may have a good chance of securing a teaching assistantship. Such a position may involve delivering lectures, correcting classwork, grading papers, counseling students, and supervising laboratory groups; usually about 20 hours of work each week is required.

Teaching assistantships provide excellent educational experience as well as financial aid. TAs generally receive a salary (usually considered taxable income), and sometimes tuition is waived as well. Appointments are based on academic qualifications and are subject to the availability of funds within a department. If you are interested, you should contact the department head, who ultimately appoints teaching assistants. Ordinarily you are not considered for such positions until you have been admitted to the graduate school.

Research Assistantships

Research assistantships usually require the student to assist in the research activities of the faculty. Appointments are ordinarily made for ten or twelve months. They are rarely offered to first-year students. You should contact individual faculty members directly to determine whether you are eligible. As is the case with teaching assistantships, research assistantships provide excellent academic training as well as practical experience and financial support.

Administrative Assistantships

This type of position usually requires 10 to 20 hours of work each week in an administrative office of the university. For example, those seeking a graduate degree in education may work in the admissions, financial aid, student affairs, or placement office of the school they are attending. Some administrative assistantships provide a tuition waiver, others a salary. Details concerning these positions can usually be found in the school catalog or obtained from the academic department.

College Work-Study Program

This federally funded program provides eligible students with employment opportunities in public and private nonprofit organizations. The government pays up to 80 percent of the wages, with the remainder paid by the employing agency. Work-study is available to both graduate and undergraduate students who can demonstrate financial need. Not all schools have work-study funds, and some limit funding to undergraduates. In order to qualify for work-study, you must be a U.S. citizen, U.S.

national, or permanent resident; be enrolled at least half-time (schools are allowed to use up to 10 percent of their work-study funds for students attending less than half-time, but most do not); and be making satisfactory academic progress, as determined by the graduate school.

Each school sets its own application deadline and work-study earnings ceilings. The dollar value of a work-study award depends upon financial need, the amount of money the school has to offer, and the aid received from other sources. Wages vary and are related to the type of work done. Occasionally schools use work-study funds to pay teaching and research assistants. Work-study students generally work up to 20 hours per week during the academic year and up to 40 hours per week in the summer.

In addition to the types of positions described above, many schools provide on-campus employment that does not require demonstration of financial need. The student employment office on most campuses assists students in securing jobs both on and off campus.

LOANS

Loans, an important source of support for graduate students, should be approached carefully. As a rule, you should wait to hear about possible grant, fellowship, and employment offers before resorting to borrowing. Loan programs available nationwide are described below.

Guaranteed Student Loans

The Guaranteed Student Loan Program (GSL) is open to graduate and professional students who are citizens, nationals, or permanent residents of the United States and who are enrolled on at least a half-time basis in an eligible postsecondary institution. Those who qualify may borrow up to \$5000 per year, up to a total of \$25,000 for undergraduate and graduate or professional education. Interest payments are subsidized by the federal government, and you are not required to repay the loan until after you leave school.

If your total annual family income, defined according to federal standards, is \$30,000 or less, you are automatically eligible for a GSL, with interest paid by the federal government while you are in school. Within the borrowing limit of \$25,000, a student in this income category may borrow up to the cost of attendance at the school in which he or she is enrolled, less the estimated total of other financial assistance from federal, state, or private sources, as determined by the school's financial aid officer.

If your total annual family income, defined according to federal standards, is more than \$30,000, you may also be eligible for a GSL, with interest paid by the federal government while you are in school. However, you must be able to demonstrate financial need for the loan, which is determined by the school's financial aid officer using a system of need analysis that is approved by the federal government (GAPSFAS and CSS have systems that are approved for this purpose). Again, the maximum that may be borrowed may not exceed the cost of attendance at the school, less family contribution and other estimated financial assistance from federal, state, or private sources.

Guaranteed Student Loans are available through participating banks, savings and loan associations, credit unions, pension funds, insurance companies, and in some cases directly through school or state guarantee agencies. At the time a GSL is taken out, you are required to pay a loan origination fee that is equal to 5 percent of the loan proceeds. For example, if you borrow \$5000, a \$250 loan origination fee is deducted from the loan. This fee, required by law, is used to offset a portion of the federal interest subsidy. In addition, you might be charged an insurance fee by the guarantee agency of up to 1 percent per year of the unpaid principal balance of the loan.

Loan repayment is deferred while you are in school and for a grace period of up to six months after you finish your studies. Loan repayments may be deferred under certain circumstances, such as periods of required residence or service in the U.S. armed forces. When repayment begins, borrowers are charged interest at a simple annual interest rate of 8 percent on the unpaid principal and interest. The maximum repayment period is usually ten years, with payments made in equal monthly installments. If you borrow a small amount, a shorter repayment period and minimum monthly installments of \$50 may be required.

Under certain circumstances, it may be possible for you to extend repayment over fifteen to twenty years, and you may also opt for a graduated repayment plan. Such a plan involves monthly payments that are relatively low in the early years of the repayment period and rise gradually toward the end.

PLUS Loans

Graduate and professional students may also be eligible for PLUS loans. Like Guaranteed Student Loans, PLUS loans are guaranteed by the federal and state governments. But the federal government does not subsidize interest payments on PLUS loans as it does with GSLs. Moreover, PLUS loan repayment may be required while you are in school, and the interest rate is somewhat higher—currently 12 percent.

Citizens, nationals, and permanent residents of the United States who are enrolled in eligible schools on at least a half-time basis may qualify for PLUS loans. Graduate and professional students may borrow up to \$3000 per academic year, to a maximum of \$15,000, in addition to amounts borrowed under the GSL and other programs.

Students are eligible to borrow through the PLUS program regardless of their family income or financial need. However, most lenders check applicants' creditworthiness (credit ratings, ability to repay the loan) before making PLUS loans.

Each year you may, within the loan's limitations, borrow up to the cost of attendance at the school in which you are enrolled or will attend, less estimated financial assistance from other federal, state, and private sources. Because neither your nor your family's resources are counted as financial assistance when a school determines your eligibility for a PLUS loan, you may use PLUS loan proceeds in place of some or all of the amount of family contribution expected according to need analysis formulas.

There is no origination fee for PLUS loans, but because they are insured by the federal and state governments, you might be charged an insurance fee by the guarantee agency. This fee may be as much as 1 percent per year of the unpaid principal balance of the loan.

The simple annual interest rate for PLUS loans is 12 percent of the unpaid principal balance of the loan. The repayment period begins within sixty days of the time the PLUS loan is made by the lender, with certain possible exceptions. PLUS lenders have, for example, the option of permitting graduate and professional students to (1) defer principal payments and pay only interest while in school or (2) defer both principal and interest payments while in school (with this option, interest accrues during the in-school period and is added to the principal, with payments beginning after you leave school). You may find either of these options preferable to making principal and interest payments on PLUS loans while you are in school.

Lenders may require a \$600 minimum annual repayment, not counting periods when principal or interest and principal payments are deferred. Repayments are made in monthly installments. In general, lenders allow borrowers between five and ten years to repay PLUS loans.

PLUS loans are not as widely available as GSLs but can be obtained through participating banks, savings and loan associations, credit unions, pension funds, and insurance companies. In some cases, PLUS loans are available directly through state guarantee agencies.

Although PLUS loans may not be as desirable as GSLs from the consumer's perspective, they can provide a useful source of support for those who may not qualify for GSLs or who need additional financial assistance.

If you are interested in applying for a PLUS loan, ask banks in your community if they offer these loans. If you can't find a PLUS lender, you may wish to ask your state guarantee agency for the names of some.

A Word of Advice About GSLs and PLUS Loans. In its pamphlet called *Borrowing for Education: A Guide for Graduate and Professional Students*, Educational Testing Service (ETS) makes a number of important points about GSL and PLUS loans in giving advice to prospective borrowers. It urges students to wait until they have heard from the financial aid officer of the school they wish to attend before applying for either a GSL or a PLUS loan, for the school may offer a financial aid package that makes such a loan unnecessary. Even if this does not happen, a student is better able to borrow only what he or she needs once the school has made its offer.

ETS also points out that you should submit your application several months before you need the loan. It could take from eight

to twelve weeks for your application to be processed. If you have already received a GSL or PLUS loan from one lender, you may not be able to borrow from another. Certain states do not allow borrowing from more than one lender. All lenders do not offer both PLUS and GSL loans, however, so you may have to apply to one lender for a PLUS loan and to another for a GSL. If one lender tells you that you are ineligible for the loans according to federally established criteria, it is not a good idea to try another. All lenders must comply with the same guidelines governing family income and financial need.

Finally, the regulations of these loan programs are not the same in all states. Therefore, you should contact your financial aid officer, the lender, or the loan guarantee agency that serves your state if you have questions.

National Direct Student Loans

The National Direct Student Loan Program (NDSL) is a long-term-loan program with very low interest—5 percent—that is available for both graduate and undergraduate students who demonstrate financial need. It is administered directly by the school, with 90 percent of the money coming from the federal government and 10 percent from the school. However, not all institutions have NDSL funds, and some choose to award NDSLs to undergraduates only.

Depending on your need, the availability of NDSL funds at your school, and the amount of other aid you are receiving, you may borrow up to \$12,000 as a graduate student. This includes any amount you borrowed under NDSL as an undergraduate or for another graduate program. In order to be awarded an NDSL, you must be a U.S. citizen, U.S. national, or permanent resident; be enrolled at least half-time; and be making satisfactory academic progress as determined by the graduate school. Each school sets its own application deadline. You should consult the school catalog and apply as early as possible. The school will notify you of your eligibility and arrange to have the loan credited to your account, usually in two installments.

Repayment begins six months after you graduate, leave school, or drop below half-time status. Repayment can be arranged over a ten-year period, depending upon the size of your debt, but usually you must pay at least \$30 per month. In special cases—for example, if you are unemployed or ill for a period of time—you may make arrangements to pay less than \$30 per month or may extend your repayment period.

You may defer payment while you are attending an approved institution at least half-time. A three-year deferment is available for members of the U.S. armed forces or the Commission Corps of the U.S. Public Health Service, Peace Corps volunteers, and participants in ACTION programs such as VISTA or in programs the U.S. Department of Education has determined to be comparable to those of the Peace Corps or ACTION.

Part of your NDSL can be cancelled for each year you teach handicapped children, teach in a designated elementary or secondary school that serves low-income students, or work in specified Head Start programs. If you serve as an enlisted person in certain special areas of the U.S. Army, the Department of Defense will repay a portion of your NDSL.

For further details on the NDSL program, you should contact the financial aid office of the school you attend.

Health Education Assistance Loans

The Health Education Assistance Loan Program (HEAL) provides large insured loans to medical and other health-professions students. The loans are made by participating banks. Application forms are available from your school's financial aid office, which will refer you to a participating lender.

Medical, dental, osteopathic, veterinary medicine, optometry, and podiatry students may borrow up to \$20,000 per academic year up to a total of \$80,000 for all years. All other eligible students may obtain loans of \$12,500 per year to an aggregate of \$50,000. A previous HEAL borrower is permitted to continue borrowing under HEAL (within the aggregate limitation) during internship and residency in order to pay interest on the loans. An insurance premium of 1 percent per year is charged in advance to cover the period from disbursement.

Interest is based on that for the ninety-one-day U.S. Treasury bills for the previous quarter and is determined on a quarterly basis. At this writing, HEAL interest is 12 percent.

Interest accrues and may be compounded semiannually during the period before repayment begins. The lender must permit you to defer all payments toward interest and principal until you enter the repayment period. Instead of allowing the

interest to capitalize, you can choose to pay the interest on an ongoing basis, which markedly decreases the overall cost of the loan.

Repayment begins nine to twelve months after completion of training or withdrawal from school. You have ten years to repay, excluding deferment periods. At the lender's option, repayment may be extended to twenty-five years. Repayment of principal may be deferred for up to four years for internship or residency training; service in the armed forces, Peace Corps, ACTION, or the National Health Service Corps; or further full-time study at an approved institution of higher education.

Health Professions Student Loans

The Health Professions Student Loan Program (HPSL) is for full-time undergraduate and graduate students enrolled in programs required of those studying to be a physician, dentist, osteopath, optometrist, pharmacist, podiatrist, or veterinarian. It is administered by the school. Not all schools have HPSL, and some limit its use to undergraduates. You must be a U.S. citizen, U.S. national, or permanent resident and demonstrate financial need in order to qualify. You may borrow the cost of tuition plus \$2500 or the amount of your financial need, whichever amount is less. The interest rate is 9 percent. Loans are repayable over a ten-year period beginning one year after you complete or cease to pursue full-time study. Deferments are granted to those on active military duty, Peace Corps volunteers, and those pursuing advanced professional training. Cancellation provisions exist for those who work for two or more years in an area where there is a shortage of health personnel. Further information about HPSL may be obtained from the financial aid office of the institution you attend.

You should explore all sources of financial aid before you take out loans in order to keep borrowing to a minimum. The standard monthly installments for repaying borrowed principal at 5 and 8 percent—the rates for the NDSL and GSL, respectively—are indicated below.

Approximate Monthly Repayments for NDSL and GSL Loans

Principal	At 5%	At 8%
\$ 2,000	30	30*
\$ 4,000	43*	49*
\$ 6,000	64	73
\$ 8,000	85	97
\$10,000	106	121
\$12,000	127	146
\$14,000	149	170
\$16,000	170	194
\$18,000	191	218
\$20,000	212	243

*The minimum payment under GSL is now \$50; under NDSL it is \$30.

AID FOR SPECIAL GROUPS

If you are black, Hispanic, Native American, Asian, or a Pacific Islander, there are many fellowships for which you may be eligible. You should consult such books as *Graduate and Professional School Opportunities for Minority Students* (available from Educational Testing Service, Princeton, New Jersey 08541), which will give you the name and address of an individual to contact on each campus about aid opportunities. The *Directory of Special Programs for Minority Group Members* (Garrett Park Press, Garrett Park, Maryland 20766) describes programs for minorities offered by 750 national and local organizations, 300 federally funded programs, and hundreds sponsored by individual colleges and universities.

If you register with the Minority Graduate Student Locator Service of Educational Testing Service in Princeton, New Jersey, you will be contacted by schools interested in increasing their

enrollments of minority students. Such schools may well have funds designated for minorities.

The Bureau of Indian Affairs (BIA) offers aid to students who can demonstrate financial need and are at least one-fourth American Indian or Alaskan Native of a federally recognized tribe. This scholarship assistance may be used at any accredited postsecondary institution. A BIA publication, *Career Development Opportunities for Native Americans* lists approximately 100 sources of assistance for Native Americans. To obtain this and other information, contact your tribal education officer at a BIA Area Office, or write to the Bureau of Indian Affairs, P.O. Box 1788, Albuquerque, New Mexico 87103.

Title IX of the Higher Education Act provides support for minorities and women through a program known as GPOP, Graduate and Professional Opportunities Program, which this year funds 1,250 recipients nationally. The awards go to institutions and are allocated to individual students by the graduate schools. These grants provide up to \$3900 toward the cost of tuition and a stipend of \$4500 for living expenses. Other Title IX programs include public service fellowships offered on a competitive basis for those studying in fields of public policy and public administration, as well as two programs for professional education in law. The law programs are called Legal Training for the Disadvantaged and Law School Clinical Experience; both operate in conjunction with law schools to provide assistance for low-income students pursuing a legal education.

Financial aid designated for women is available, especially for those interested in fields in which women are underrepresented—such as mathematics and engineering. A *Woman's Guide to Career Preparation: Scholarships, Grants and Loans*, by Ann J. Jawin (Anchor Press/Doubleday, 1979), lists sources of support and identifies foundations and other organizations interested in helping women secure funding for graduate education.

In addition, there are a number of organizations that provide financial aid to disabled students. You should contact the Vocational Rehabilitation Services in your home state for further details on such programs.

INTERNATIONAL EDUCATION AND STUDY ABROAD

There are many different sources of funding for those who want to study abroad, as well as for foreign nationals who want to study in the United States. The Institute of International

Education (IIE), 809 United Nations Plaza, New York, New York 10017, assists students in locating such aid. It acts as a clearinghouse for information and publishes a free pamphlet, *A Guide to Scholarships, Fellowships and Grants, A Selected Bibliography*, which is an excellent reference tool for locating directories that list sources of support for graduate study. Another such agency is the Council on International Educational Exchange, 205 East 42nd Street, New York, New York 10017, which publishes the *Student Travel Catalogue*. This publication lists fellowship sources and contains a detailed explanation of the council's services both for American students traveling abroad and for foreign students interested in coming to the United States.

Under Title VI of the Higher Education Act, the U.S. Department of Education administers programs that support approximately 700 fellowships related to international education and world area studies. Foreign Language and Area Studies Fellowships and Fulbright-Hays Doctoral Dissertation Awards are merit-based programs that, in an effort to promote a wider knowledge and understanding of other countries and cultures, have been established to support graduate students interested in foreign languages and international relations.

You should discuss the possibility of other opportunities for foreign study with the financial aid officer at the school you will attend. Some schools have scholar exchange programs.

A Final Note

Today more than ever the world needs women and men with a graduate education. Lack of financial support need not be the reason promising young scholars are diverted from graduate study. While they vary from field to field as well as from year to year, opportunities for financial assistance do exist. If you are interested in graduate or professional study, be sure to discuss your plans with faculty members and advisers. Explore your options and arrange for personal interviews with the admissions office or department of the schools you are considering. Plan ahead, complete forms on time, and, lastly, do not give up in your search for support for graduate or professional study.

Patricia McWade
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Tests Required of Applicants

Many graduate schools require that applicants submit scores on one or more standardized tests, often the Graduate Record Examinations (GRE) or the Miller Analogies Test (MAT). Professional schools usually require that applicants take a specific admission test, such as the Dental Admission Test (DAT), the Graduate Management Admission Test (GMAT), the Law School Admission Test (LSAT), the Medical College Admission Test (MCAT), the Optometry College Admission Test (OCAT), or the Pharmacy College Admission Test (PCAT). Many graduate schools of education ask applicants to take the NTE Program tests. Virtually all graduate and professional schools ask students whose native language is not English to take the Test of English as a Foreign Language (TOEFL).

Brief descriptions of these tests and the addresses to write to for additional information are given below.

GRADUATE RECORD EXAMINATIONS

The GRE, given each year at many test centers in the United States and abroad, is administered by Educational Testing Service (ETS) of Princeton, New Jersey, under policies determined by the Graduate Record Examinations Board, an independent board affiliated with the Association of Graduate Schools and the Council of Graduate Schools in the United States.

The GRE General Test contains seven 30-minute sections designed to measure verbal, quantitative, and analytical abilities. The General Test is given in the morning on each national administration test date.

The Subject Tests are designed to measure knowledge and understanding of subject matter basic to graduate study in specific fields. Each Subject Test lasts 2 hours and 50 minutes, and only one may be taken on any given test date. Subject Tests are available in seventeen areas: biology, chemistry, computer science, economics, education, engineering, French, geology, history, literature in English, mathematics, music, physics, political science, psychology, sociology, and Spanish.

No Subject Tests are given in June. On all other dates, fifteen of the tests are given in the afternoon of the same date as the General Test. The French Test is given only in October; the Spanish Test is given only in December.

The GRE schedule for 1984-85 is: October 13, December 8, February 2, April 13, and (General Test only) June 8. Students who, for religious reasons, cannot take tests on Saturday may request a Monday administration.

In the United States, U.S. territories, and Puerto Rico, the fee for the General Test is \$29, and the fee for one Subject Test is \$29; in other locations, an additional fee of \$10 is levied for each test date. (The fees are subject to change.)

Additional information about the GRE is available from: Graduate Record Examinations, CN 6000, Princeton, New Jersey 08541-6000. In addition, from 8:30 A.M. to 9:30 P.M., Eastern time, the GRE phone lines in Princeton (609-771-7670) are open for student inquiries, and from 8:30 A.M. to 4:30 P.M., Pacific time, the phone lines at the Berkeley, California, office of ETS (415-849-0950) are open.

MILLER ANALOGIES TEST

The MAT requires the solution of 100 intellectual problems stated in the form of analogies, mostly verbal. The item content is heterogeneous, with broad sampling across a number of subjects. Test takers are allowed 50 minutes to complete the test.

The MAT is given at a number of testing centers in the United States and Canada; there are two testing centers in the Philippines, and an agency in Australia and Great Britain can arrange for examinations in various cities in those countries. Any potential test taker who is more than 100 miles from a testing center can make arrangements for a "special examination" through the Psychological Corporation. The fees for the test are determined and collected locally.

Additional information is available from: The Psychological Corporation, 7500 Old Oak Boulevard, Middleburg Heights, Ohio 44130. Telephone: 216-234-5300.

DENTAL ADMISSION TESTING PROGRAM

The DAT Program is conducted by the Council on Dental Education of the American Dental Association. The testing

program consists of four examinations covering natural sciences (biology, general chemistry, and organic chemistry), reading comprehension, quantitative ability, and perceptual ability. The entire test requires one-half day. In 1985, the DAT will be given April 20 and October 5 at testing centers in each of the fifty states, the District of Columbia, and Puerto Rico. Members of recognized religious groups that observe the Sabbath on Saturday may make special arrangements to take the test on a Sunday or Monday. Special arrangements for the administration of the test in a foreign country must be made at least three months before the test date. In the United States, the fee for the examination is \$35; the fee at foreign test centers is \$40.

Additional information is available from: Division of Educational Measurements, Council on Dental Education, American Dental Association, 211 East Chicago Avenue, Chicago, Illinois 60611. Information about test centers is available by telephone (312-440-2686), as is information about test application procedures (312-440-2687).

GRADUATE MANAGEMENT ADMISSION TEST

The Graduate Management Admission Test is designed to help graduate management schools assess the qualifications of applicants for advanced study in business and management. The current GMAT consists of eight separately timed sections, each containing twenty to thirty-five multiple-choice questions. The total testing time is 4 hours.

The GMAT measures general verbal and mathematical skills that are developed over a long period of time and that are associated with success in the first year of study at graduate schools of management. The quantitative sections of the test measure basic mathematical skills and understanding of elementary concepts and the ability to reason quantitatively, solve quantitative problems, and interpret graphic data. The verbal sections of the test measure the ability to understand and evaluate what is read and to recognize basic conventions of standard written English. These sections include reading comprehension, writing ability, and analysis of situation questions.

The test is given four times a year. The test dates for 1984-85 are October 20, January 26, March 16, and June 15. The fee for students taking the test in the United States is \$30; the fee for students taking the test abroad is \$36.

The test is prepared and administered by Educational Testing Service, for the Graduate Management Admission Council (GMAC). Students who want to familiarize themselves with the contents of the test may obtain a copy of GMAC's *Official Guide to GMAT* from ETS for \$9.95. Additional information and registration materials are available from: Graduate Management Admission Test, CN 6101, Princeton, New Jersey 08541-6101. Telephone: 609-771-3330.

LAW SCHOOL ADMISSION TEST

The LSAT is designed to assist law schools in assessing the academic promise of their applicants and to measure skills and knowledge that develop over a long period of time. In June, 1982, a revised version of the LSAT was administered for the first time. The revised LSAT consists of six 35-minute sections, two of which are pretest sections that do not contribute to the examinee's score. The four scored sections, yielding a score ranging from 10 to 48, include four types of questions: some measuring the ability to read with understanding and insight; some focusing on the ability to understand a structure of relationships and to draw conclusions about that structure; some designed to evaluate both reading and reasoning skills; and some evaluating the aptitude for understanding, analyzing, using, and criticizing a variety of arguments. The test also includes a required 30-minute writing exercise. The writing sample is not scored; instead, a copy of the writing sample is sent to each law school to which an LSAT report is sent for the examinee.

The LSAT is given at test centers in each of the fifty states, the District of Columbia, Puerto Rico, and Canada and many other foreign countries. It is not given at every test center on every test date. The 1984-85 test dates for the LSAT are June 18; September 29; December 1; and March 2. Members of recognized religious groups observing the Sabbath on Saturday may make special arrangements to take the test on the Monday following the Saturday administration.