Master's Education:

A Guide for Faculty and Administrators

A Policy Statement

Council of Graduate Schools

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COUNCIL OF GRADUATE SCHOOLS

MASTER'S EDUCATION:
A GUIDE FOR FACULTY AND ADMINISTRATORS

A Policy Statement

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FOREWORD

Master's degrees in the United States comprise the largest portion of the U.S. graduate education enterprise, accounting for 90% of all graduate degrees awarded in 2003–2004. Each year, thousands of students pursue master's degrees through hundreds of different programs. In fact, master's education has shown the most dramatic growth in graduate education over the last fifteen years. This growth has been fueled by the tremendous workforce demand for employees with skills and experiences that reflect postbaccalaureate training, by mid-career professionals seeking to change fields or upgrade their skills within their fields, and by an influx of new populations of students for whom graduate education would not have been possible several decades ago. Those who were once commonly referred to as "nontraditional" students—part-time, working adults—now comprise a large proportion of master's students, and what might have been perceived as insurmountable distances or demands on student time are now regularly overcome with new technologies for delivering high-quality instruction in innovative master's programs. Master's education has thus led the way in graduate education on many fronts, serving the needs of a rapidly changing economy and diverse student populations.

One of the most exciting recent developments is the creation of professional master's degree programs. These programs combine advanced, discipline-specific course work with activities that develop communication and technical skills. They provide knowledge in specific areas related to entry-level professional employment in industry, government, and nonprofit organizations. In developing such programs, universities interact directly with business, industry, and government to devise programs that respond to employer needs and specific local or regional interests and conditions.

To respond appropriately to this growing demand for master's degrees in all fields, universities need a reliable source of up-to-date information on the nature of master's education, policy guidelines, and commonly accepted standards of good practice. This publication is intended to meet those needs by providing an overview of master's education and examples of good practice in the development and academic review of master's programs.

This revised edition of a 1994 CGS publication explores the significant changes that have occurred in master's education in the past decade, especially the recent introduction of professional master's programs across the

sciences, social sciences, and humanities. We believe this book will be most useful not only to graduate deans but also to faculty members, department chairs, and college deans, as they consider their roles in the development of graduate programs at the master's level, and to anyone who is interested in understanding the nature of master's education in the United States at the beginning of the twenty-first century.

Debra W. Stewart
President
Council of Graduate Schools

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INTRODUCTION

Master's education in the United States today is a substantial, dynamic, and important part of graduate education. Through its responsiveness to societal needs for advanced education, the master's degree plays a continuing and prominent role in the training of the American professional workforce. This document is a policy statement that identifies the principles of good practice for the development and administration of master's degree programs in the U.S.[1]

Master's programs serve many of the educational needs of the student and of society that are not satisfied by baccalaureate degree programs, needs that can be met only by more advanced and specialized study in a particular field. Master's degree students seek these programs in order to prepare for scholarly or professional careers, to develop more advanced discipline-based research skills, or perhaps merely to satisfy a thirst for further knowledge. Our society, in turn, needs scholars, scientists, teachers, and professionals in a multitude of fields as well as well-educated men and women in all walks of life. Graduate education, and master's education in particular, produces a good portion of our teachers, social workers, librarians, scientists, business leaders, and scholars. Master's degree graduates hold positions of importance and contribute to the nation's economic, political, educational, and social well-being, thus making use of the leadership, management, clinical, and applied research skills gained from their graduate programs.

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[1] It is important to differentiate master's education from education for the first-professional degree. As defined by the U.S. Department of Education's National Center for Education Statistics (NCES), the first-professional degree signifies both completion of the academic requirements for beginning practice in a given profession and a level of professional skill beyond that normally required for a bachelor's degree. There are ten fields identified by NCES as awarding first-professional degrees: chiropractic (D.C. or D.C.M.), dentistry (D.D.S. or D.M.D.), law (J.D.), medicine (M.D.), optometry (O.D.), osteopathic medicine (D.O.), pharmacy (D.Phar.), podiatry (D.P.M., D.P., or Pod.D.), theology (M.Div., M.H.L., B.D., or Ordination); and veterinary medicine (D.V.M.). The administration of first-professional degrees is generally in a school or college for that profession within the institution, which may or may not fall under the purview of the institutional graduate dean and office. For more information on these professional degrees, contact the appropriate professional accrediting agencies or visit their Web sites.

HISTORY

The history of the master's degree stretches back nearly 700 years. Early in the thirteenth century, the title conveyed the right to teach, and the titles of "master," "doctor," and "professor" were synonymous. In thirteenth century France, for instance, professors were called "masters," while in Bologna they were called "doctors." In time, the titles "master" and "doctor" came to represent degrees that were honorary distinctions conferred for academic scholarship.

Early master's degrees in America were highly respected as a measure of academic achievement. The first master's degrees in this country were awarded by Harvard College in the mid-1600s (Storr, 1973). During the colonial period, the degree was awarded for one to three years' work beyond the baccalaureate. By the end of the eighteenth century, however, it had ceased to be an earned degree and was awarded to anyone who applied and paid for the privilege. The title lost prestige and was no longer a symbol of achievement. In the latter half of the nineteenth century, education reformers laid the groundwork for graduate study as it is known today, and the master's degree was once again recognized as a prestigious academic award, earned upon successful completion of substantial postbaccalaureate study.

By the beginning of the twentieth century, the master's degree was well established as the first postbaccalaureate degree and was offered at many American universities. The majority of degrees awarded were Master of Science (MS) in science and engineering fields or Master of Arts (MA) in humanities and social sciences. These degrees typically required scholarly theses. The latter half of the twentieth century saw a great expansion of master's programs in business (MBA), social work (MSW), public administration (MPA), the arts (MFA), education (MEd, MAT), and other professional fields. Many MS and MA programs dropped the thesis requirement in favor of other capstone or culminating experiences.

Despite the large percentage of master's degrees awarded and the increasing numbers of students pursuing the master's degree, master's education was considered less important than doctoral education among many faculty and administrators. Some university administrators and scholars expressed concern that standards were lacking and that the proliferation of degree titles meant less oversight and more inconsistency. Although the master's degree was considered appropriate preparation for public school and community col-

lege teachers, it was thought by many faculty and administrators to be an insubstantial degree that served as only a stepping-stone for those on the way to the doctorate or a "consolation prize" for students who dropped out of, or were not permitted to continue in, doctoral programs.

Major changes began to occur, particularly after World War II. In writing about master's education, Donald S. Spencer (1986) places these changes directly at the heart of the American tradition of practicality, of attacking "concrete problems with concrete solutions, constantly experimenting and adjusting . . . in almost total disregard for either the imperatives of tradition or the dictates of ideology . . . At no level of American education since World War II," states Spencer, "has that tinkerer's impulse proven more pervasive, or more salutary, than it has in the continuing redefinition of the once scorned and lowly [m]aster's degree. In an almost total absence of centralized planning—in the absence, indeed, even of a genuine national debate about the issues involved—the [m]aster's degree has evolved since 1945 into a major source of innovation in higher education, resembling only in its most mechanical aspects the dominant degree structure which had existed before." The factors traditionally cited as compromising the credibility of master's programs, such as different degree requirements for different kinds of programs, proliferation of degree titles, and an emphasis on applied research, came to be recognized as those that contribute most to the real value and success of master's education.

The last decade has seen significant efforts in master's education to better prepare graduates for entry-level professional careers in nonacademic employment sectors, to respond more effectively to the needs of employers and regional economies, and to meet growing student demand. Students are seeking postbaccalaureate degrees that require only one or two years of additional work, and they are demanding that these degrees be career oriented, affordable, and accessible. Employer preferences in both the public and private sectors are also contributing to the accelerated growth of the master's degree. Many employers are now choosing to hire graduates of master's programs or to assist current employees in obtaining a master's degree while they are working by providing release time, tuition support, or cooperative in-house degree programs taught by a local university.

Today, over 1,500 of the more than 4,000 colleges and universities in the United States offer master's degree programs. Approximately two thirds of these are "master's focused" institutions, in the sense that at the graduate level the primary institutional and faculty commitment is to master's education (though these institutions may offer some doctoral programs). Among master's-focused institutions, approximately 500 universities offer the master's as the highest degree (NCES, 2002). It is now possible for students to choose from a range of over 1,200 master's programs; this number is up from 800

programs at the time of the last edition of this booklet in 1994. These programs range from the most traditional MA and MS programs, to well-established degrees in business (MBA), social work (MSW), and health sciences to a broad array of titles for the more recently developed professional master's programs, most of which tend to be interdisciplinary, as shown by the examples in Table 2.

NEW APPROACHES TO UNDERSTANDING MASTER'S DEGREE PROGRAMS

Master's degree programs can be categorized in many ways: thesis/nonthesis, professional/traditional, practical/theoretical, terminal/preparatory, etc., as described in Judith S. Glazer's comprehensive study of the master's degree (1986)[2].

In 1993, Clifton F. Conrad, Jennifer Grant Haworth, and Susan Bolyard Millar published *A Silent Success: Master's Education in the United States*, based on a national study conducted under the auspices of the Council of Graduate Schools. The study involved interviews with 781 stakeholders of master's education, including faculty, students, administrators, alumni, and employers, from forty-seven master's degree programs at a variety of institutions. The interviews and case studies led the authors to identify four distinct types of master's programs that occurred across the range of programs studied and were independent of discipline or type of institution: *community-centered programs* (collaborative programs to prepare graduates for community needs), *apprenticeship programs* (that prepare graduates for a regulated profession or guild), *career advancement programs* (primarily for nontraditional, working adults), and *ancillary programs* (master's programs awarded en route to or in lieu of the primary Ph.D. degree offered by the department).

Conrad et al. also identified four attributes of master's programs that stakeholders indicated as contributing to a high-quality experience. These attributes are:

- a supportive program culture
- informed faculty who can provide a first-hand perspective on the field and workplace

[2] The Sloan Foundation awarded a grant to Judith Glazer-Raymo to revise and update this important study. It is expected that this revision will be published in 2005.

Table 1. Master's Programs Classification Matrix*

	Single-Discipline Focus	*Interdisciplinary Focus*
Research/ Scholarship Based Preparation for doctorate, community college teaching, or awarded *en route* to PhD	***Classical/Traditional Master's*** Typical Requirements Most course work in one discipline Research/Scholarly project Thesis/nonthesis capstone project Examples MA in History MA in Psychology MS in Mathematics	***Traditional Master's*** Typical Requirements Course work in more than one discipline Research/Scholarly project Thesis or nonthesis capstone project Examples MA in American Studies MA in Women's/Cultural Studies MS in Molecular Biology
Practitioner/ Career Focused Preparation for business, government, nonprofit careers, or for licensure in regulated field	***Applied Master's*** Typical Requirements Most course work in one discipline Field observation of applications Capstone course or project Supervised internship Examples MBA (Business) MFA (Fine Arts) MSW (Social Work) MAT (Education) MPT (Physical Therapy) MA (Clinical Psychology) MS (Applied Math)	***Professional Master's*** Typical Requirement Course work in several disciplines Employment-related courses/ activities External advisory board/ presenters Team work on real-world project Intentional development of high-level communications and professional skills Internship in employment sector Examples MPA (Public Administration) PSM, Professional Science Master's (Financial Math, Bioinformatics) PMA, Professional Master's in Humanities/Social Sciences (Public History, Gerontology)

*Sims and Syverson, 2003

- a variety of planned learning experiences, ranging from traditional and immersion/intensive courses to practice-centered learning, effective mentoring, a culminating experience or tangible product, and skills-building activities

- appropriate and adequate resources, which may include facilities and financial support, stakeholder commitment, career/placement assistance, and faculty credit for program participation (in promotion, tenure, and workloads)

In a Ford Foundation–sponsored Web survey of 333 social science and humanities master's programs, Sims and Syverson (2003) identified a spectrum of master's program types, ranging from *traditional* (research-based preparation for doctoral study, e.g., MA in History) and *applied* (discipline-based, practice-focused, e.g., MA in Aging Studies in Sociology) to *professional* (generally interdisciplinary, designed to prepare students for nonacademic, professional work). The various classifications of master's programs can be represented by the matrix in Table 1.

Traditional master's programs focused in a discipline or an interdisciplinary area are designed to prepare students for scholarship or research that leads to new knowledge. Students typically pursue degrees in these programs to satisfy a requirement for entry into a doctoral program, to prepare for community college teaching, or for personal enrichment. Once dominant, these programs now constitute less than 15% of master's degrees.[3]

Applied master's programs are practice-focused and designed to prepare students primarily to apply newly-developing or existing knowledge of a discipline to specific social or public/private needs.

Professional master's programs are designed to prepare graduates for entry-level professional employment in business, government, and nonprofit sectors, which often require new employees to exhibit advanced disciplinary background, high-level skills, and knowledge in specific legal, regulatory, policy, and management areas. A sample of Professional Master's Programs is listed in Table 2.

Applied and professional master's programs have assumed an increasingly prominent role in preparing students to be capable in the workplace and to secure professional positions that offer career potential. In professional areas such as business, health, and education, the master's degree is now a required entry-level credential for administrators, managers, and most practitioners.

Although structure, curriculum, requirements, and expectations differ substantially among the different categories of master's programs, the next section outlines general standards and practices that are common to most master's programs.

[3] Personal correspondence with Judith Glazer-Raymo [LS].

Table 2. Titles of Professional Master's Programs*

Applied Behavioral Analysis
Applied Biosciences
Applied Biotechnology
Applied Financial Math
Applied Genomics
Applied Gerontology
Applied Industrial Physics
Applied Philosophy
Applied Physics
Applied Physics-Modeling/Simulation
Applied Physics-Nanotechnology
Applied Space Physics
Applied Statistics
Applied Systematics-Botany
Archival Studies
Arts & Cultural Management
Bioanalytical Chemistry
Bioinformatics
Biology for Entrepreneurs
Biomedical Informatics
Biomedical Laboratory Operations & Food Safety
Biosciences Management
Biostatistics
Biotechnology
Biotechnology-Agricultural
Biotechnology Management
Chemistry for Entrepreneurs
Community Health Promotion
Computational Chemistry
Computational Linguistics
Computational Mathematics
Computational Molecular Biotechnology/Bioinformatics
Computational Science
Computational Technology & Informatics
Computer Information Systems
Criminal Justice
Cryptology
Economic Forecasting
Environment Geosciences
Environmental Analysis & Decision Making
Environmental GIS
Environmental Monitoring
Environmental Science
Environmental Science & Assessment
Environmental Science Management
Financial Mathematics
Forensic Chemistry
Forensic Science
Genetic Counseling
Genetics and Public Health Advocacy
Genetics and Research Ethics
Geographical Information Science
Geographic Information Systems (GIS)
Graduate Professional Development
Health & Biopharmaceutical Economics
Health Physics
Human-Computer Interaction
Human Language Technology
Industrial Mathematics
Industrial Microbiology
Integrated Pest Management
International Relations
Laboratory Informatics
Materials & Chemical Synthesis
Mathematics for Entrepreneurs
Microbial Biotechnology
Microbial Systems Analysis
Modeling for Corporate Applications
Molecular Biotechnology
Molecular Chemical Biology
Museum Studies
Nonprofit Administration
Nursing Informatics
Physics for Business Applications
Physics for Entrepreneurs
Professional & Technical Writing
Professional Sociology
Prosthetics & Orthotics
Public History
Quantitative Computational Finance
Quantitative Financial Mathematics
Radiation Health and Environmental Safety
Science Entrepreneurship
Science Instrumentation
Social Documentation
Statistics for Entrepreneurs
Subsurface Geoscience
Women & Gender Studies
Zoo & Aquarium Sciences Management

*Programs funded by the Sloan Foundation or by CGS through grants from the Sloan and Ford Foundations

THE MASTER'S DEGREE: COMMON STANDARDS AND PRACTICES

The master's degree is awarded to students who demonstrate a level of academic accomplishment and subject mastery substantially beyond that required for the baccalaureate degree. Graduates from master's degree programs should have developed the ability to think logically and consistently; integrate and synthesize knowledge; access up-to-date knowledge and information within the discipline; communicate in a clear, consistent, and logical manner, both orally and in writing; understand the interrelationships between their discipline and others; be aware of and prepared to deal with ethical dilemmas within their profession; apply their knowledge of the discipline to real-life situations; and, increasingly, adapt to the dynamic and changing requirements of their profession and their workplace.

Master's graduates are expected to have gained knowledge and skills not only from course work, research, and practicums but also from varied experiences and perspectives brought to the program and shared among students, faculty, and practitioners. The specific requirements for individual students, even those working in the same field, may vary to a certain extent, depending not only on their pre-master's preparation and experience but also on the research projects or new applications of knowledge for which the program is preparing them.

Master's programs usually require a capstone or culminating experience that indicates the ability to synthesize material from course work and to apply information and knowledge to a specific issue or problem, although some programs may require only completion of course work. The capstone requirement may be a thesis (once nearly universal), an equally rigorous creative project, a demanding comprehensive examination, or, increasingly, some alternative requirement, such as a documented contribution to a group project or outcome (increasingly common in professionally focused programs) or reports of internship or fieldwork experiences. Since the ability to communicate in one's field is essential, master's programs typically include an opportunity for the student to learn to present scholarly information in written and oral form to a variety of audiences.

THE INSTITUTIONAL ENVIRONMENT

When institutions place a strong emphasis upon the baccalaureate or the doctoral degree, master's education is sometimes shortchanged in decisions about allocating institutional resources and faculty time, attention, and effort. The growing national focus on workforce and economic development has elevated these issues among the university's missions and has therefore somewhat bolstered the standing of the master's degree. Within the institutional environment, however, master's programs should be regarded as important and significant programs in their own right and should be given careful consideration in the mix of degrees developed and supported in the context of the institutional role and mission.

The ability of colleges and universities to develop both specialized and broad-based degree programs in response to student interests and public needs has been an important factor in the evolution of master's education. The creation of innovative master's programs has been a primary strategy by which colleges and universities have responded to the needs of the communities and the region. Businesses and industry, as well as government and other public agencies, benefit from graduates who are prepared to work effectively in emerging areas of interest, often within a global context. New and changing technologies, disciplines, and societal concerns mean that even well-trained and experienced workers are returning to school. Relatively new master's programs in fields such as forensic science, cryptology, bioethics, bioinformatics, gerontology, human/computer interaction, archival studies, and nonprofit management illustrate the responsiveness of colleges and universities to student interests as well as social and workforce needs.

By offering master's degrees that respond to demonstrated needs, institutions form strong links with agencies and organizations that work for the social good and provide opportunities for students and faculty to become directly involved in shaping practice in the disciplines and professions. For undergraduates seeking entry into productive and satisfying careers in nearly any sector other than higher education, master's degrees offer an important and vital link between education and the professional world. With requirements of one to two years of full-time enrollment, high job-placement rates,

and favorable compensation upon graduation,[4] master's programs have proven attractive in terms of commitment, resources, and outcomes.

Rapidly changing social and economic conditions have led universities to develop a wide range of new master's degrees. Within such an environment, each institution is urged to adopt guidelines for developing new master's degree programs that ensure standards of quality and consistency in the curriculum and content, as well as in degree titles and designations. For instance, a Master of Science (MS) degree in computer science might require a thesis, whereas a Master of Computer Science (MCS) degree may require an applied research project report and additional course credits or other requirements such as an internship in lieu of a thesis. Although there have been many attempts to regulate master's degree titles and designations, there is little obvious pattern among the over 1,200 existing degrees. Some institutions adhere to an earlier CGS recommendation to retain the Master of Science (MS) and Master of Arts (MA) titles for degrees that require a thesis based upon research or scholarship and to indicate disciplinary or interdisciplinary major on transcripts, while adopting the common practice of using titles and more specific designations for applied and career-focused master's programs.[5] This practice preserves the historical reputation of the MS and MA degrees and reflects, with proper transcript notation, the nature of contemporary master's programs and the work that students in those programs accomplish.

[4] Data from the U.S. Census Bureau from 1991 to 2003 show that master's graduates earned, on average, 22% more (approximately $950) per month than bachelor' s graduates and over twice as much (approximately $2,900 more) per month as high school graduates.

[5] Examples of specific designations include business (MBA), public administration (MPA), and fine arts (MFA). More recent degree titles include Master of Accountancy (MAcc), Master of Computer and Information Science (MCIS), the Professional Science Master's (PSM, with major transcripted), and the parallel Professional Master's (PMA) with majors in disciplinary or interdisciplinary areas of the humanities and social sciences.

MASTER'S STUDENTS

Master's students, like master's programs in the U.S., are diverse. They differ in terms of sex, age, ethnicity, financial support, previous experience or education, reasons for attending graduate school, and goals. What unites them is that they have earned a bachelor's degree, they can see the value of further education, and they are willing to spend the time, money, and energy to further their education.

Many students work for a time to support their family and to accumulate funds before deciding that they can afford the time and expense of further education, and others decide to get a master's degree to support career advancement or a career change. Many attend graduate school on a part-time basis, taking one or two courses per term. Attending part-time provides students with an opportunity to relearn study skills and develop ways to manage the personal and professional demands on their time before deciding to attend full-time. A typical profile of a current master's student would be the following: a woman who attends school part-time, has probably worked after obtaining her bachelor's degree, is thus probably older than previous generations of master's students, and is likely to be married or partnered, with one or more children or dependents (Syverson, 2004). Specifics about master's students will emerge from consideration of enrollments and degrees.

ENROLLMENT

National enrollment figures for graduate programs are not reported separately for master's and doctoral students for several reasons: many programs count all new graduate students as master's students; students who want only a master's degree may list their goal as a doctoral degree to enhance chances of receiving financial aid; and some entering doctoral students may terminate their graduate study with a master's degree. In addition, students admitted (and counted) as master's students may later be allowed to change their status to doctoral candidate, often receiving a master's degree *en route* to the doctorate. Those who do not continue for the doctorate may receive a terminal master's degree.

Table 3. Graduate Enrollment, Fall 2001*

	Total		*Men*		*Women*	
Graduate Enrollment	1,903,730	100.0%	795,718	41.8%	1,108,012	58.2%
Full-time	843,070	44.3%	387,724	46.0%	455,346	54.0%
Part-time	1,060,660	55.7%	407,994	38.5%	652,666	61.5%
Public	1,119,479	58.8%	460,031	41.1%	659,448	58.9%
Private	784,251	41.2%	335,687	42.8%	448,564	57.2%
White - U.S./Perm Res	1,275,079	67.0%	503,397	39.5%	771,682	60.5%
Minority - U.S./Perm Res	378,517	19.9%	138,876	36.7%	239,641	63.3%
Black	169,355	8.9%	51,456	30.4%	117,899	69.6%
Hispanic	100,532	5.3%	37,759	37.6%	62,773	62.4%
Asian-American	97,397	5.1%	45,566	46.8%	51,831	53.2%
Native-Amer/Alaska	11,233	0.6%	4,095	36.5%	7,138	63.5%
U.S. Citizen/ Permanent Resident	1,653,596	86.9%	642,273	38.8%	1,011,323	61.2%
International	250,134	13.1%	153,445	61.3%	96,689	38.7%

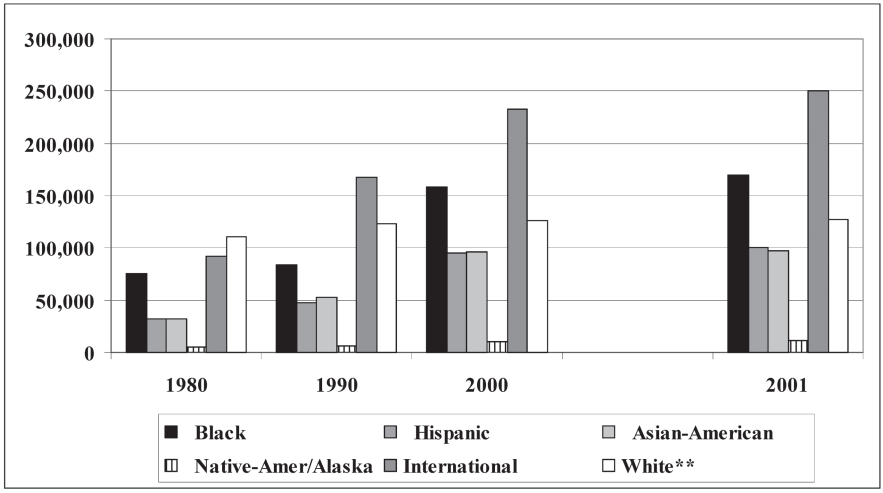
* U.S. Department of Education, National Center for Education Statistics (NCES), 2002; Integrated Postsecondary Education Data System (IPEDS).

The latest enrollment figures that allow comparison by sex, enrollment status, citizenship, and control of institution are shown in Table 3.

Among current graduate students, nearly 60% are women—a percentage that holds for nearly every category except for black graduate students, where 70% are women, and for international students, only 39% of whom are women. Over 50% of graduate students attend part-time (60% of women, 40% of men). Public institutions enroll nearly 60% of graduate students. Two thirds of graduate students are white citizens, and 20% are from U.S. minority populations. U.S. citizens and permanent residents account for 87% and international students for 13% of the total enrollment in U.S. graduate programs.

Graduate enrollment has changed markedly since 1980, as Figure 1 illustrates. Note that in order to find the totals for U.S. white graduate enrollment, you need to multiply the number shown by the white bar by 10. Native American totals are barely visible along the horizontal axis, reflecting an extremely small participation that has not changed significantly with time.

Figure 1. Graduate Enrollment by Race/Ethnicity and Citizenship, 1980-2001*



*SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), 2002; Integrated Postsecondary Education Data System (IPEDS).

**White: For totals, multiply enrollment numbers pictured by 10.

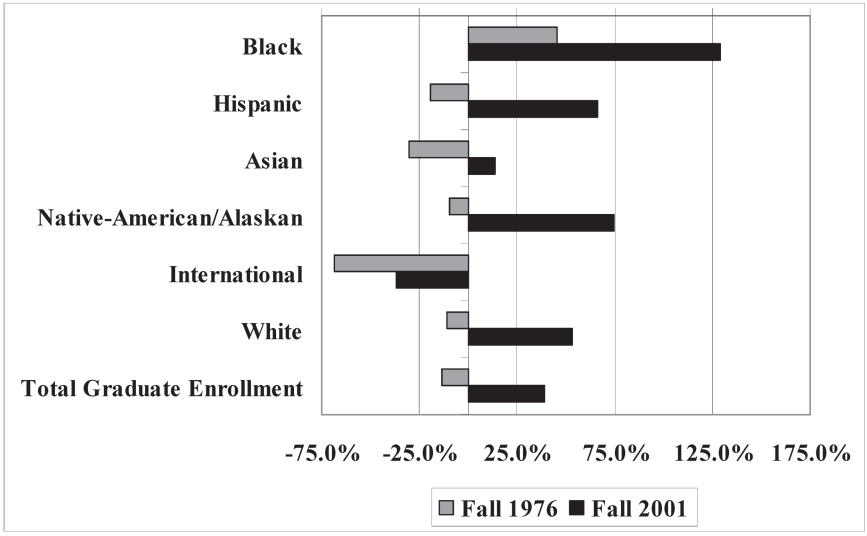
Graduate enrollment of all other minority groups, however, has grown significantly while enrollment of white U.S. citizens and permanent residents and international students has grown much more slowly.

As shown in Figure 2, in 1976 men enrolled in graduate programs in greater numbers than women for all groups except African-Americans. From 1976 to 2001, the percentage of women enrolled in graduate programs increased for all groups of students. Thus, in 1976, nearly 20% fewer Hispanic women were enrolled in U.S. graduate programs than Hispanic men; by 2001, there were about 70% more Hispanic women than men enrolled. The only group for which men graduate students continue to exceed women is international students, but even for that group, women have steadily increased relative to men.

For nearly 20 years, approximately two thirds of graduate students enrolled part-time rather than full-time. This has recently fallen, reaching 56% by 2001; similar decreases occurred for both men and women.

Private institutions' share of total graduate enrollment increased from 36% to 41% from 1991 to 2001, with similar increases occurring for both men and women.

Figure 2. Female Relative to Male Graduate Enrollment, Fall 1976 and Fall 2001*



*SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), 2002; Integrated Postsecondary Education Data System (IPEDS).

DEGREES AWARDED

Totals and Overview

Table 4 provides the numbers of academic degrees awarded at all levels, from high school through the first professional, since 1961. Although there have been increases in all degrees, master's degrees have increased at a higher rate, nearly five-fold, than any other degree. Recent U.S. Census data show that over 6% of the adult U.S. population has earned a master's degree (*Digest of Education Statistics,* 2003). The NCES (2002) projects that master's degrees will continue to be the fastest growing degree through at least 2013.[6]

At the beginning of the twentieth century, approximately 1,500 master's degrees were awarded annually in the United States. By 1940, the number was 27,000, and in 1960 the number had risen to 75,000. Since 1960, the number of master's degrees awarded has continued to increase, reaching 482,000 by 2001–02.

[6] NCES projects that the nearly five-fold increase in master's degrees from 1960 to 2002 will be sustained through at least 2013, whereas doctoral degree production will be static and the growth of bachelor's degrees will slow because of demographic factors (NCES, 2002).

Table 4. Degrees Awarded by U.S. Institutions, 1960–61 to 2001–02[a]

	1960-61	*1970-71*	*1980-81*	*1990-91*	*2000-01*	*2001-02*	*% change 1961-2002*
First Professional	25,253	37,946	71,956	71,948	79,707	80,698	220%
Doctorate	10,575	32,107	32,958	39,294	44,904	44,160	318%
Master's	84,609	230,509	295,739	337,168	468,476	482,118	470%
Bachelor's	365,164	839,730	935,140	1,094,538	1,244,171	1,291,900	254%
Associate*	111,607	252,311	416,377	481,720	578,865	595,133	136%
High School	1,964,000	2,938,000	3,020,000	2,492,893	2,839,000	2,869,000	46%

*Value for Associate degrees is earliest available, 1965-66; % change is thus for 1966-2002

[a]SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), 2002; Integrated Postsecondary Education Data System (IPEDS).

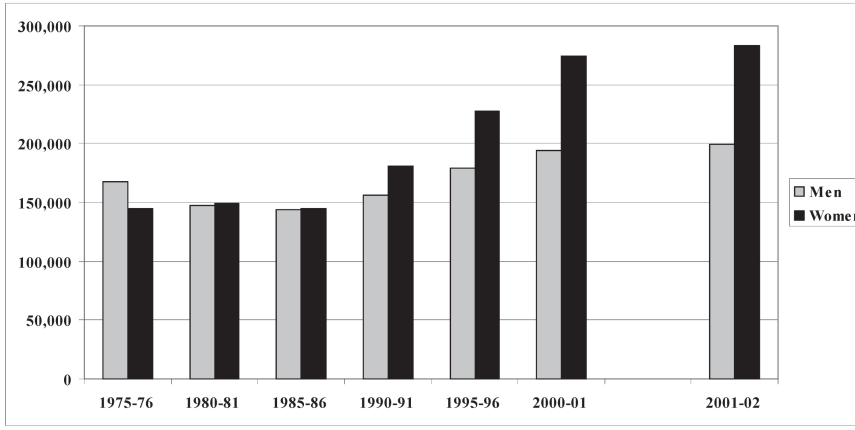
Graduate education, and master's education in particular, is a growing component of U.S. higher education. Enrollment trends are likely to continue, even beyond current NCES projections. Demographics indicate larger high school graduating classes through 2008, with declines and a slower growth of bachelor's degrees after 2008 (NCES, 2002). An annual survey of entering freshmen reveals a substantial and growing fraction, currently 70%, that plans to complete a graduate (primarily master's) degree (Sax, L.J., et al, 2003), although only about 25% currently pursue a graduate degree (NCES, 2000).

Discipline

Table 5 (pp. 18–19) presents master's degrees awarded in specific disciplines for both 1975–76 and 2001–02. In addition, data are provided by sex, race/ethnicity, and citizenship for each discipline in 2001–02.

Taken together, more than half of all master's degrees are earned in Education (28.3%) and Business (25.6%). Nearly 60% are earned by women. U.S. citizens and permanent residents earn nearly 87% of all master's degrees; just over 13% are earned by foreign students (international and non-permanent residents). Among U.S. citizens and permanent residents, whites earn two thirds (68%) of all master's degrees and minorities earn a combined 18.8%—nearly half of these by blacks and a quarter each by Hispanic and Asians; Native Americans/Alaska Natives earn less than 1% of all master's degrees. A more detailed discussion of these data on sex, race, and citizenship will be provided in later sections devoted to these issues.

Figure 3. Master's Degrees Awarded by Year and Sex, 1975-1976 to 2001-2002*



*DATA SOURCES: U.S. Department of Education, National Center for Education Statistics, Earned Degrees Conferred, 1869–70 through 1964–65; Projections of Education Statistics to 2013; Higher Education General Information Survey (HEGIS), "Degrees and Other Formal Awards Conferred" surveys, 1965–66 through 1985–86; and Integrated Postsecondary Education Data System (IPEDS), "Completions" surveys, 1986–87 through 1998–99, and Fall 2000 through Fall 2002 surveys. (This table was prepared in August 2003.)

Business ranks first or second in terms of degrees earned among all U.S. racial/ethnic groups and international students. Education is the top choice of degree major for U.S. whites, blacks, Hispanics, and Native Americans and is the third choice for Asian-Americans and fifth choice for international students. Health professions and engineering are among the top choices for a majority of racial/ethnic and citizenship groups, and computer/information science is among the top five for both international and Asian-American students.

The fastest growing areas of master's education from 1975 to 2002 were computer and information science, health sciences, business, law, interdisciplinary studies, and protective services (all of which increased by over 100%); communications, public administration, and area/ethnic/cultural studies each increased by over 50%. Conversely, master's degrees declined slightly in the biological, physical, and social sciences, with significant declines in English and mathematics and substantial declines in foreign languages and library science.

The decline in library science may be in part an artifact of the importance of electronic information/media and reflect a shift of persons with interests in the field toward computer and information sciences—the fastest growing field of master's education. A parallel shift toward computer and information sciences may also be a factor in the decline of master's degrees in mathematics. Similarly, the slight decline in biological and life sciences may be partly the result of students opting for more professionally

Table 5. Master's Degrees Awarded by Discipline, 1975–76, and by Sex, Race/Ethnicity, and Citizenship, 2001—02*

Discipline	*1975-76*	*2001-02*	*% Change*	*2001–02 Women*	*2001–02 U.S. Citizens/Permanent Residents White*	*Black*	*Hispanic*	*Asian*	*Native*	*2001–02 International*
Education	126,061	136,579	8.3%	104,407	107,793	13,069	7,751	3,095	955	3,916
Business	42,054	120,785	187.2%	49,628	76,435	10,434	5,024	8,352	510	20,030
Agriculture	3,340	4,519	35.3%	2,174	3,454	122	117	139	27	660
Home Economics	2,179	2,616	20.1%	2,226	1,911	270	130	104	22	179
Biological/life sciences	6,582	6,205	-5.7%	3,589	4,265	303	261	552	35	789
Health professions	12,556	43,644	247.6%	33,847	33,012	3,249	1,740	3,304	227	2,112
Public affairs/admin	15,209	25,448	67.3%	18,943	16,889	4,386	1,743	882	228	1,320
Foreign languages	4,190	2,861	-31.7%	1,980	1,598	55	351	115	7	735
English	8,809	7,268	-17.5%	4,942	5,897	349	243	250	43	486
Communications	2,961	5,510	86.1%	3,604	3,512	532	189	251	19	1,007
Area/ethnic studies	995	1,578	58.6%	968	959	130	125	106	23	235
Architecture	3,215	4,566	42.0%	1,960	2,797	164	220	267	14	1,104
Visual/performing arts	8,817	11,595	31.5%	6,683	7,906	508	437	577	54	2,113
Humanities, liberal A&S	3,989	4,088	2.5%	2,228	3,219	274	155	136	24	280
Social sciences & history	15,953	14,112	-11.5%	7,171	8,660	1,022	670	570	80	3,110
Psychology	10,167	14,888	46.4%	11,371	10,931	1,837	921	592	111	496
Library science	8,037	5,113	-36.4%	4,181	4,280	259	212	152	31	179
Multi/interdisciplinary	1,158	3,211	177.3%	1,974	2,236	250	156	150	24	395
Mathematics	4,315	3,487	-19.2%	1,478	1,727	126	85	239	10	1,300

Computer/info science	2,603	16,113	519.0%	5,360	5,144	745	307	2,264	36	7,617
Physical sciences	5,466	5,034	-7.9%	1,892	3,056	149	148	267	21	1,393
Engineering	16,342	26,911	64.7%	5,752	11,798	869	796	2,414	65	10,969
Law & legal studies	1,442	4,053	181.1%	1,693	1,304	176	167	211	11	2,184
Parks/recreation/fitness	571	2,754	382.3%	1,396	2,231	210	71	56	9	177
Protective services	1,197	2,935	145.2%	1,322	2,119	482	159	59	25	91
Other**	3,563	6,245	75.3%	2,229	4,502	403	209	310	15	806
Total, All fields	311,771	482,118	54.6%	282,998	327,635	40,373	22,387	25,414	2,626	63,683
% of 2001-02 Total	64.7%	100.0%		58.7%	68.0%	8.4%	4.6%	5.3%	0.5%	13.2%

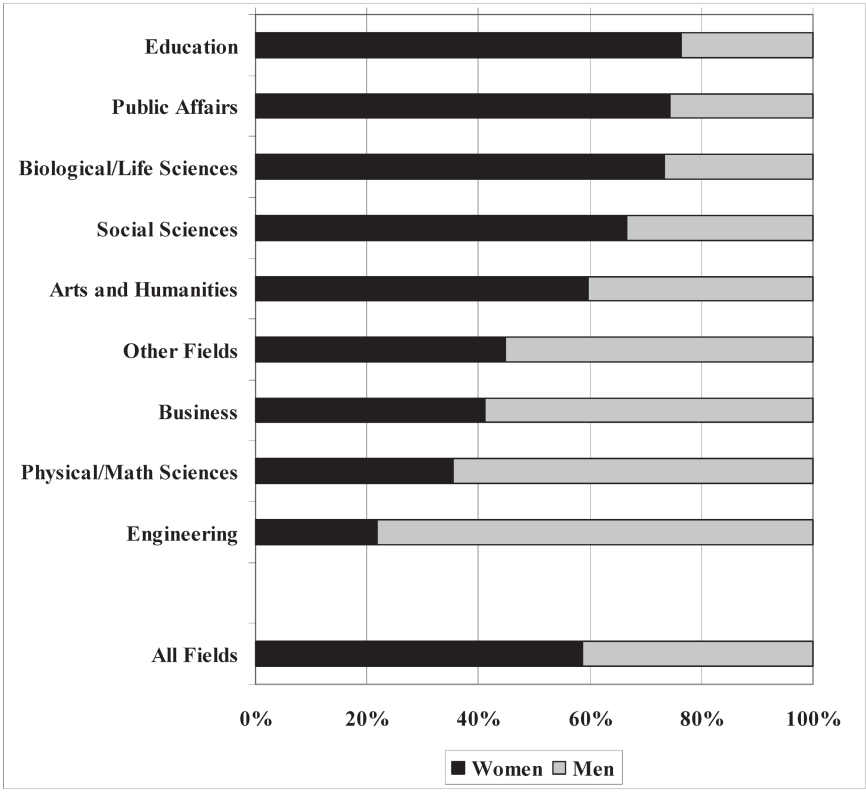
Total U.S. Minority = 90,800

U.S. Minority as % of Total =18.8%

*SOURCE: U.S. Department of Education, National Center for Education Statistics, Higher Education General Information Survey (HEGIS), "Degrees and Other Formal Awards Conferred" surveys, and Integrated Postsecondary Education Data System (IPEDS), "Completions" surveys, 1990–91 through 1998–99, and Fall 2000 through Fall 2002 surveys. (Table 253, Master's degrees conferred by degree-granting institutions, by discipline division: Selected years, 1970–71 to 2001–02, prepared August 2003); IPEDS, Fall 2002 survey. (Table 268, Master's degrees conferred by degree-granting institutions, by sex, racial/ethnic group, and major field of study: 2001–02, prepared August 2003.)

**Communications technologies, construction trades, precision production trades, theology/religious vocations, transportation, ROTC, not classified

Figure 4. Master's Degrees Awarded by Sex and Broad Field of Study, 2001-2002*



* SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2002 survey. (This table was prepared in April 2005.)

oriented programs in information sciences (e.g., genomics or bioinformatics, included among the fastest growing area of computer and information sciences) and health professions (e.g., genetic counseling, gerontology, etc.).

Sex

Since the mid-1980s, women have constituted over half of the students enrolled in graduate programs and over half of the master's degree recipients. Before 1975, men earned greater numbers of master's degrees than women. As shown in Figure 3, men and women earned master's degrees in about equal numbers from 1980–81 through 1985–86. Since 1985–86, women have steadily increased their share of earned master's degrees to over 55%.

Women master's students are more likely than men to be enrolled as part-time students (see Table 3). Fewer women than men receive financial

Table 6. Master's Degrees by Race, Sex, and Nationality, 2001–02*

	Total		*Men*		*Women*	
Master's Degrees	482,118	100.0%	199,120	41.3%	282,998	58.7%
White	327,635	68.0%	128,770	64.7%	198,865	70.3%
Black	40,373	8.4%	11,796	5.9%	28,577	10.1%
Hispanic	22,387	4.6%	8,431	4.2%	13,956	4.9%
Asian-American	25,414	5.3%	11,749	5.9%	13,665	4.8%
Native Am/Alaskan	2,626	0.5%	994	0.5%	1,632	0.6%
Total Minority	90,800	18.8%	32,970	16.6%	57,830	20.4%
U.S. Citizen/ Perm Resident	418,435	86.8%	161,740	81.2%	256,695	90.7%
International (nonresident)	63,683	13.2%	37,380	18.8%	26,303	9.3%

* SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), 2002; Integrated Postsecondary Education Data System (IPEDS).

aid (55% versus 61% in 2001–02— see Table 7), which is most likely due in part to their predominantly part-time status and chosen fields of study.

Figure 4 shows master's degrees awarded in 2001–02 in various broad fields of study, by sex. More women than men earned master's degrees in education, public affairs, and health professions (included among biological/ life sciences), whereas men earned more master's degrees in engineering and physical/math sciences.

Race, Sex, and Nationality

Table 6 provides comparative data on master's degrees by sex across racial/ ethnic and citizenship groups. The results are similar to the related comparison for graduate enrollment (Figure 2), namely: women in general earn more master's degrees than do men, which is also true among U.S. white and minority students (nearly 2:1 among black students). Only among Asian-Americans and international students do men earn more master's degrees than women (2:1 among international students).

As the total number of master's students and the proportion of women in master's programs have increased, the number of minority students has also increased. The growth in graduate enrollment of U.S. minorities during the past decade far exceeded that during the preceding 25 years, whereas graduate enrollment of U.S. white students has slowed dramatically. In par-

Table 7. Financial Aid for Master's Students by Sex and Race/Ethnicity, 2001-02*

	Some Aid	Federal	Inst**	Grants**	Assistantships	Loans**	Employer Aid	Avg, All Aid
All Master's	57.9%	26.4%	22.2%	37.3%	9.3%	27.3%	24.7%	29.3%
Men	61.4%	24.7%	23.9%	41.0%	10.9%	25.8%	29.4%	31.0%
Women	55.5%	27.7%	21.0%	34.8%	8.1%	28.3%	21.5%	28.1%
White	57.7%	15.9%	21.1%	38.3%	8.7%	26.7%	27.2%	27.9%
Black	64.5%	42.2%	18.4%	33.5%	3.7%	42.5%	21.0%	32.3%
Hispanic	61.9%	29.5%	26.4%	29.8%	10.8%	29.8%	22.6%	30.1%
Asian	47.6%	13.5%	29.2%	30.7%	15.6%	14.7%	11.6%	23.3%
Native-Amer/Alaskan	62.2%	45.6%	35.5%	47.8%	9.0%	41.9%		40.3%
Average Minority	59.1%	32.7%	27.4%	35.5%	9.8%	32.2%	18.4%	30.7%

*SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992–93, 1995–96, and 1999–2000 National Postsecondary Student Aid Studies (NPSAS: 93), (NPSAS: 96), and (NPSAS: 2000).

**Inst includes funds from federal research grants; grants include scholarships, fellowships, tuition waivers, and employer aid; loans include Stafford Loans.

ticular, during the past decade, enrollment of minority students (primarily black, Hispanic, and Native American) has approximately doubled, while the enrollment of Asian-American students has slowed significantly from its previous rate from 1976–1990.

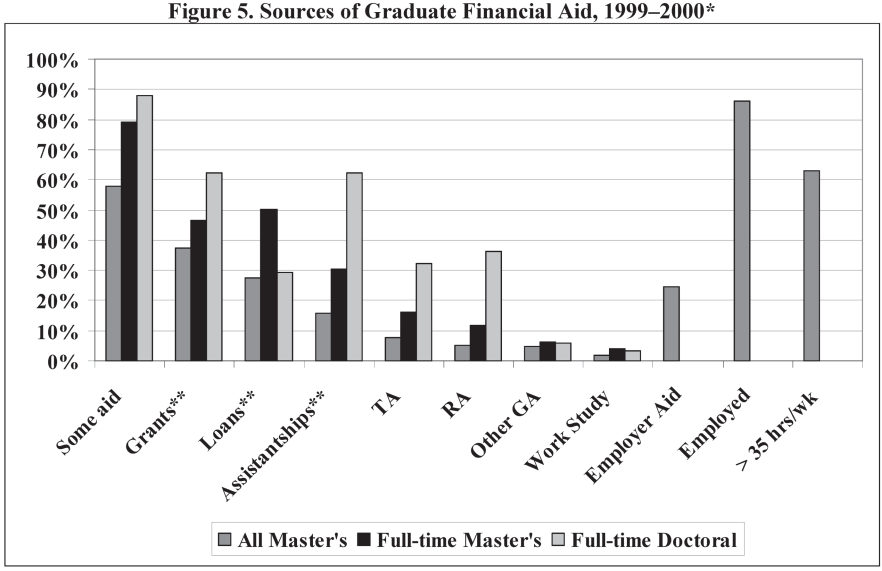
Since 1976, the overall number of international students enrolling in graduate programs in the U.S. has increased at all graduate levels. The number of master's degrees awarded to international students has increased also. In master's programs, international students earn degrees primarily in business, engineering, and computer/information science (see Table 5). In recent years, however, international applications have declined, particularly in business and engineering, suggesting that international participation at the master's level may decrease in the years to come.

FINANCIAL SUPPORT

Students in master's degree programs tend to be self-funded (supported financially by themselves or their families). According to the National Postsecondary Student Aid Study (NPSAS, 1999–2000), 40% of master's students received no financial aid, 15% relied only on loans, and 23% received grants, fellowships, tuition waivers, or employer support. Many students receive more than one type of support. The study also reveals the variety of financial support received by master's students, as depicted in Figure 5.

Approximately 60% of all master's students receive some financial aid. Financial aid awarded by a university or department is generally in the form

Figure 5. Sources of Graduate Financial Aid, 1999–2000*



*SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999–2000 National Postsecondary Student Aid Study (NPSAS: 2000).

**Grants include scholarships, fellowships, and tuition waivers; loans include Stafford Loans; assistantships are student-reported

of either grants (scholarships, fellowships, tuition waivers) or assistantships (teaching assistantship [TA], research assistantship [RA], or other type of graduate assistantship [GA]). In return for an assistantship, students perform supervised teaching or research, often directly related to the work required for their master's degree. Other graduate student financial support is available from federal loan (Stafford) or state loan programs, work-study, and cooperative programs in federal agencies or industry. Over 85% of master's students work at least part-time while enrolled, almost two thirds of them for more than 35 hours per week. About a quarter of employed students receive some financial aid from their employer. Note that full-time master's students (darkest bars) receive significantly greater financial aid compared to part-time students (which includes most employed students).

Master's students at institutions that also award doctoral degrees are more likely to receive aid than students at institutions where the master's is the highest degree. This probably occurs because doctoral institutions tend to be more heavily involved in research and therefore have more funding available for research assistantships at both the master's and doctoral levels and, as mentioned above, because many are presumed to be continuing for the doctorate.

ACADEMIC AND INSTITUTIONAL CONTEXTS OF A MASTER'S PROGRAM

Most master's degree programs are administered within the structure of an academic department, which may offer several independent but usually related master's programs or different types of degrees (e.g., nonthesis as well as thesis) in the same discipline or field. Interdisciplinary or multidisciplinary and the newly-emerging professional master's programs may be offered through a primary "sponsoring" department but have the support and active involvement of faculty in several different departments or degree-granting units within or across disciplines.

Although the responsibility for the organization and administration of master's degree programs is shared between the faculty and the graduate school (or other administrative office), students bear the ultimate responsibility for their success in a graduate degree program. Master's students must be fully responsible for knowing and complying with all of the regulations and requirements for admission to graduate study and for the completion of degree requirements. It is essential that students become familiar with the policies and regulations of the department/program and the institution; this familiarization should occur before or very soon after first enrollment. Students should request information and clarification from faculty, the graduate program coordinator, and/or the graduate school about any issues on which they are not clear. Students contribute significantly to the success of the graduate program by taking an active part in departmental committees, new-student orientation programs, and the graduate council or other graduate student organization. This kind of involvement, over and above just meeting degree requirements, gives graduate students a greater sense of ownership in the program and contributes to their professional development.

While there are different kinds of administrative structures for graduate education, two models predominate, and most others are variations on the two. In the first, the graduate division, school, or college[7] is responsible for all graduate degrees offered by the institution, including master's, doctoral, and, in some cases, professional degrees. In this "centralized" model, the graduate dean has oversight over all graduate committees, graduate students, and graduate programs and makes the final determination that degree requirements have been met. In the second model, the sphere of the graduate dean's authority is typically limited to departments, graduate programs, and degrees in a particular college, generally the College of Arts and Science. In this "collegiate" model, professional schools are responsible for their own graduate programs. (See the CGS publication, *Organization and Administration of Graduate Education*, revised 2004.)

Schools of business or education, as well as other fields outside of arts and sciences, may have a separate administrative structure with their own graduate degree programs, academic policies, and dean or graduate dean. In institutions with such separate collegiate administrative structures, the policies and procedures for graduate education developed by the graduate school may or may not apply to the master's programs in the separate schools or colleges. The basic concepts of good practice in master's education apply, however, and these professional schools are encouraged to adhere to the guidelines for quality graduate education provided in this document.

Regardless of institutional organization, the administration of master's degree programs involves four distinct administrative levels: 1) the program faculty and advisory committee; 2) department chair and/or program coordinator; 3) academic dean at the school or college level; and 4) central administration, including the graduate dean and/or academic vice president. Each of these four levels is discussed below.

Highlighted at the beginning of each section is a list of many of the "elements to consider" within each master's program or institution. These elements may be addressed differently by each institution or program but consideration of the issues surrounding them results in informed faculty and administrative decisions and policy guidelines regarding master's programs.

[7] Throughout this document, the terms "graduate division," "graduate school," and "graduate college" are used interchangeably to refer to the central unit or office responsible for graduate education at an institution. "University" and "institution" are used interchangeably to refer to any institution of higher education, and the title of "graduate dean" refers to the chief academic officer responsible for graduate education at an institution.

FACULTY

Elements to consider: *faculty status (graduate, adjunct, affiliate) and duties (course loads, advising, research supervision/mentoring, recruitment, admissions, student professional development), program structure (curriculum, standards, degree requirements)*

Program faculty have responsibility for the delivery of academic course work and seminars and for the advising and guidance of graduate students through the completion of their master's degree programs. Faculty are also responsible for the coherent and logical development of graduate programs and the standards and policies that govern them. It is the faculty who have the ultimate responsibility for ensuring that appropriate standards for academic performance are required of all who participate in the program. Moreover, they have a responsibility to stimulate the development of creative inquiry, professional integrity, intellectual honesty, and responsible conduct of research. Faculty must meet the qualifications for graduate faculty status established by the institution. These requirements generally include, at a minimum, that the core faculty possess the appropriate terminal degree in the discipline, that they be actively involved in research and scholarly or creative endeavors appropriate to the discipline, and that they offer graduate course work and advise graduate students. Those institutions that do not have a separately designated graduate faculty should develop appropriate requirements for the teaching of graduate courses and advising of graduate students.

While permanent, full-time faculty constitute the essential core of any graduate program, they are often joined by part-time or adjunct faculty members who may also serve on student advisory and thesis committees and offer specialized lectures, seminars, and courses. Professional-degree programs, in particular, can benefit from the participation of practicing professionals with unique experiences who provide enrichment and a real-world perspective to students in the program. Care should be taken, however, to ensure that students and graduate programs have appropriate guidance and leadership from a substantial core of permanent, full-time tenured or tenure-track faculty.

Faculty members hold the key to successful recruitment, admission, and retention of graduate students. Faculty members should be fully informed about the recruitment goals of their master's program and the institution as they develop their admission standards. They are influential in helping prospective students to decide to apply to, and ultimately attend, their graduate program. Personal contact from faculty members, by phone or letter, has been cited as an extremely important factor in a student's decision to attend and is especially important in recruiting students from traditionally underrepresented

groups. Faculty members must understand the full spectrum of what the program can offer a prospective student, and the best match of student and program can be achieved when sufficient information about the student's qualifications and attributes is available. When faculty take the initiative to personally contact prospective students, the likelihood of students choosing to enter that program increases significantly.

Other factors in successful recruitment of students include inviting prospective students to visit campus, hosting of such visits by currently enrolled students, contacting students after an offer of admission has been made to answer any questions or provide any information that may influence their acceptance decision, and maintaining contact between the time the student accepts and arrives on campus. During this time, students may be provided with updates on program activities, advice on relocation and housing options, information on when and where to report for orientation/initial program events, etc.

A faculty advisory committee is generally assigned to work with each new graduate student. The initial interactions between these faculty members and their students are especially close and important. The quality of faculty advising often affects students' career or education choices. Students are more likely to consider academic careers if their experiences within the program and university are positive. Faculty should treat students as professionals and colleagues, and they should provide mentoring and encouragement to students as they progress in the degree program. The attitude of faculty members toward master's students should be that of collaborators, rather than simply of lecturer and provider of knowledge. Faculty members should initiate and support activities that contribute to students' professional development, by including students in their research and teaching, by providing opportunities for them to become collaborators on articles and publications, and by encouraging their attendance and participation in professional meetings and conferences. Faculty members have a responsibility to assist graduates in job searches and placement or admission to a doctoral program.

Faculty members play an important role in the institutional consultative bodies for graduate education beyond the program or departmental level. Institutions that offer several graduate degree programs in different schools, divisions, and departments generally establish an institutional graduate committee or council to provide recommendations regarding institutional policies, curriculum, and planning for graduate education. Although members of the graduate council should represent the broad interests of graduate education as a whole and not act only for their specific programs or departments, faculty in master's degree programs find representation on the graduate council a useful way to educate their peers about the value of master's education and their own master's programs.

GRADUATE ADVISORY COMMITTEE

Elements to consider: *duties, number of faculty on the committee, choosing a committee chair*

Based on general guidelines for the graduate program as developed by the graduate school and the department, the specific academic program for each master's student is generally developed cooperatively between the individual student and his or her faculty adviser or major professor. Often, a committee of two or three faculty members works with the adviser and the master's student in developing a plan of study, including the courses to be taken, other requirements such as seminars or an internship, and the research project, if one is required. This faculty advisory committee and chair are chosen by the department or by the student, depending on the institution, for their special expertise in the areas of the student's research and/or program and career interests. In many institutions, committee members recommended by the department for graduate students must be appointed by the graduate dean. Individuals with special competence who are not members of the university faculty may serve on advisory committees in some institutions, always working with faculty members of the committee. The composition of advisory committees may change as a student's work progresses because of changes in the research project or occasionally because of personal conflicts between the student and a faculty member. Such changes are always regarded as serious, especially if they occur after official approval of the committee, and must be made with due regard for the integrity of both the student's program and the department.

In master's programs where degree requirements consist of a defined series of courses for all students, such as in business, the need for a graduate advisory committee is not as great, and the role of the committee may be filled by the graduate program coordinator for all students in the program. In these programs, as in all cases, the master's student should be carefully advised of the degree requirements, including course work, seminars, and deadlines for paperwork related to plan of study, advancing to candidacy, and graduation.

DEPARTMENT (DEPARTMENT HEAD/ GRADUATE COORDINATOR)

Elements to consider: *student recruitment, admissions, degree requirements procedures, liaison, relationship to other institutional priorities, faculty recruitment*

Program requirements for graduate students are developed and monitored by the department and the graduate division (unlike baccalaureate degree

requirements, which are generally developed by the institution as a whole and monitored by a central administration office such as institutional records). If departments develop explicit guidelines and procedures beyond those required by the graduate division for completion of degree requirements, the guidelines must be set forth clearly so that the students and faculty know and understand their opportunities, duties, and responsibilities. In addition, the program unit should provide information to its students on sources of funding opportunities, both within and outside the university. Guidelines and procedures for students in each master's program should be printed in a departmental master's or graduate program handbook that should include such things as:

- objectives of the graduate program
- course and seminar offerings
- research specialties offered
- departmental requirements beyond those of the graduate division or institution
- how advisory committees are to be selected
- testing dates and program deadlines
- reading lists for comprehensive examinations, if relevant
- guidelines for setting up and reviewing internships, if required

At the department level, an individual, usually the chair or program coordinator or director, is responsible for coordinating graduate program routine operations such as student admissions, advisory committee assignments, advancement to candidacy, research/project approvals, and recommendations for awarding degrees. In cases where the program coordinator is not the department chair, the coordinator should be involved in decisions regarding program resources, facilities and personnel planning, and program development. Coordinators may be responsible for recruitment and outreach activities, general advising, and assignment of student advisory committees and chairs. These individuals may also contribute to coordination of other activities, including academic program or accreditation reviews, colloquia, collaborative efforts with other institutional units, and liaison with other academic areas, the student affairs office, and the graduate school.

A critical element in any master's degree program is the recruitment and retention of a quality faculty that meets departmental requirements for

graduate teaching, advising, and mentoring. To the chair and/or coordinator fall the important tasks of recruiting new faculty members and orienting them to their graduate program assignments. Orientation of new graduate faculty members is of particular importance, especially for those with little or no experience in teaching graduate courses and seminars, serving on graduate student advisory committees, or building their research programs.

COLLEGIATE DEAN

Elements to consider: *funding, other resources, advocacy*

The dean of each academic unit is responsible for the development, operation, and financial management of all programs in the departments within that unit. In many institutions, this may involve undergraduate and professional programs as well as graduate programs, where the responsibility may be shared with the graduate dean. The allocation of funds to support these programs is complicated by the fact that, for the most part, faculty, space, library facilities, and other resources are used jointly by all sectors of the institution. It is essential that school or college deans have a clear picture of the interaction of these programs and their relationship to the mission and goals of the institution. An overall view is particularly important with respect to faculty workload and the recognition that participation in a master's program will occupy a significant portion of a faculty member's time. Academic deans, along with faculty, may be involved in setting guidelines for such matters as the number of students in graduate seminars and the number of thesis committees chaired by each faculty member. Attention to these issues helps to ensure that students and faculty members can devote sufficient time and attention to the master's program and that faculty are appropriately rewarded for their participation.

The dean plays an important role in providing the leadership that is essential to sound planning, implementation, and promotion of master's programs, as well as a role in linking them to other program interests responsive to community and institutional needs and research development. In institutions where the baccalaureate degree is seen as the primary focus of the institution, as well as when doctoral programs predominate, master's programs often face an uphill battle in the competition for funding. To protect the quality of master's education and ensure the recognition of this degree's value to the institution, it is important that the academic dean guarantee commitment to the master's degree programs when considering the general competition for resources within the institution.

CENTRAL ADMINISTRATION (GRADUATE DEAN/VICE PRESIDENT)

Elements to consider: *program quality, degree requirements, financial aid, budget, advocacy*

The central administration of the institution, generally the graduate school, establishes the administrative format for the development of each individual program and also the basic requirements for a master's degree with the concurrence of the faculty at the institution. There are several different organizational models for the administration of graduate education, but most include a central position with broad responsibility for all graduate programs in a college or across the institution. Among the various possibilities, the title of choice for this central position at most universities is that of graduate dean. Whatever the title, the role and authority for this position should be clearly defined with regard to responsibilities for graduate education at the master's degree level as well as at the doctoral level. (See the CGS publication, *Organization and Administration of Graduate Education,* 2004.)

Typical functions of the graduate dean include, but are not limited to, exercising general supervision for the maintenance of quality in all master's degree programs that fall within the scope of responsibility of the graduate school; initiating and facilitating development and planning for graduate curricula, faculty, facilities, and resources; administering and interpreting institutional graduate education policies; and overseeing the processing of graduate admissions, records, and awarding of the degrees. The graduate dean may be responsible for the allocation of student financial support (assistantships and fellowships) and raising funds to support graduate students and graduate education. Moreover, the graduate dean plays an increasingly significant role in addressing issues of student diversity, graduate education advocacy, graduate outreach and recruitment activities, orientation for new graduate students, and training of teaching assistants. When the position is combined with that of central research administration at the institution, the dean is also involved in administrative supervision of sponsored research, fund-raising efforts, and allocation of institutional faculty research funds.

In institutions where the master's degree is the highest degree awarded, the graduate dean should become the advocate, along with the program faculty, for inter-institutional cooperation in the placement of those students who wish to continue in doctoral programs.

As a campus advocate for the master's degree, the graduate dean who is well versed in budget policies and practices can help to strike a balance in allocating resources in support of quality undergraduate programs, master's

programs, and, where applicable, doctoral and professional programs. Graduate deans are well positioned to address perceptions among some faculty and students that offering a master's degree program can occur only at the expense of the other programs. In the case of institutions that also offer doctoral programs, the dean is responsible for ensuring that the master's degree programs are not devalued or ignored because of emphasis on the doctoral programs. The graduate dean should be prepared to demonstrate the value of the master's degree, as well as to argue for resources that ensure programs of merit for all participants in graduate education. He or she should work with the provost, who allocates resources among schools and colleges, to ensure that successful master's programs are supported and rewarded. Because many of the master's degree programs, especially professional master's, are developed in response to societal needs, a graduate dean, working in concert with provosts, college deans, department chairs, and program directors, can take the issues of advocacy and communication beyond campus boundaries. In so doing, graduate deans explore and develop avenues of cooperation with community officials, legislative and professional bodies, and the media.

REQUIREMENTS AND SPECIFIC ASPECTS OF A MASTER'S PROGRAM

GENERAL NATURE OF THE DEGREE PROGRAM

Although master's degree requirements are often individualized for each graduate student, master's programs at a given institution typically include two groups of common characteristics: the admissions requirements and the program requirements. The **admissions requirements** in common for master's students include 1) an earned baccalaureate degree from an accredited institution; 2) command of basic skills in the discipline; 3) command of the English language; and 4) superior motivation and abilities. The **program requirements** that master's programs have in common include 1) a minimum number of required credits; 2) a core curriculum to be mastered or a prescribed program of courses, seminars, and/or project or research component; and 3) an assigned faculty adviser and/or advisory committee for each student.

Other characteristics that may be part of master's degree programs vary within a given institution as well as among institutions. Those elements that may or may not be required in master's programs include:

- an internship or preceptorship
- a "capstone" or culminating experience, which may consist of a thesis, research project, performance, or other scholarly or creative work and communication of it in writing and/or orally
- a comprehensive examination
- a requirement for residency at the institution where the degree is offered
- completion of the degree within a specified time limit
- completion of a "minor" field
- mastery of a foreign language or research tool

Each institution should set general requirements for all master's degrees, but departments or programs may develop more specific requirements for their own students. Because master's programs vary greatly, it is essential that students know what is expected of them. An orientation program for new graduate students is an excellent way to acquaint students with degree requirements and to provide insight into what to expect and how the graduate program will differ from their undergraduate education. The orientation program can be coordinated by the graduate school or, in larger institutions, by colleges, departments, or programs within the institution. Many institutions have found it effective to involve graduate students in the development and presentation of these programs.

At the beginning of the graduate program, a study plan should be formulated for each student. This plan, generally developed by the student and faculty advisory committee, should list the courses to be taken, other requirements to be completed such as an internship or research project, and names of the student's faculty advisory committee. It should also include a timetable for expected completion of all requirements and award of the degree. The preliminary plan of study may be revised as the student advances in the program to reflect changes in course availability or research requirements, but it is important that there be an understanding at the beginning as to what the student will be required to do and how long it will take. Increasingly, plans of study include expectations of the student, the primary faculty adviser, and the advisory committee. Also commonly included is information on intellectual property issues: who owns copyright and other aspects of research or project results, how authorship of papers and conference presentations is to be decided, how internship placements are to be made and evaluated, etc. The study plan and/or an appended agreement on intellectual property issues, especially in professionally-focused master's programs, are often signed by both the student and the primary faculty adviser.

Each program and the graduate office should monitor progress of all graduate students to ensure that satisfactory progress is being made and to be alert to instances where students may need encouragement or support along the way. Tracking a student's progress and evaluating completed work, including courses, research, and internships or practicums, should be done periodically. This is particularly important for programs that require more than one year to complete. An annual evaluation of the student by the graduate advisory committee is one way to keep track of progress. The evaluation is preferably conducted using a form completed by the student and advisory committee listing the accomplishments of the year. In some cases, a statement to the graduate school by the student's adviser that satisfactory progress is (or is not) being made suffices, although a regularly scheduled review by

the advisory committee is strongly recommended. Faculty advisers and committees must sometimes be reminded to meet with their students, and regularly scheduled evaluation meetings are a good way to encourage communication.

After a student satisfactorily completes all requirements for the master's degree within the time limits established, the institution confers the degree, generally at the end of the term in which the student finishes the requirements.

PROGRAM AND DEGREE REQUIREMENTS

Admissions

Elements to consider: *application materials, standardized exam scores, TOEFL scores, faculty review, final decision and offer, record-keeping, need for original transcripts and scores*

Admissions decisions represent the first of a series of critically important judgments that faculty members must make. As with any important decision, all available information that bears upon the issue should be carefully considered. When making admissions decisions, it is essential that faculty consider all materials in an applicant's file and not depend solely on numerical grade point averages from previous college work or standardized test scores. In seeking ways to diversify the student body, it has long been recognized that some students who do not score well on standardized tests or do not have outstanding undergraduate grades may indeed have the potential and talent for advanced study. Therefore, numerical indicators may not be representative of their ability to do well in graduate school. A strong commitment to the graduate program is very important, however, and can often be assessed from the applicant's cover letter, goals statement, letters of recommendation, or an interview with the student in person or on the phone. Graduate faculty and deans must keep these issues in mind and continue to explore additional ways to identify applicants who have the potential to be successful master's students. (See the CGS publication *An Essential Guide to Graduate Admissions*, revision forthcoming 2005, and the 2003 CGS Inclusiveness Series, Volume 2, *Recruiting for Success* for further information on establishing and implementing admissions policies.)

Admission to graduate study at the master's level, as at the doctoral level, is based on review of an applicant's file by the graduate program director or a faculty committee within the program to which the student has ap-

plied. The institution and graduate program determine the materials to be submitted by the applicant. These materials generally include the application form, application fee, a cover letter stating the student's interest in the program, letters of recommendation from undergraduate faculty or others who can address the student's ability to succeed in graduate school, transcripts from all colleges and universities attended, and the results of a standardized test. Students whose native language is not English must also submit evidence of mastery of the English language. Individual departments or programs may require additional information for the application, such as a personal statement or essay on the student's experience and goals related to the chosen academic program or a portfolio of writing or artwork for those who are applying to fine arts programs.

Admission to a master's program is based on a variety of criteria established by the graduate division of the institution and by the graduate faculty of the department or organizational unit that administers the degree program. The admissions process seeks to ensure quality among programs at a given institution, as well as quality within a particular program, by admitting students who have the background and previous experience that will allow them to contribute to the program as well as to gain from it. Almost always, the graduate division sets minimal standards that all persons admitted to graduate study at the institution must meet, but standards set by a department are specific to that department and may be higher or more stringent than those of the graduate division. Normally, the graduate division requires that an applicant hold a baccalaureate degree from an accredited institution where the basic requirements are equivalent to those of the admitting institution and include adequate preparation in the chosen field of study (with a minimum grade point average). Some graduate programs accept a copy instead of the original standardized test scores and past transcripts, with the understanding that originals must be submitted before the student registers for the first semester of classes.

The requirement for scores on standardized tests allows admissions committees to compare the applicant's scores with average scores for national applicant pools as well as with current and past applicants to the program. One widely used test, which is administered worldwide, is the Graduate Record Examinations (GRE). The GRE General Test measures the verbal, quantitative, and analytical skills of the student. Admissions committees should thoroughly familiarize themselves with the recommendations of the GRE Board in the proper use of test scores. (See the 2004–2005 *Guide to the Use of Scores*, *Graduate Record Examinations,* published by ETS.) In particular, the GRE Board cautions against adding the separate scores, using "cutoff" scores to define minimum admissions standards, or using test scores as the

sole or even principal criterion for admission. Rather, the Board recommends using test scores as one among many other measures of ability or scholarly promise.

Research has shown that performance on standardized tests is difficult to interpret for students who have been out of school for some time after obtaining their bachelor's degree. Many master's students are in this category, among them women and minorities or other groups of students for whom standardized tests may not be good predictors of success. This is yet another reason why faculty and administrators are urged to consider the standardized test scores only in combination with all other information provided by the student in the application.

Master's students must be able to understand written and spoken English, as that is the language of instruction in all colleges and universities in the United States. In general, students whose native language is not English, or who have attended an undergraduate institution where English was not the language of instruction, are required to demonstrate mastery of English by submitting a satisfactory score on the Test of English as a Foreign Language (TOEFL), offered worldwide by Educational Testing Service (ETS), or by other equivalent means (many universities offer on-campus language testing by ESL experts for this purpose). ETS also offers tests in written and spoken English that may be recommended or required by departments in addition to the TOEFL, especially for students applying for teaching assistantships.

Students should be notified promptly about admission decisions. In many institutions, official notification of these decisions comes from the graduate school itself and is based upon recommendations by the departments. If the official notification comes instead from individual departments, it is important that the graduate school provide oversight to ensure that the notifications are consistent with university policies. If the admission notifications include offers of financial aid, institutions should explicitly allow students until April 15th to accept or decline the offers. (See the CGS Resolution Regarding Graduate Scholars, Fellows, Trainees, and Assistants, http://www.cgsnet.org/PublicationsPolicyRes/resolutions.htm.)

Departments and the graduate school should establish record-keeping systems that allow them to analyze their ratios of applicants to offers of admission to actual enrollments. The applicants/admits ratio is often referred to as the "selectivity" of the program; the admits/enrollments ratio is referred to as the program's "yield." They also need to know who their students are in terms of race, sex, and citizenship. Finally, there should be departmental mechanisms in place to track student progress toward the degree as well as degree completion or lack thereof. The graduate school should develop systems for analyzing these data on an institution-wide basis.

Curriculum and Time Requirements

Elements to consider: *mix of course work and other requirements, minimum number of credits, maximum time limit for completion, extensions*

All students in master's degree programs take courses. Some degree programs consist solely of course work, but most are composed of a mix of courses and other activities such as seminars, an internship, arts performance, research, and/or thesis or project credits. During a master's degree program, a student should acquire the ability to analyze, synthesize, and create knowledge. This is accomplished through independent study, individualized research, practicums, seminars, and studio or clinical experiences, as well as formal courses.

Although individual students in the same degree program may have different courses of study due to prior experience and research plans, there is often a core curriculum that all students in the program must master. The minimum number of credits for a master's degree at any institution is determined by the graduate division, but the actual credit requirement for each specific degree program is determined by the faculty in that program and may be more stringent than the institutional requirements. A student may be required to take an additional number of credits as preparation for the required course work or research. This may be true of students entering a master's program that is different from the baccalaureate major or minor or for those whose undergraduate program did not provide sufficient background for graduate work in the program.

Master's degree programs generally require a time commitment equal to at least one year of full-time study (30 semester or 45 quarter credits). For some professional disciplines, the time required for a master's degree may be as much as the equivalent of two or three years of full-time work. Those programs that require a significant research or internship commitment fit into this category, and students who are starting on the master's in a discipline different from that in which they earned their bachelor's degree will also require more time. Part-time students will, of course, take longer to complete their degrees.

Institutions should consider a maximum time limit for completion of master's degree requirements, including time for writing and defense of a thesis, if required. Course work in most, if not all, fields becomes dated, and it is incumbent on the faculty and the graduate division to make sure that students finish in a timely manner. The following must be considered, however, when setting time limits: the needs of students working on their degrees part-time and taking only one or two courses per term, the availability of required courses needed in sequence, and the conditions under which extensions to the stated

time limit are allowed. Policies on time limits should clearly state the procedures for requesting extensions and for approving extension requests.

Capstone Experience

Elements to consider: *thesis and nonthesis options, research projects, communication of results*

The inclusion of a culminating or capstone experience in all master's programs is strongly recommended. The master's program is often the first academic experience in which a student is expected to integrate prior learning. The faculty in each program must determine the most appropriate capstone experience for their graduate students to complete. Whether this capstone experience is a series of specific courses and seminars, one course that requires compilation and interpretation of information from previous courses and experience, a performance, a comprehensive examination or a research project and thesis, the capstone experience requires a student to put into practice what has been learned in the program. Students may be anxious about the capstone experience, but, for most students, the sense of achievement and the opportunity to demonstrate comprehensive knowledge in a specialized field of study are sources of pride in the completion of a master's degree program. The integration of prior courses and information into a single project is noted by many students as being the most important part of their master's program (Conrad et al., 1993).

A master's student who undertakes a thesis or project should be required to design the research project with the help of a faculty advisory committee, conduct the necessary background literature search, do the research, analyze the results, write the thesis, and communicate the results at an oral thesis defense. This work will not necessarily be original research, but it will be a new application of ideas. The experience of conducting research and/or analyzing the research of others instills abilities that can be useful on the job, whether in academia or elsewhere. The master's student must also demonstrate the ability to write and communicate orally about the work done. In many programs, especially in the sciences and engineering where courses consist largely of problem solving, class participation, or short written assignments, students are not required to write extensively until the end of the master's program. The experience of having to organize one's thoughts and communicate them to one's peers gives students confidence in their abilities and a broader view of their discipline.

The master's thesis should be designed so that the research and report writing can be done within a reasonable period of time; guidance from the

student's advisory committee is essential to guaranteeing this. Beginning researchers often want to answer all questions about a topic before writing the report or thesis, but master's work should be limited in scope. Because there may be loose ends, however, and not all questions will be answered during the research time available, students should be encouraged to include their thoughts on what they see as future research needs when reporting their work. The thesis and project approval process should be clearly articulated, and requirements for format of the written document and the formal presentation of this work should be made available to each student early in the degree program.

Guidelines on the purpose and framework of the master's research must also be articulated. Differences between a thesis and a project are generally related to the extent and focus of the research, formatting of the finished written product, requirement to give an oral defense of the work, and final approval of the finished product. A thesis may be more extensive than a project in terms of the amount of research required, but this varies with the individual and the discipline. A thesis must meet institution or graduate school requirements for format and is usually bound and placed in the permanent collection of the university library and/or, increasingly, in an electronic library of theses and dissertations. The focus of the research for a master's project is generally more applied than that for a thesis, with the student often defining a problem in the workplace and developing a solution for it. Examples include an engineer developing a safety manual for use in a specific setting or a teacher analyzing and solving a problem in a school. For such work-related projects, the master's research report may be published by the student's employer and used in the setting for which it was designed. A *master's project* may receive final approval at the advisory committee or department level. A *master's thesis* will generally receive final approval at the academic or graduate dean level.

Internship, Practicum, and Other Applied Experiences

Elements to consider: *type, supervision, credit earned, guidelines, cooperative education programs*

Interest in "on-the-job" experience is widespread and has grown rapidly with the emergence of new professional master's programs designed to produce entry-level professional employment in business, government, and nonprofit agencies. Most such professional master's programs and, increasingly, other nonthesis master's programs require internships, preceptorships, practicums, externships, or cooperative education programs. These experiences outside

of the college or university give a student the chance to participate in professional practice while under supervision, and they form an important and integral part of many master's programs.

When an internship or other applied experience is required, guidelines should be spelled out clearly in each master's program manual or handbook so that students, faculty, and external associates know what is expected. Some accrediting agencies have guidelines for internships within those disciplines. Departments that require internships should help students to find a suitable position and should have a list of approved agencies and organizations with which graduate students can work. Departments must also clearly specify the number of hours to be worked, number of credits to be earned, who will supervise and who will certify completion of the internship (faculty adviser or external supervisor), at what point in the degree program the internship should begin and/or be completed, and whether prior professional experience can be used for some or all of the internship credit. The program faculty also must develop procedures for monitoring the quality and nature of the internship experience to ensure that it is consistent with program goals, objectives, and standards. Agreements for exchange of fees and services may be developed between master's institutions and the local agencies where students serve as interns. For example, the institution may award tuition credits to the agency, for use by their employees, in exchange for supervision of interns within the agency.

Cooperative education programs are based upon an agreement between a student and an employer, such as a federal or state agency or a local business, that the student will work part-time for pay while attending graduate school. These programs are advantageous to the student as they provide financial support in addition to practical experience and training in the field of study. Although academic credit is not generally earned for this type of work, a cooperative education employer often provides benefits such as health insurance and may guarantee the student a job upon graduation. The schedule for cooperative work varies from a full-time summer position, which leaves the student free to attend school full-time during the academic year, to a part-time position throughout the entire year. Employers are often flexible and can arrange work schedules based on a student's class schedule. The graduate division and career planning or placement office at an institution can facilitate development of these cooperative programs by interacting with agencies and businesses in the area. Students can also initiate arrangements with employers. The employer should require, from the graduate division or records office, confirmation that a student is making satisfactory progress on the degree each term.

Nontraditional Delivery of Master's Education

Elements to consider: *where are the students and when can they attend classes, contact hours per credit, calendar time per credit, residency*

Innovative approaches to providing master's programs have been developed to reach those students who, for a variety of reasons, cannot attend regular classes on a college or university campus. The approaches have included opening branch campuses or offering graduate courses at an off-campus site to serve population centers not located near a college or university. Other innovations include newer methods of program delivery, such as offering courses via the Web, teleconference, video delivered by satellite, interactive video, or mailing videotaped lectures to each student in the class. Courses may be shortened from the traditional academic term to take place on evenings or weekends or during the summer.

In any of these methods of delivery, the same standards of quality must be maintained by the institution as are required for those courses taught and activities offered during the academic term on the institution's main campus. As outlined by Roberds, 1989, admission requirements for the master's program, frequency of course offerings, the presence of qualified faculty, access to library holdings, resources such as laboratories and computers and the number of contact hours, elapsed calendar time, and required student preparation for each hour of credit must not be compromised because the program is being taught in a different way. New technologies have given institutions the ability to reach students at a distance, and more students are thus able to attend graduate school from their homes or their home communities. Faculty and students must work together, however, to keep communications open and maintain a consistent structure and quality for master's degree programs. Much of the value of graduate education is the opportunity to interact with other faculty and students and to share concepts, ideas, and experiences in the analysis of issues; by reaching new student populations, new methods of delivery enhance this exchange.

Residency requirements have traditionally been considered an important part of graduate programs. Being in residence and participating in classes on campus allow for interaction between faculty and students in the program, discussions outside of class, and mentoring of students. However, with more students acquiring their education long distance, through Web-based courses, teleconferencing, satellite communications, and video or television courses, the residency requirement and nontraditional delivery may become mutually exclusive. Students who cannot participate in face-to-face interactions with other students and faculty are still able to learn on their own, but they must

generally be more mature and more willing to be aggressive and seek help when needed. Faculty, on the other hand, must be more alert to problems that students might be having, and they should make every effort to reach out to help those who need it. A faculty member may plan to meet once or twice a term with all students in the class, together or separately, in their own community, and faculty should stay in touch with their students during the academic term via mail, telephone, Web-messaging, or e-mail. Programs should develop mechanisms to include opportunities for students to spend time with both faculty and other students in the program, for advisement, career counseling, and sufficient interaction so that they feel they are a part of the program and can exchange ideas with others. Some courses may be offered during a series of weekends or during the summer with all students required to participate. These often involve a shorter but more intensive time commitment than a full academic term, but they allow some of the course work to be completed with others in the program.

DEVELOPMENT AND EVALUATION OF MASTER'S PROGRAMS

INTERDISCIPLINARY PROGRAMS

Elements to consider: *what unit awards degree, what is title (how specific), research collaborations, regional research interests, dual degrees, accelerated programs, number of credits, time involved*

Graduate programs within an institution can complement each other, and this provides stimulation and intellectual strength to the entire academic enterprise. Multidisciplinary or interdisciplinary graduate degree programs are at the forefront of new developments in master's education. For example, faculty in the sciences, engineering, and public policy may join together to offer a degree program in environmental quality or environmental studies. Similarly, a master's program in creative writing can benefit from the collaboration of students and faculty in graduate programs in English literature, journalism, broadcasting, and theater. The Alfred P. Sloan Foundation began a Professional Science Master's (PSM) initiative in 1997 with grants to research universities to develop an alternative type of master's degree that combines graduate-level core work in a science or mathematics discipline, other elements to develop work-related knowledge and skills, and an internship. In collaboration with CGS, the PSM initiative was extended to master's-focused institutions beginning in 2002. Most of the professional master's degree programs developed through the Sloan Professional Master's initiative (see www.sciencemasters.com) and the CGS/Sloan Professional Science Master's (PSM) and the CGS/Ford Professional Master's (PMA) initiative in the humanities and social sciences (see www.cgsnet.org) are interdisciplinary, as the titles in Table 2 suggest. In spring 2005, there were roughly 100 PSM programs that had produced over 400 graduates and enrolled over 1,150 students. Some of the most interesting and challenging questions arise at the boundaries of existing disciplines and may not be amenable to resolution by

those disciplines or departments. Such interdisciplinary research questions may be addressed more appropriately by collaborative efforts, as, for example, in the biomedical area, environmental sciences, or in areas of comparative literature and literary theory. The administration of these interdisciplinary programs can be handled by the faculty on a case-by-case basis for individual students. More frequently, however, multidisciplinary institutes, centers, or formal degree programs are being developed at universities. Faculty in the multidisciplinary programs generally have their major affiliation in an academic department, but they do collaborative research and support students in the interdisciplinary centers or programs. These graduate programs often are administered through the graduate school with review and approval by the graduate dean.

Provision is made by some institutions for accelerated or dual-degree programs that take advantage of the overlapping interests in many programs and the need for graduates to have expertise in different fields. By carefully planning in advance, students working on one degree can thus get another degree in less time than it would normally take to earn two separate degrees. Some courses taken for one master's program may be accepted for credit in another degree program, if so articulated in institutional policies. In some cases, a student may apply graduate courses taken as an undergraduate toward a master's degree, assuming that the courses were not used for credit in the undergraduate program. Early planning on the part of students may allow them to get a baccalaureate in three years, for instance, with an additional two years for the master's degree. Institutions should recognize the need for these kinds of options and carefully and clearly define the conditions under which they may be used.

ESTABLISHMENT OF NEW MASTER'S DEGREE PROGRAMS

The decision to initiate a new master's program is based on many factors and conditions. Often a new program will be developed by faculty and administrators who recognize that there is a need for future practitioners in a given field. Increasingly, though, the impetus for such programs comes from professional groups, businesses, or government and nonprofit agencies that express interest in the availability of a particular master's program. A corporation may want more of its employees to have business degrees, for instance, or a hospital may require its nursing staff to get additional education in nursing, administration, or a specific medical field such as radiology. Prospective students may express interest in a new degree program and lobby the institution to provide it. Developing a new program in response to an identified need

requires faculty who are able to teach in such a program and the willingness of the institution to commit new resources to it.

The following is a list of the many factors that must be considered when a new master's degree program is being planned. At the institutional level, the considerations most important for development of a new program are:

1. Clear evidence of the need for a high-quality program that could not reasonably be offered through existing programs or by other institutions in the region
2. A body of knowledge that can serve as the academic core of the program
3. Participation of faculty who are already active in their fields or productive in research and are in full support of the new program
4. Clear evidence of student interest among one or more prospective applicant pools
5. A business plan that indicates adequate financial resources
6. Institutional administrative support for the program
7. Library resources adequate for master's study in the new and supporting program areas
8. Laboratories or comparable facilities available and adequate for the new program
9. Appropriate procedures planned or in place for administering and reviewing the new program

When the above conditions are met, the following process will increase the likelihood that the institution can establish a sound program leading to a master's degree:

1. Form a faculty committee at the department or school level to develop the proposal for the new master's program.
2. Especially for professional master's degree programs: Form an external advisory board of alumni, prospective employers of program graduates, and community or other leaders to influence curriculum and assist in developing the program.

3. Develop the proposal for the new program, to include the following:
   a. reasons for offering the program
   b. need for the program in light of the university's mission, other university programs, and local, regional, and national needs
   c. curriculum requirements: total credits; required and elective courses; internship or practicum, comprehensive examination, thesis or research project
   d. expected interactions of the program with existing university departments, and the liaison mechanism to be established with those departments; letters of support from interacting units
   e. number of students expected to participate in the program, both in start-up phase and in steady-state, and evidence of student interest
   f. availability of resources and facilities (e.g., faculty, space for student and faculty offices and labs, library support)
   g. form and availability of graduate student support
   h. plan for affirmative action or student diversification
   i. plan for assessing continuing demand and the adequacy of the curriculum to reflect changing needs
4. Discuss the proposal with the graduate dean to ensure that institutional and/or governing board procedures for program approval are clearly understood.
5. Develop a detailed plan for the new program, including goals and objectives, academic procedures, and estimated costs to the institution.
6. Develop a statement of standards based on those established by CGS, the regional or provincial accrediting associations (where appropriate), the appropriate professional organizations, and practices at other universities granting the master's degree in the proposed discipline.
7. Develop a tentative schedule for establishing the new program and reviewing it. The review schedule should allow sufficient time (usually one year after approval of the program) for adequate recruitment of a high-quality applicant pool.

8. Present the proposal to faculty, heads of appropriate departments, and curriculum councils for their suggestions and approval.
9. Invite outside consultant(s) to review the proposal, make recommendations, and possibly visit the campus to determine whether the department and the university are ready for the new program. If appropriate, consult with the public coordinating or regulating agency to which the proposal must ultimately be submitted.
10. Submit the revised version for approval to the graduate school.
11. Submit the proposal for approval to the relevant bodies as established by the university. New programs generally must be approved by the faculty graduate council, faculty governance group, university administration, and governing board of the university. In addition, approval may also be required by the state higher education agency and regional accrediting association.

ACADEMIC PROGRAM REVIEW

Elements to consider: *procedures, coordination with accreditation reviews, timetable*

Although program review is often mandated by state or institutional governing boards, the graduate school should develop policies for and coordinate a periodic review of each graduate program. These reviews should assess progress and determine whether the program is meeting established goals and continues to be viable, whether resources are adequate for its further development, and/or whether the program would benefit from a renewed discussion of program goals. Academic program review is a natural follow-up to the extensive work required to develop each new program. Program assessment is essential in guaranteeing that quality and efficiency are maintained in a degree program. A review should be done every five to ten years, and all master's and doctoral programs within a discipline are generally reviewed together (occasionally with baccalaureate programs).

In the program review process, the institution should examine the unique characteristics of its master's programs and should develop evaluation criteria appropriate for each program. Practice-oriented or professional master's programs, such as the M.B.A., M.S.W., PSM, or PMA deserve careful and separate attention because of their differences from traditional master's and doctoral programs. Although an institution may choose to review all graduate programs in a given discipline or department at the same time, the goals of each of the programs must be considered individually. Academic program review should

be separate from, but coordinated with, accreditation review (see Accreditation below). Much of the data collected at the institution, such as graduate enrollment, gender, ethnicity, full-time/part-time status, graduate degrees awarded, financial support of students, and external funding for the program (such as grants received) can be used for both program and accreditation reviews. Academic program review, however, should include more specific analysis of the graduate program: how it supports the mission of the institution; how it meets the needs of the community, region, or nation; how it fits into the future plans of the institution; and how it might be improved. The purpose of program review is ultimately program improvement. (See the CGS publication *Academic Review of Graduate Programs*, forthcoming winter 2005.)

ACCREDITATION

The purpose of accreditation is to determine that an academic program is of a quality satisfactory to meet the standards of the accrediting organization. In the United States, there are currently six regional higher education accrediting agencies and numerous disciplinary and professional accrediting agencies, at least twenty-five of which have criteria dealing with specific master's degrees. Accreditation is a voluntary, nongovernmental, self-regulating process, and accreditation review requires that the program show that it "meets or exceeds a level of quality considered to be necessary for that particular institution or program to achieve its stated purposes and thereby meet its responsibilities to all its publics." (Middle States Commission on Higher Education) Most institutions offering graduate degrees are accredited by one of the six regional agencies, New England, Middle States, Southern, North Central, Western, and Northwest. Regional accreditation addresses the ability of the entire institution to be engaged in higher education. Regional accreditation review teams generally review all of the administrative functions as well as the academic functions of the institution. Some of the degree programs within each institution, however, will also be accredited by the disciplinary accrediting agency that deals only with the program or with the department or division in which programs in that discipline are offered.

Many of the professional programs for which the master's degree is the terminal degree required for practice or advancement in the profession have special accreditation requirements. Examples of these are the programs in business administration, engineering, education, library science, nursing, physical therapy, counseling, social work, and architecture. Programs in art, design, forestry, health services administration, journalism, landscape architecture, planning, rehabilitation counseling, and speech-language pathology may also be accredited by their professional accrediting agencies.

DISCONTINUATION OF MASTER'S DEGREE PROGRAMS

Decisions to eliminate programs should generally consider the same issues and follow essentially the same procedures as those for developing new programs. The need to discontinue a graduate program will be based on the demand for the program, its cost effectiveness, quality, and whether it fits into the mission of the institution. Using the academic program review process, departments and administration may decide that it is necessary to discontinue some of the graduate degree programs at the institution. In these cases, due concern must be given to those students currently in the program, with provision for transfer to a similar program or continuation of the program for a reasonable period of time so that all current students can graduate. All faculty and students involved must be given sufficient notice and information so that they can make decisions relevant to their own career plans.

FUTURE OF THE MASTER'S DEGREE IN THE U.S.

Recent history and many projections point toward a secure future for the master's degree. The degree provides the advanced professional training that is in high demand in our twenty-first century society, and, increasingly, students are finding that in order to progress in their careers they must have at least one advanced degree. The process of attaining the degree is moving from the traditional one to two years of residency beyond the bachelor's degree toward multiple patterns involving part-time enrollment while holding down a full-time job. More women, minorities, and nontraditional adult students are pursuing master's degrees, and colleges and universities are accommodating these students by offering more evening, weekend, and summer classes, using new technology to deliver course work to those who are place-bound, and developing other methods to reach out and serve those who can benefit from graduate school.

Issues of access, quality, fiscal and resource support, and the role of the master's degree in higher education will continue to be important in shaping the future of graduate education at the master's level. Among the factors likely to influence the direction and importance of these issues are:

- *recognition:* the understanding, by higher education and society, of the value of master's programs, which comprise the largest component of graduate education
- *societal needs:* the increasing demand to have a responsive system of education at all levels and for all citizens
- *economic viability:* an increasing number of communities, both rural and urban, that view advanced education and applied research as opportunities through which they may derive economic benefits

- *nontraditional students:* a growing population of graduate students who are older, hold off-campus jobs, are oriented toward professional careers and advancement in their current careers, and are interested in earning graduate degrees outside of the customary academic schedules and conventional campus settings
- *new delivery systems:* an accelerating interest in delivering instruction using advanced technologies

Partly in response to these factors, it is important that faculty and administrators work together to provide an appropriate and supportive atmosphere for master's programs and their students by:

- understanding that the master's degree is responsive to the advanced educational needs of large numbers of the population
- developing access opportunities to higher education for underrepresented groups, especially those who seek the master's degree as their immediate goal
- developing funding mechanisms that ensure adequate facilities to support workplace-related research and projects, continued scholarly development for graduate faculty at all institutions, and financial incentives for students to continue their education beyond the baccalaureate
- expanding student and faculty recruitment efforts to increase diversity in higher education institutions and to serve the needs and develop talent from all segments of the population
- enhancing the opportunities for interdisciplinary, interinstitutional, and college/university-corporate collaboration

Graduate education at the master's level provides the opportunity for students to acquire advanced education and training for reasons of career development, changing career interests, and an increasingly complex array of workplace and economic needs. Despite the fluctuating financial circumstances of both public and private institutions in recent decades, most ongoing master's programs are continuing to attract students. New master's degree programs are being developed in response to interest in society and in academia for advanced training that focuses on issues of current importance. Clearly, master's education is a strong and vital part of higher education and will continue to be a major and important effort of all graduate institutions.

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