

# **Current Trends in the Master's Degree: Science, Technology, and the Professions**

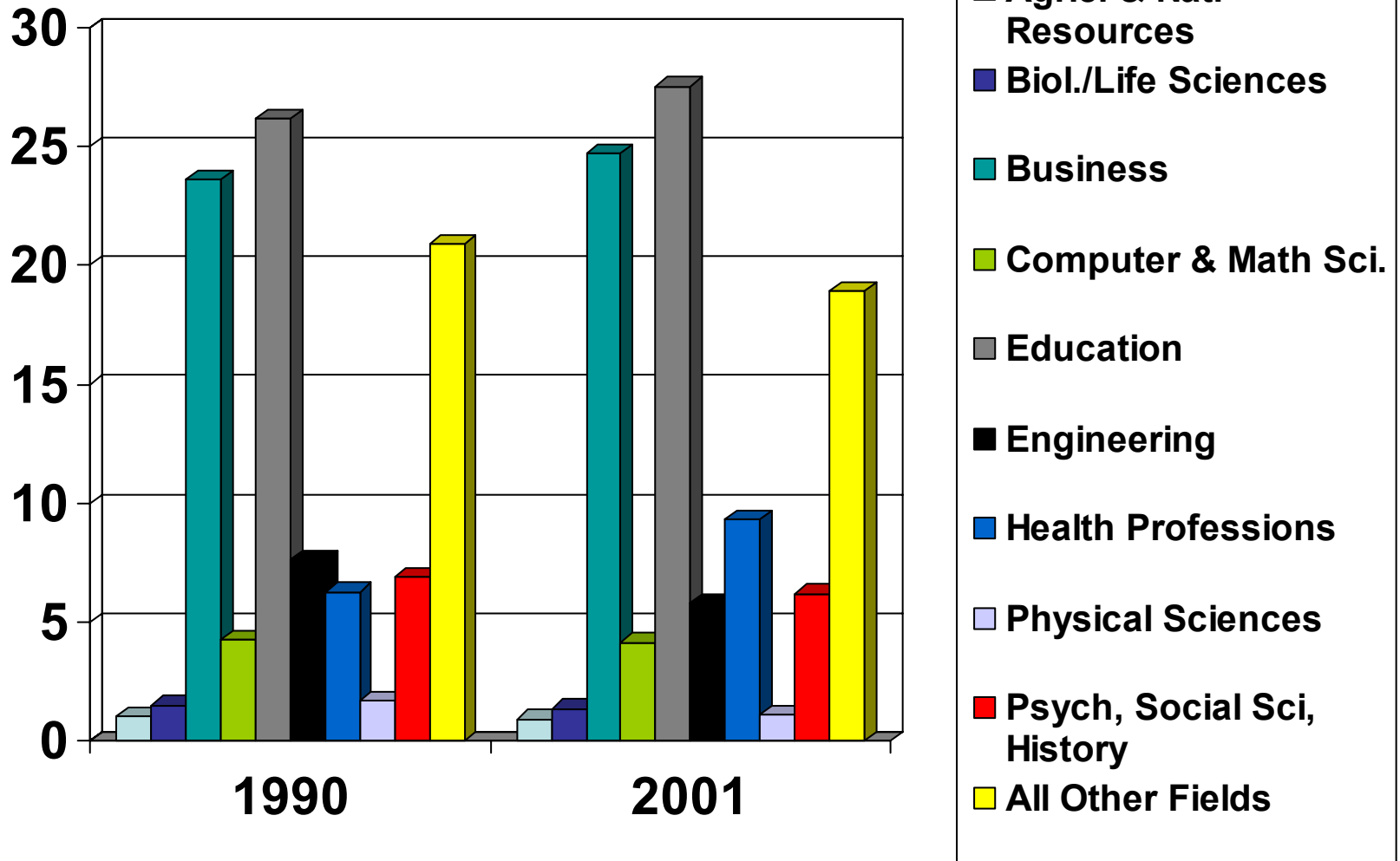
**By Judith Glazer-Raymo**

In her forthcoming book, Judith Glazer-Raymo traces historical developments, current trends, and future directions of master's education in the United States. Given the role of the university as a certifying and credentialing institution, she offers an historical review of the master's degree and its expansion and transformation from a classical to a professional credential. In addition to disaggregating statistical data on this degree, she analyzes curriculum models in the sciences, mathematics, engineering, and the professions, drawing on institutional case studies, cross-comparative analyses, published and unpublished documents, and literature gleaned from numerous databases.

In building on her earlier monograph, *The Master's Degree: Tradition, Diversity, Innovation* (1986), she describes the changes that are occurring in the production of knowledge as the locus of practice in academic disciplines becomes more transdisciplinary, problem-oriented, and socially accountable. With public and private universities competing for scarce resources in a rapidly changing political and economic environment, the mission of the graduate school is being altered. A major question being raised in this context is the value of the doctorate at a time when the academic labor market is diminishing and faculty and graduates opt for non-academic careers. In this context, the author also considers the impact of globalization and the virtual university on post-baccalaureate futures.

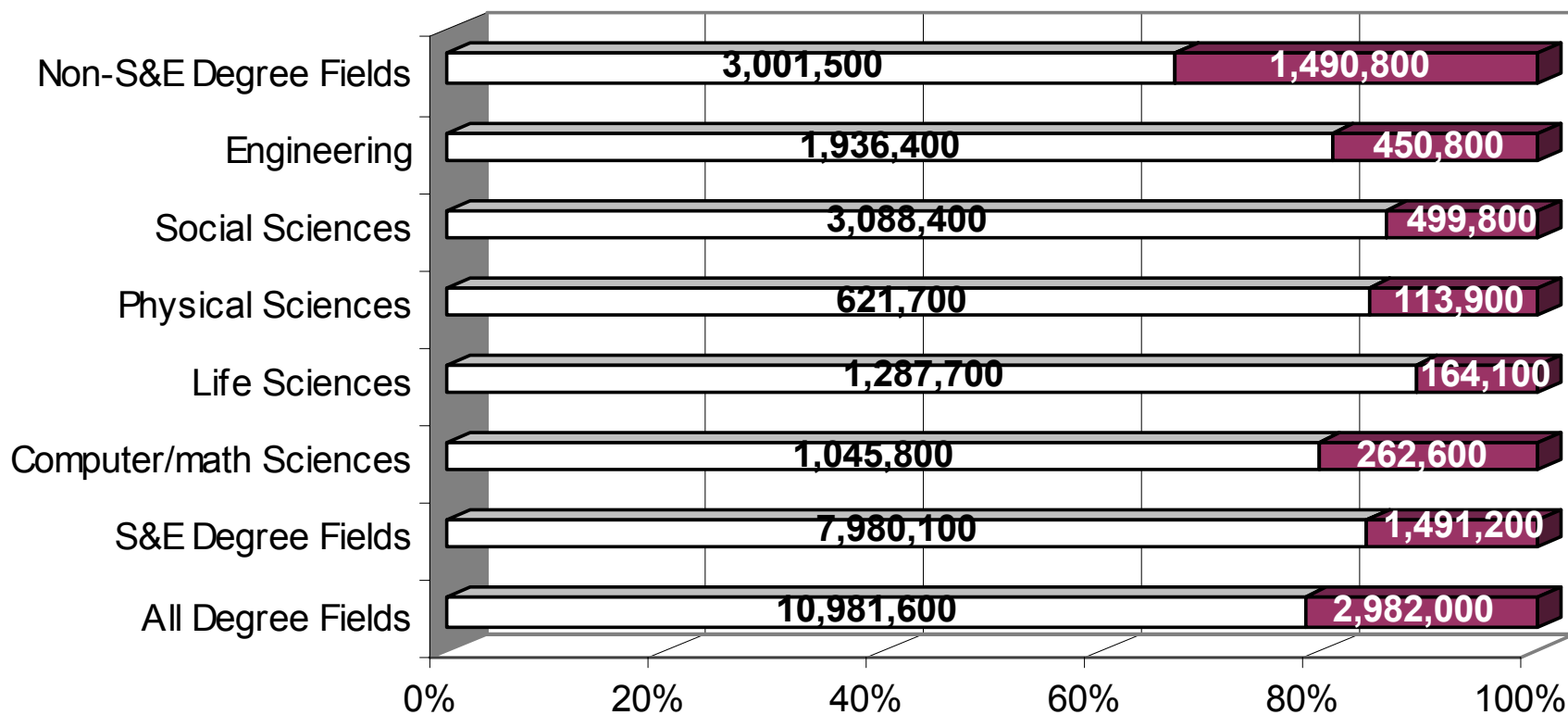
She concludes that the professional science master's degree (PSM), initiated by the Sloan and Keck Foundations in 1997 and now extant in 45 universities, is evolving as an entrepreneurial credential that has the potential to alter the direction of graduate education in the sciences. Beyond the sciences, the predominance of professional master's degrees in the social sciences, humanities, and specialized fields indicate not only a different mission for graduate education but also a new direction for the creation and advancement of knowledge.

# Masters Degrees by Broad Field, 1990 and 2001



Source: CPST, data derived from NCES

## Employed Total and Master's Level U.S. Scientists and Engineers, 1999



Source: CPST, data derived from National Science Foundation

□ Total  
■ Master's

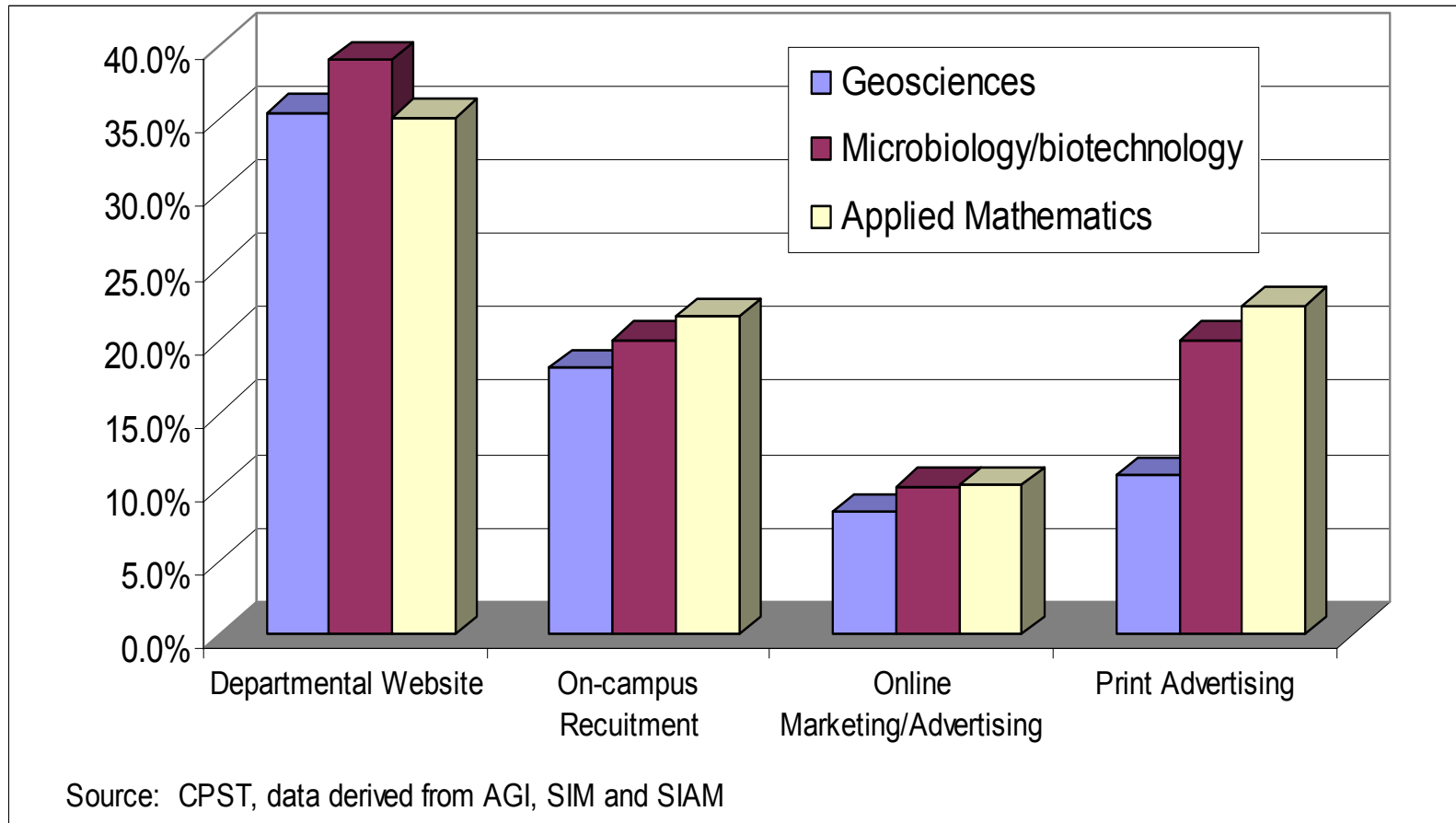
# Average Proportion of Students in Masters Programs in Three Selected Fields

<b>Field</b>	<b>Male</b>	<b>Female</b>	<b>URMs</b>	<b>U.S. Citizens</b>	<b>Non-U.S. Citizens</b>
Geosciences	53.3%	46.7%	3.9%	90.4%	14.3%
Microbiology/ Biotechnology	39%	61%	27%	79%	21%
Mathematics	59.7%	40.3%	6.7%	62.3%	37.7%

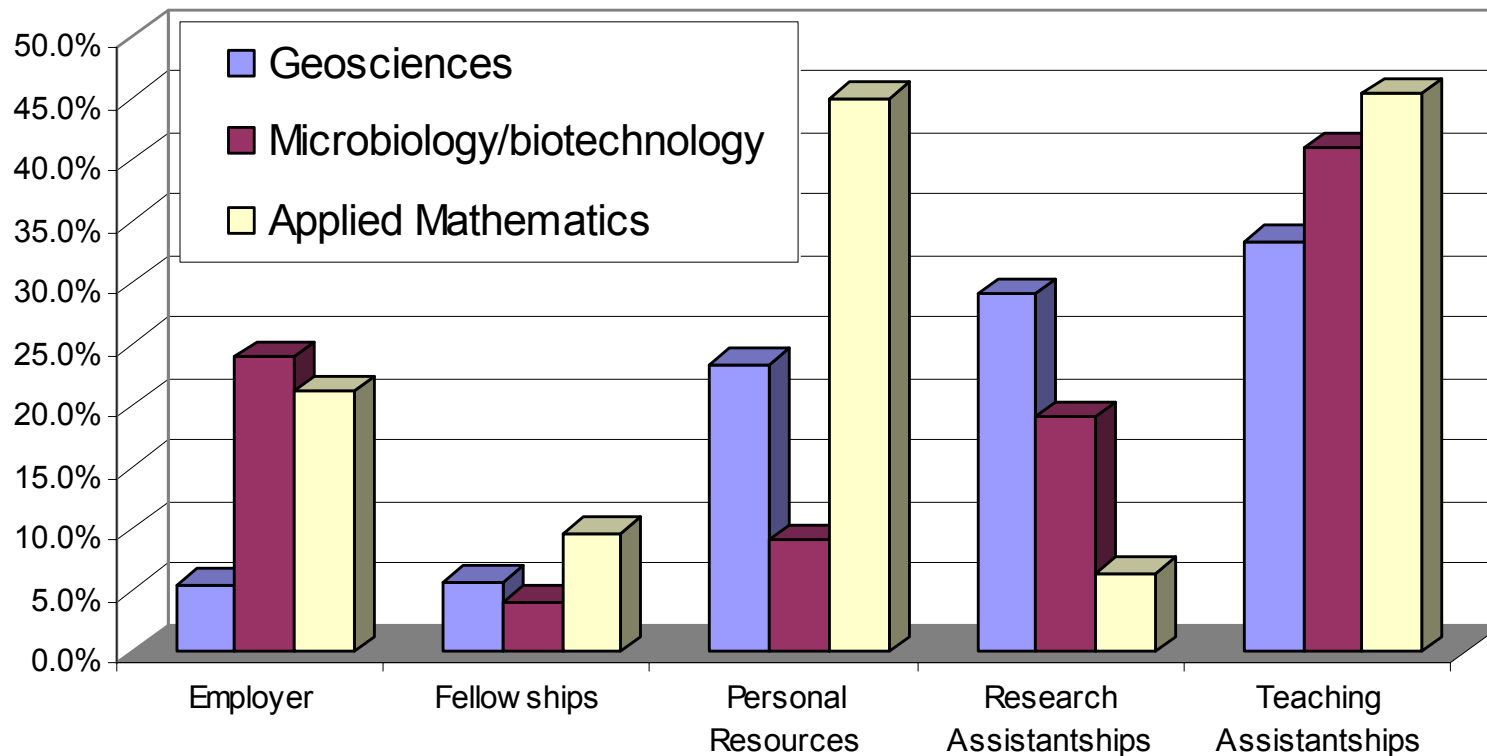
1. Based on responses from 119 geoscience departments
2. Based on responses from 47-49 microbiology programs in 38 institutions
3. Based on responses from 56 departments of mathematics

Source: CPST, data derived from AGI, SIM, and SIAM

# Recruitment Methods in Three Selected Masters Fields



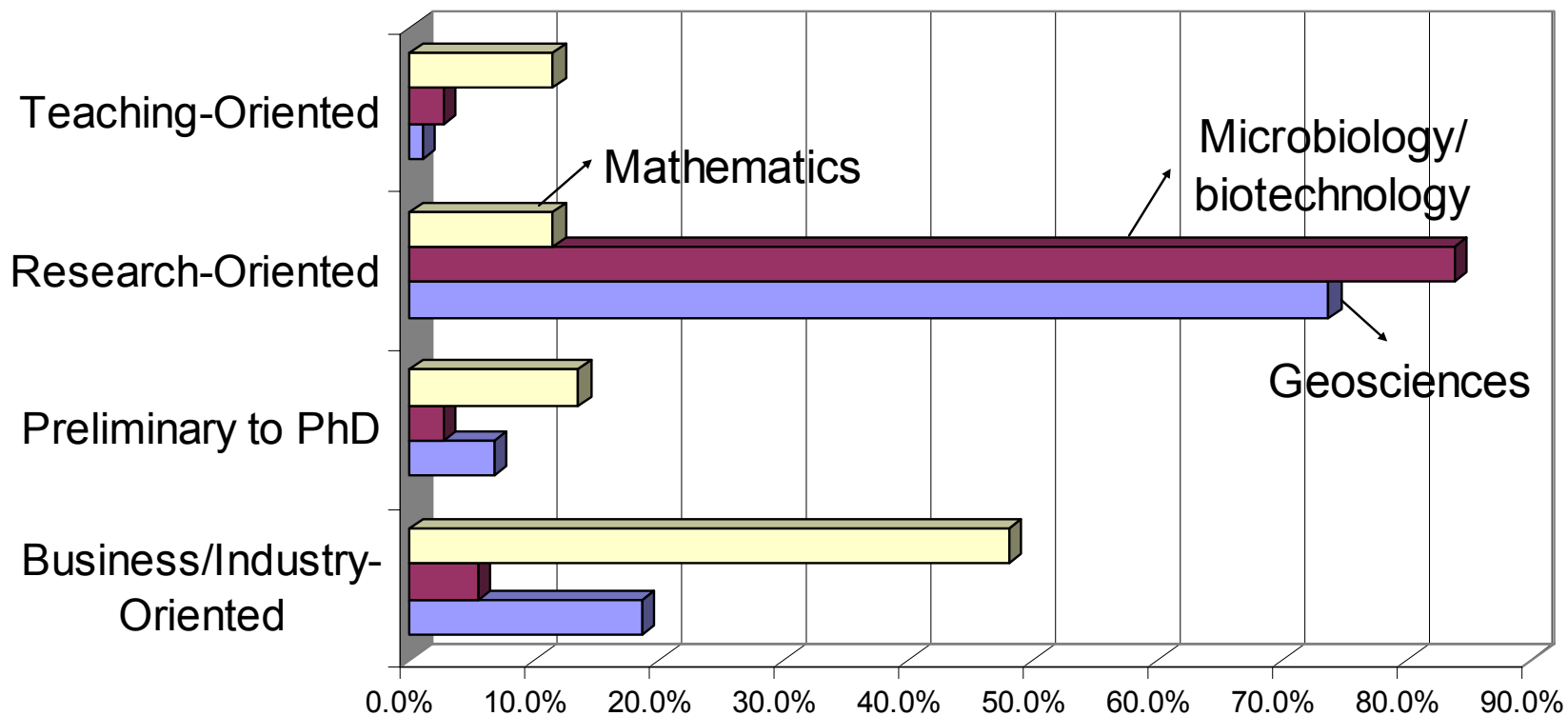
# Sources of Support for Master's Students



Note: Totals by field may sum to more than 100 because respondents could choose more than one category.

Source: CPST, data derived from AGI, SIM and SIAM surveys

## Orientation of Master's Degree Programs in Three Selected Fields



Source: CPST, data derived from AGI, SIM and SIAM surveys

# Top Reasons for Faculty Satisfaction

<b>Satisfaction</b>	<b>Geosciences</b>	<b>Microbiology/ biotechnology</b>	<b>Mathematics</b>
Interactions with Students		<b>X</b>	<b>X</b>
Research Productivity		<b>X</b>	
Quality of Students	<b>X</b>		<b>X</b>
Quality of Curriculum/Prg	<b>X</b>		
Employment Placements	<b>X</b>		<b>X</b>

1. Based on responses from 76 geoscience departments
2. Based on responses from 19-31 microbiology programs.
3. Based on responses from 42 departments of mathematics.

# Top Reasons for Student Satisfaction

<b>Satisfaction</b>	<b>Geosciences</b>	<b>Microbiology/ biotechnology</b>	<b>Mathematics</b>
Quality of Faculty	<b>X</b>	<b>X</b>	<b>X</b>
Quality of Education	<b>X</b>		
Quality of Facilities	<b>X</b>		
Quality/Flexibility of Curriculum/Program	<b>X</b>	<b>X</b>	<b>X</b>
Opportunity for Research Experience		<b>X</b>	
Job Opportunities		<b>X</b>	<b>X</b>
Practicality/Applicability of Program	<b>X</b>		<b>X</b>

1. Based on responses from 76 geoscience departments.
2. Based on responses from 29-31 microbiology programs.
3. Based on responses from 41 departments of mathematics.

# Master's Program Information

Program Information	Field		
	Geosciences <sup>1</sup>	Microbiology/ biotechnology <sup>2</sup>	Applied Mathematics <sup>3</sup>
<b>Thesis</b>			
Required	56.8%	60.0%	17.1%
Optional	31.2%	37.1%	22.9%
<b>Report or Project</b>			
Required	66.7%	68.8%	55.6%
Optional	13.6%	31.2%	25.0%
<b>Research Experience</b>			
Required	83.1%	82.4%	12.1%
Optional	18.8%	17.6%	48.5%
<b>Off-Campus Internship</b>			
Required	6.9%	3.1%	19.4%
Optional	71.8%	59.4%	41.9%