

# Commission on Professionals in Science and Technology

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Associate Director



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**National Research Council**

**Committee on Enhancing the Master's  
Degree in the Natural Sciences**

**March 28-29, 2007**



<http://www.cpst.org>

*. . . Your workforce data source.*

# About CPST

- § Founded in 1953
- § Non-Profit Membership Organization
  - § Professional Scientific Societies
  - § Corporations
  - § Academic Institutions
  - § Foundations
  - § Individuals
- § Participating Organization of AAAS

# Mission

- § Collect, analyze, and disseminate reliable information about U.S. STEM workforce
- § Promote best programs of education and training of STEM workers
- § Develop policies for the utilization of scientific and technical human resources

# Flagship Publications

**CPST**  
Comments

January/February 2007  
Volume 34, Number 1

**Workforce**

- Lesson to Still Draw at Current Edge of the 50 2
- Don't Let the Under-25s Turn a Turn 3
- Expanding the Pipeline: Do We Have a Real Opportunity for Women? 4
- Women: The Age of the 21st Century 5
- Minority Employment: How to Attract and Retain 6
- Minority Graduates: Why College Isn't the Answer 7
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- Graduate Employment: The 21st Century 9
- Graduate Employment: The 21st Century 10

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**Women and Minorities**

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- Underrepresented Minority Women among STEM Doctorate Recipients 19
- Temporary Academic Hiring: Minority STEM Doctorate Recipients 20

**Discipline-in-Depth: Mathematics**

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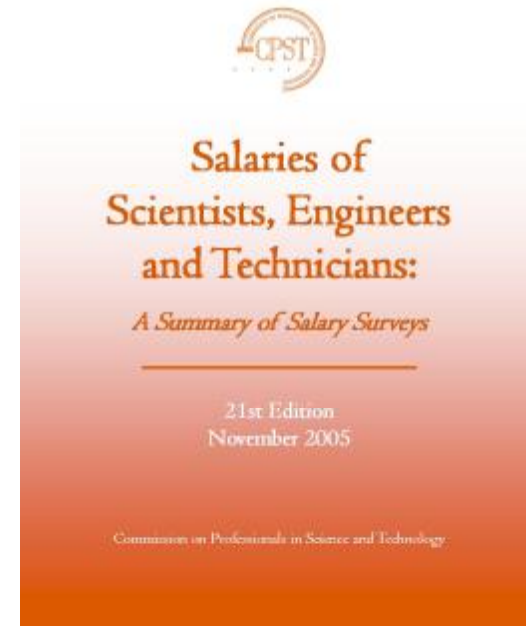
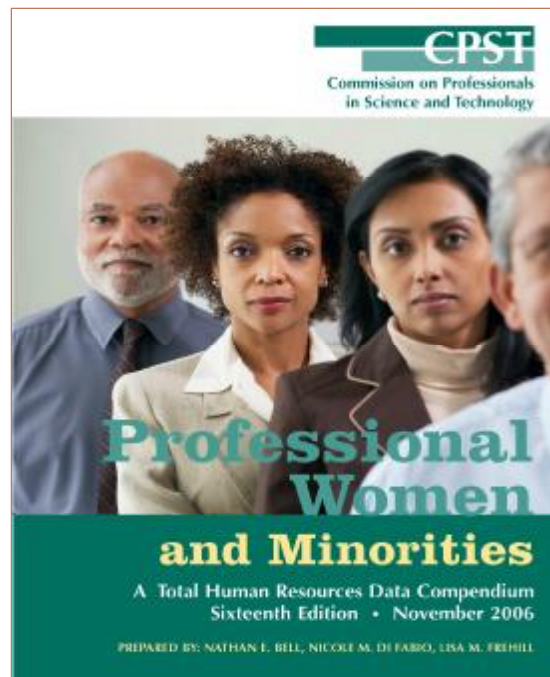
**Education**

- NCE Release 2002, 2003 and 2004 Bachelor's and Master's Degree Data 22
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**Down Washington Corridors**

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**CPST**  
Commission on Professionals  
in Science and Technology



<http://www.cpst.org>

... Your workforce data source.

# What We Don't Know

- § No comprehensive national data on enrollments in STEM at the master's level
- § No comprehensive national data on sources and mechanisms of support for master's students
- § No national data on the type of master's degree awarded, i.e. en route, stand alone, consolation prize, professional

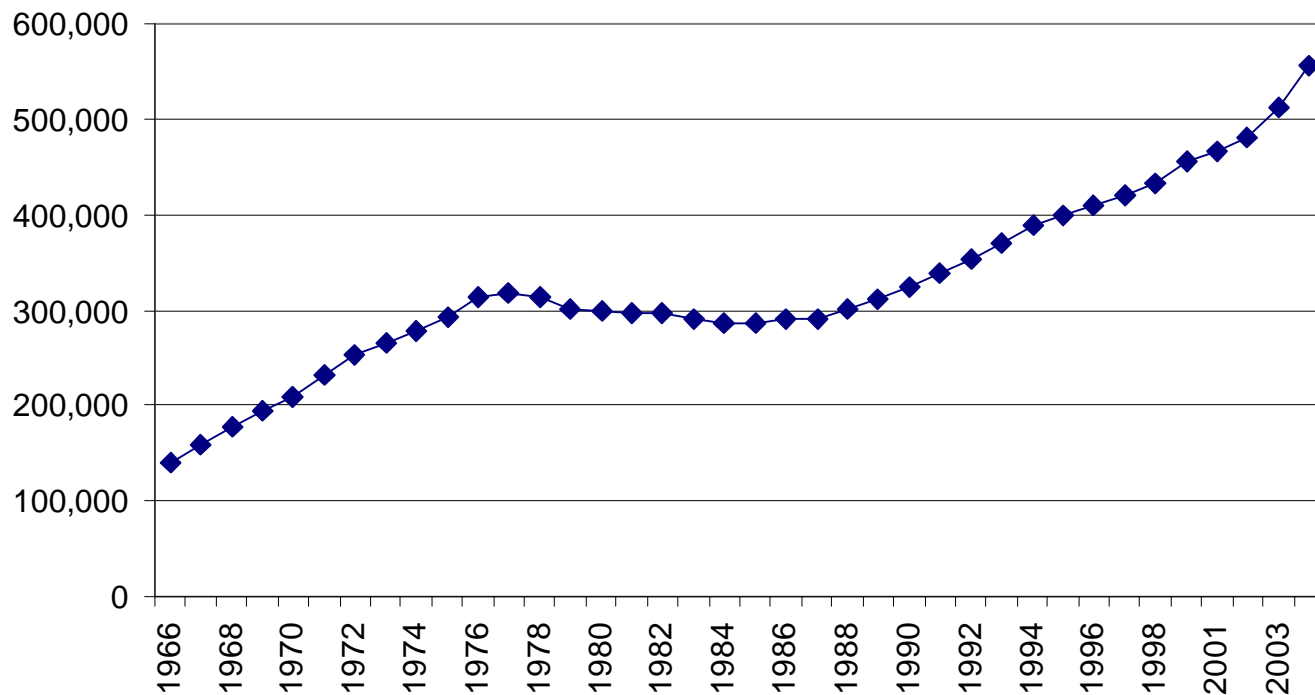
# What We Know

Master's degree data are available by:

- § Academic institution
- § Institutional control (public/private)
- § Fine field (6-digit CIP code)
- § Sex
- § Race/ethnicity
- § Citizenship

# Master's Degree Production Quadrupled Between 1966 & 2004

Master's Degrees Awarded, 1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

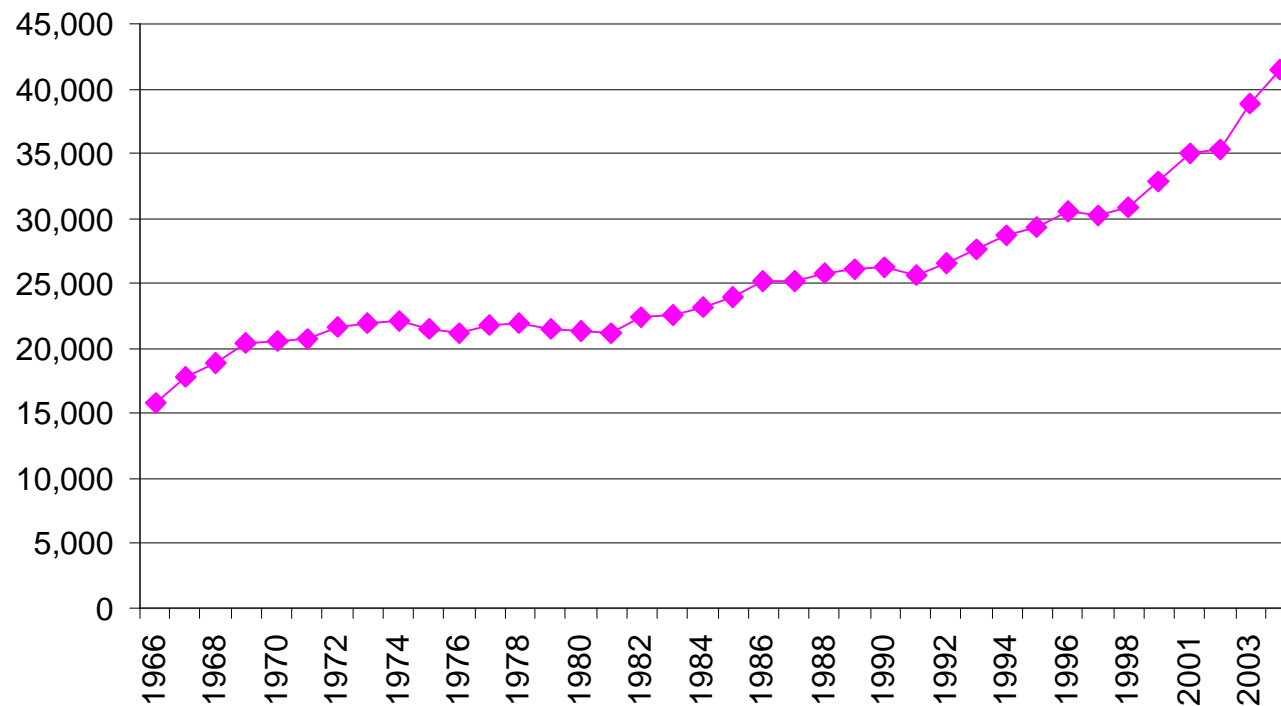


<http://www.cpst.org>

*... Your workforce data source.*

# Slower Growth for Natural Sciences Master's Degrees

Natural Sciences Master's Degrees, 1966 to 2004

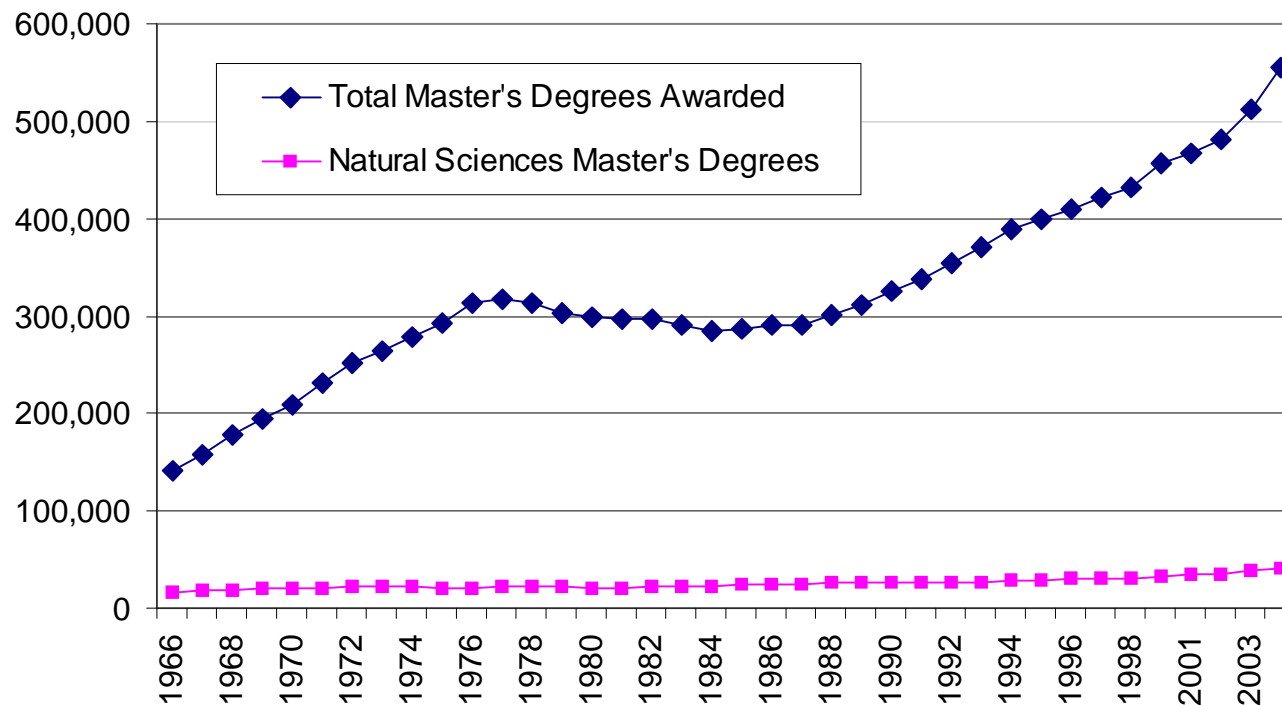


Source: CPST, data derived from National Science Foundation, WebCASPAR Database



# Less than 10% of Master's Degrees are in the Natural Sciences

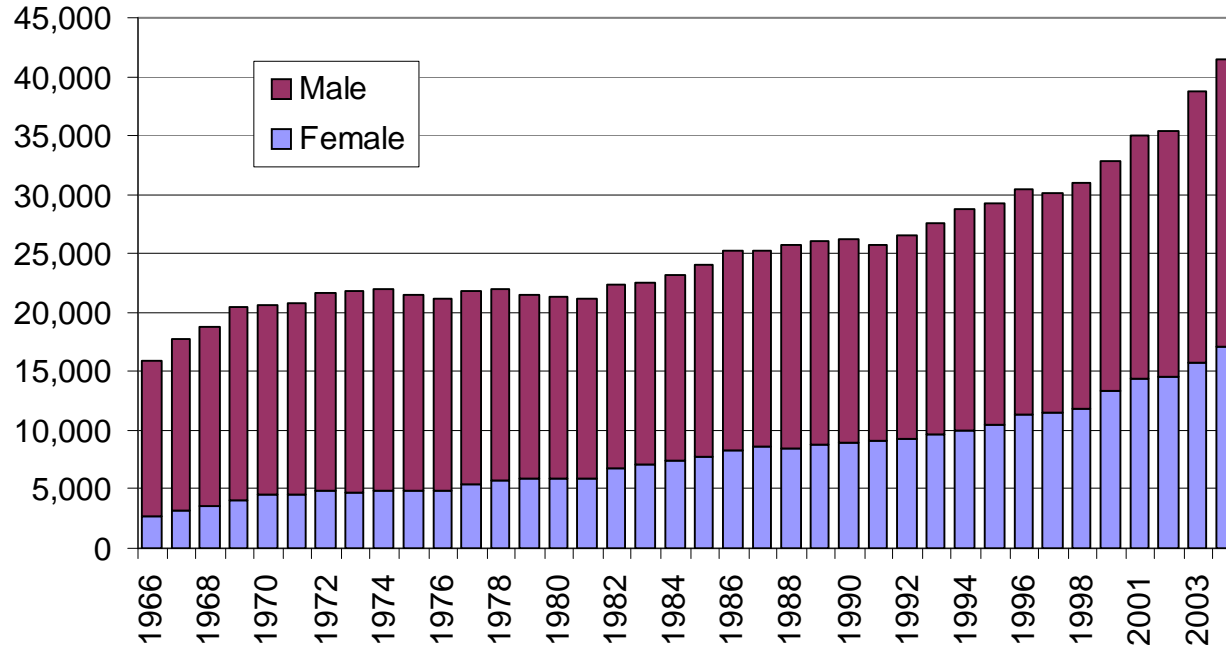
Master's Degrees Awarded, 1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Women earned 41% of N.S. Master's Degrees in 2004

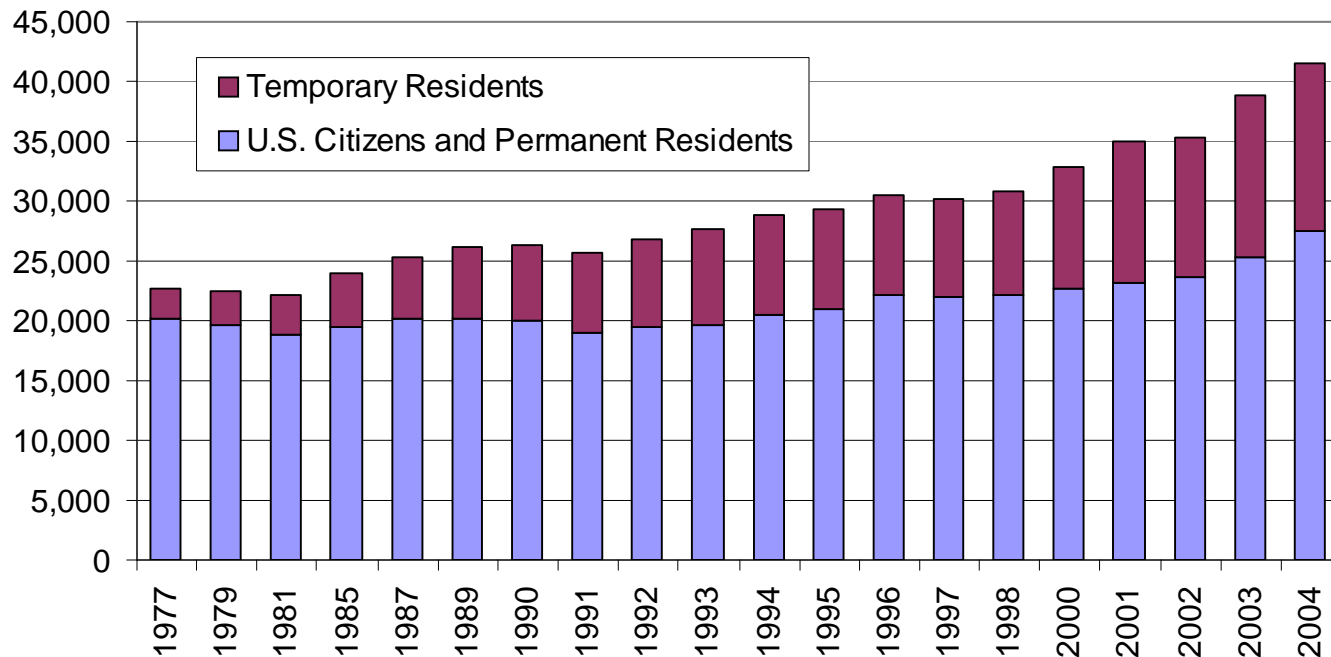
Master's Degrees by Sex, 1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Increase in N.S. Master's Degrees to Temporary Residents

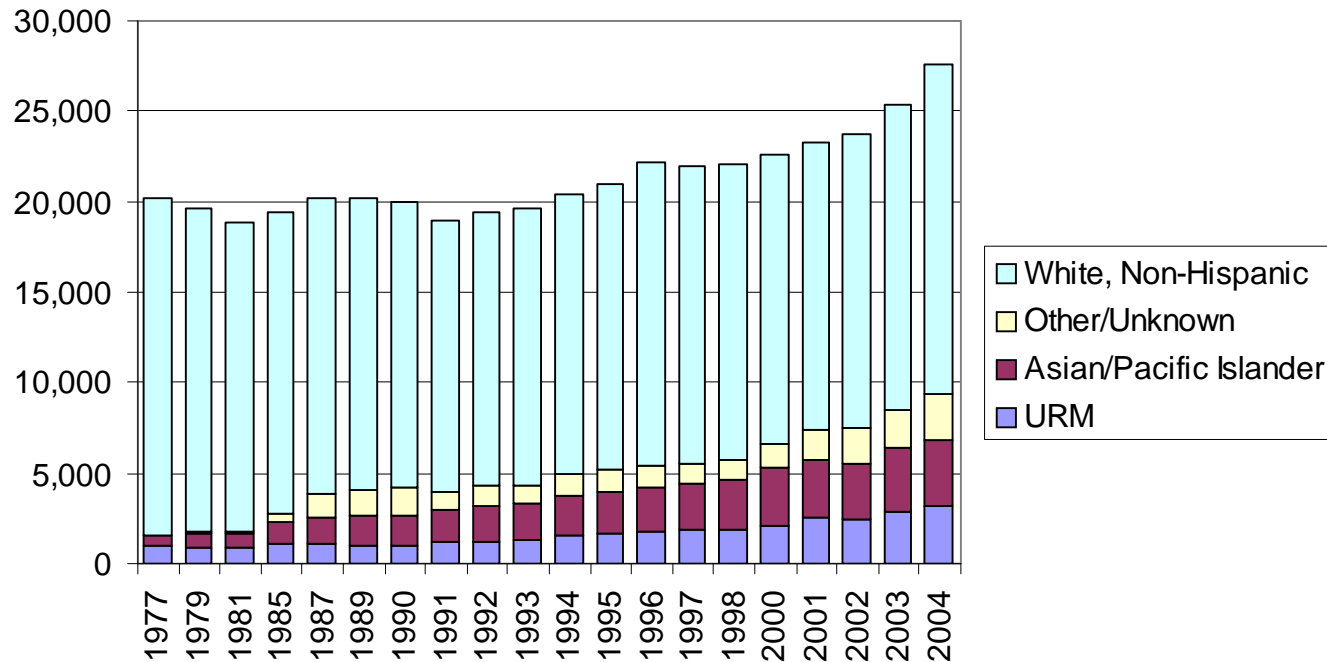
**Natural Sciences Master's Degrees by Citizenship,  
1977 to 2004**



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Increasing Numbers of Minorities Earn Natural Sciences Master's

**N.S. Master's Degrees to U.S. Citizens & Permanent Residents by Race/Ethnicity, 1977 to 2004**



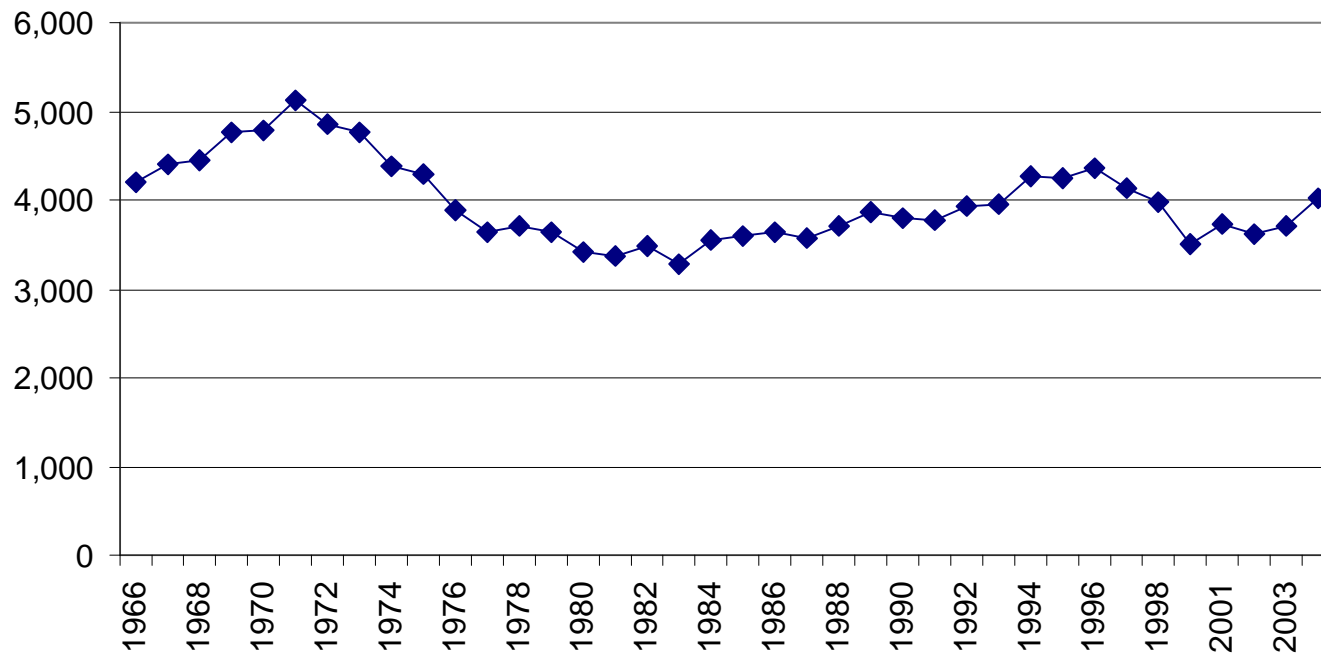
Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Changing Demographics in Natural Sciences Master's Recipients

	<u>1977</u>	<u>2004</u>
<b>White Male</b>	<b>62%</b>	<b>25%</b>
<b>White Female</b>	<b>20%</b>	<b>18%</b>
<b>Underrepresented Minority Male</b>	<b>3%</b>	<b>4%</b>
<b>Underrepresented Minority Female</b>	<b>2%</b>	<b>4%</b>
<b>Asian/Pacific Islander Male</b>	<b>2%</b>	<b>5%</b>
<b>Asian/Pacific Islander Female</b>	<b>1%</b>	<b>4%</b>
<b>Temporary Resident Male</b>	<b>9%</b>	<b>21%</b>
<b>Temporary Resident Female</b>	<b>2%</b>	<b>12%</b>

# Fewer Physical Sciences Master's were Awarded in 2004 than in 1966

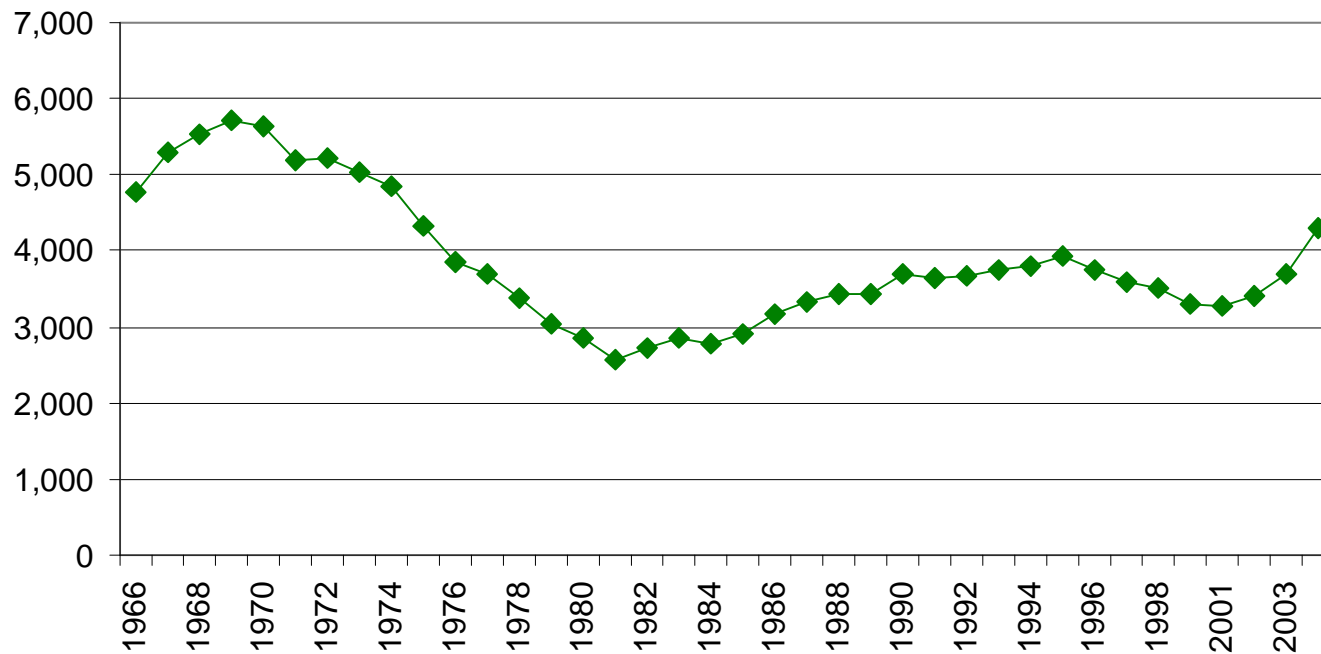
Master's Degrees in the Physical Sciences,  
1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# The Story is Much the Same in Mathematics and Statistics

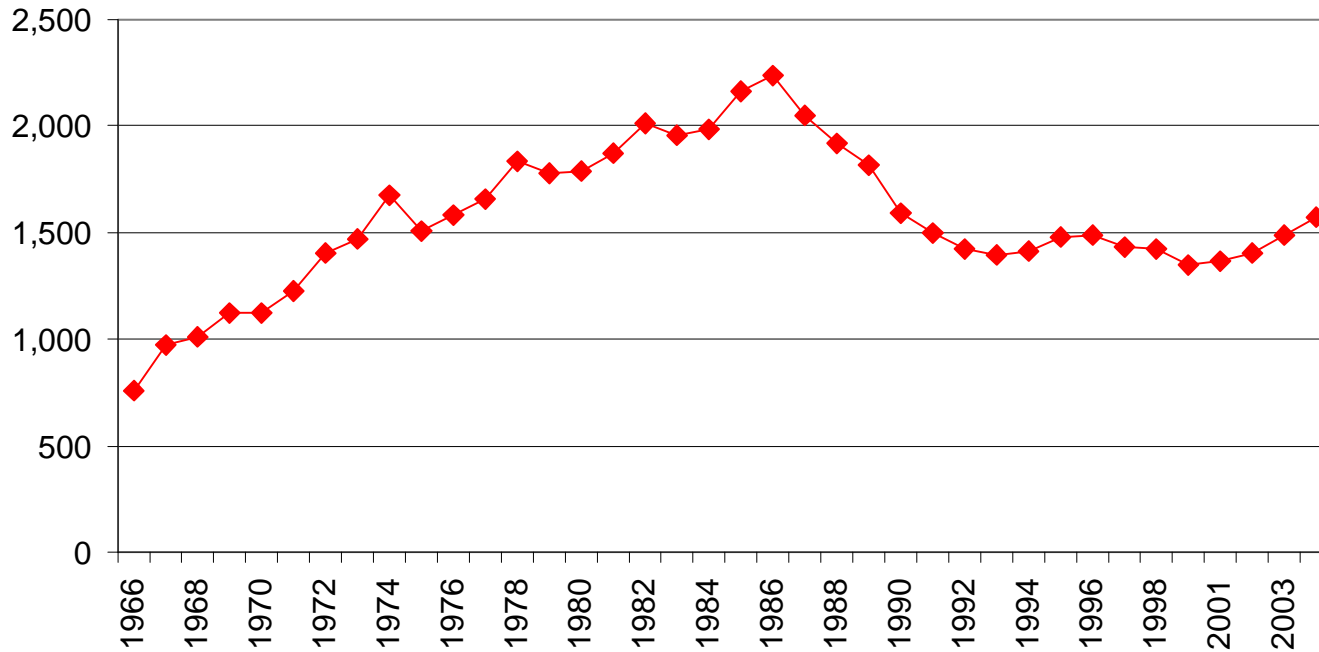
**Master's Degrees in the Mathematics and Statistics,  
1966 to 2004**



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# EAO Sciences Degree Production Doubled Between 1966 and 2004

Master's Degrees in the Earth, Atmospheric and Ocean Sciences, 1966 to 2004

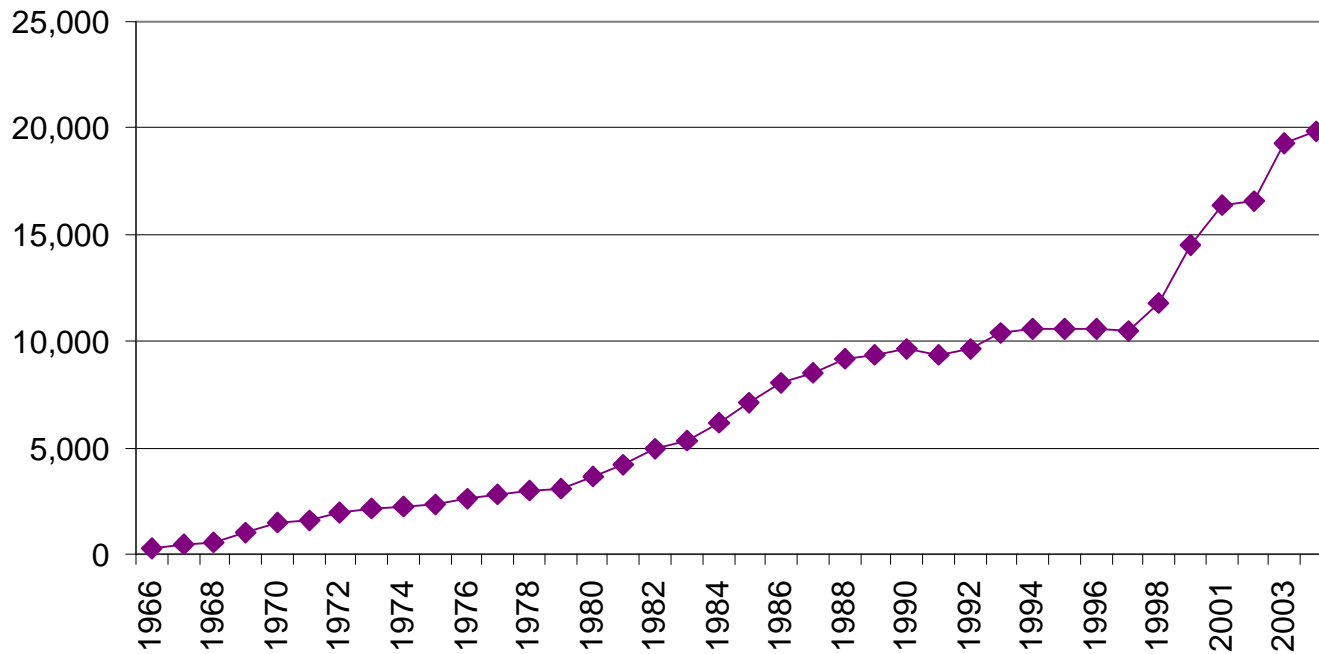


Source: CPST, data derived from National Science Foundation, WebCASPAR Database



# Radical Change in Computer Science Master's Degree Production

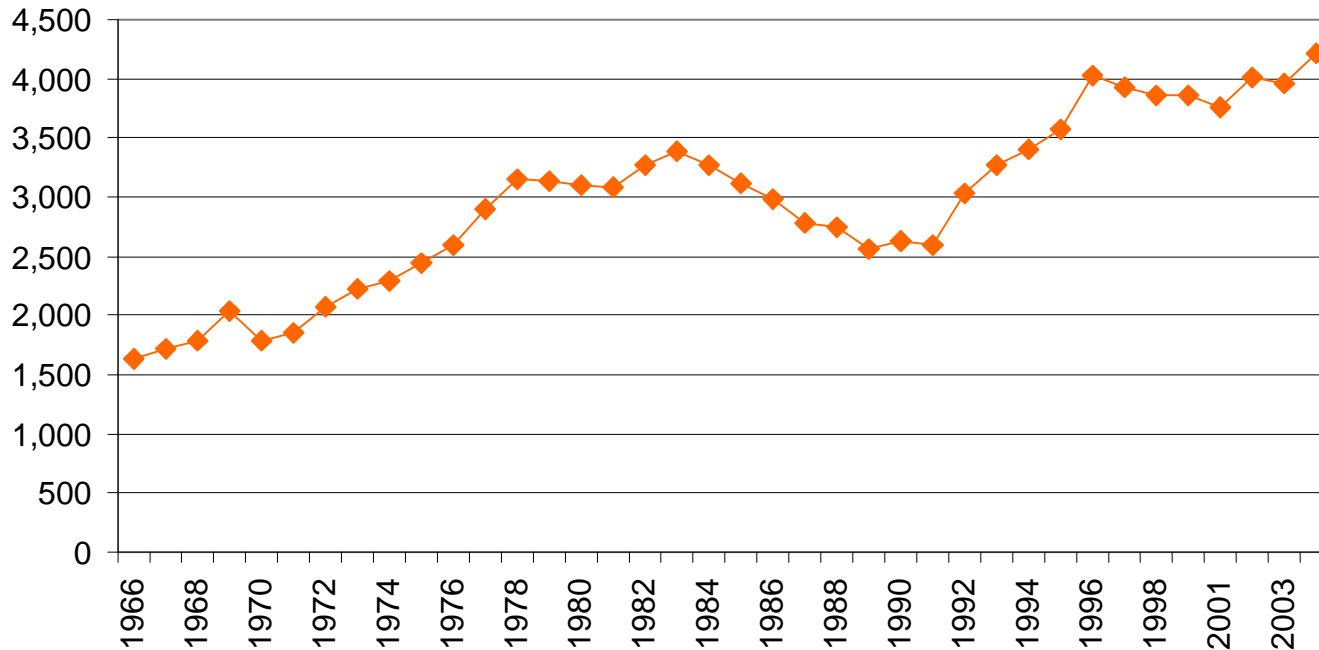
Master's Degrees in the Computer Sciences,  
1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Agricultural Sciences Master's Degree Production Nearly Tripled

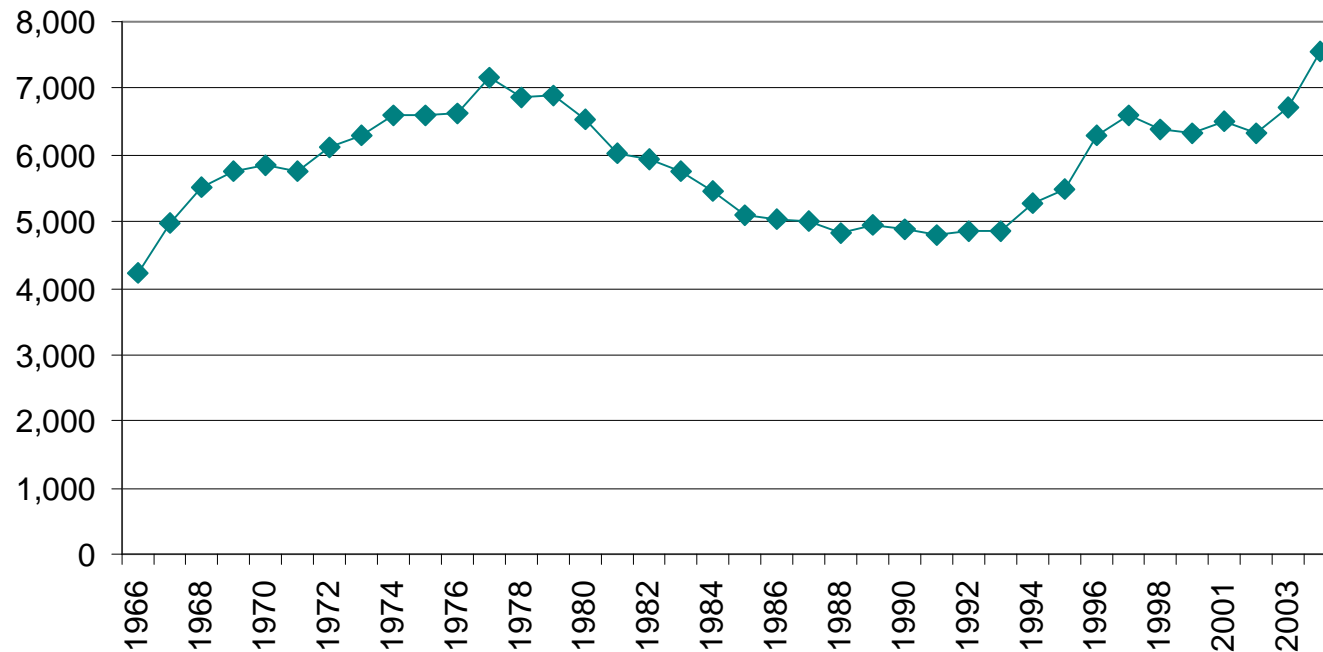
Master's Degrees in the Agricultural Sciences,  
1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# The Biological Sciences

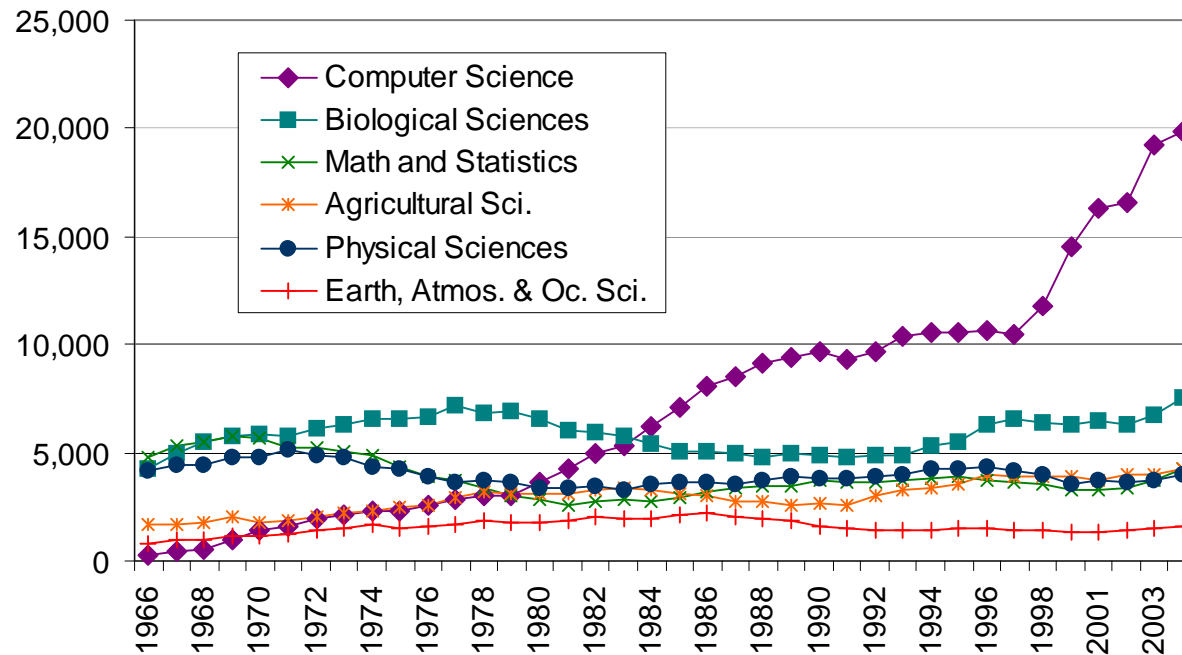
**Master's Degrees in the Biological Sciences,  
1966 to 2004**



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Computer Science is the Largest Field within the Natural Sciences

Master's Degrees in the Natural Sciences  
by Field, 1966 to 2004



Source: CPST, data derived from National Science Foundation, WebCASPAR Database

# Science Master's Clearinghouse, [www.sciencemasters.org](http://www.sciencemasters.org)

The screenshot shows the homepage of the Science Master's Education Clearinghouse. At the top, the title "Science Master's Education" is displayed in a large, white, serif font against a blue background. Below it, the subtitle "A Clearinghouse for Master's Education in the Sciences, Mathematics & Engineering" is written in a smaller, blue, sans-serif font. Underneath the subtitle, it says "Provided By The Commission on Professionals in Science and Technology (CPST)".

The navigation bar includes links for "CPST Home", "Contact Us", "Search", and "Site Map". On the left side, there is a vertical menu with buttons for "Home", "Latest News", "Data/Statistics", "Search For Programs", "Add New Program", "Articles", "Surveys", "FAQ", and "Feedback".

The main content area is divided into several sections:

- Welcome to the Science Master's Education Website:** A text block explaining that the clearinghouse is provided by the Commission on Professionals in Science and Technology (CPST). It contains a database of over 2,000 programs from over 300 institutions, along with articles, tables, and data pertaining to science master's education and the master's workforce. It mentions that the clearinghouse was developed with funding provided by the Alfred P. Sloan Foundation.
- What's New:** A section titled "New Science Master's Education Book" from the Council of Graduate Schools (CGS). It describes a broad and comprehensive guide to best practices, activities, and processes required to create a professional master's program. The book provides essential advice for graduate deans, universities, and faculty on the development of collaborative degrees, as well as interaction with business.
- Featured Master's Program:** A section titled "Health Care Informatics" at Middle Tennessee State University. It includes a photograph of a modern university building and provides the address: Murfreesboro, Tennessee 37132. There are buttons for "WEB" and "MAP". The categories listed are "Medical-Related Field" and "Bioinformatics".

At the bottom left of the screenshot, there is a "Select Graph To Display" dropdown menu set to "Engineering". Below it, a bar chart titled "Selected Engineering Master's Degrees 2004" is partially visible, showing a value of 10,000.

# Science Master's Clearinghouse Highlights

- § Recent articles on STEM master's education
- § 180+ data tables and charts on STEM master's education and the STEM workforce
- § Over 2,050 STEM master's programs – searchable by discipline, state, university, keyword
- § 156 “professional” programs – stand alone, final project or thesis, internship, business fundamentals, prepare students to enter business/industry

# Sample Program Listing

## Science Master's Education

A Clearinghouse for Master's Education in the Sciences, Mathematics & Engineering  
Provided By The Commission on Professionals in Science and Technology (CPST)

[CPST Home](#) [Contact Us](#) [Search](#) [Site Map](#)

- Home
- Latest News
- Data/Statistics
- Search For Programs
- Add New Program
- Articles
- Surveys
- FAQ
- Feedback

### Food Safety and Toxicology

**Michigan State University** [WEB](#)  
East Lansing, Michigan 48824 [MAP](#)

**Category:**  
Agricultural Science

**Contact:** [Pattie McNiel](#) [✉](#)  
Distance Learning Program  
Coordinator  
National Food Safety and Toxicology  
Center  
1651 Food Safety Bldg.  
Phone: 517-432-3100

**Master's Program Web Site:** [Food Safety and Toxicology](#) [WEB](#)

#### Program Description

Welcome to the online Professional Master of Science in Food Safety Program. It is a pleasure to announce the initiation of a program that has been in steady development for more than two years with input from active food chain participants representing production through public health and including local, state, national and international aspects of food safety.

[More Info On The Web](#)



4,221 agricultural sciences master's degrees were awarded in 2004, an 18% increase from 1995



#### Additional Information

- ▶ This program is a Sloan Funded Professional Master's program [PSM More](#)
- ▶ This program provides online courses [? More](#)
- ▶ This program accommodates working professionals [? More](#)
- ▶ View all programs offered by Michigan State University [GO](#)
- ▶ View programs offered in Michigan [GO](#)
- ▶ View all programs in the category Agricultural Science [GO](#)
- ▶ View Sloan Foundation funded programs [GO](#)

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