Overview of the

Computer Science Department

University of Maryland Baltimore County

August 1994

Computer Science Department
University of Maryland Baltimore County

- Department history
- CS Department faculty
- Research programs
- Educational programs
- Facilities
- For more information...

Computer Science Department History

1982 Computer Science undergraduate major in Mathematics awards first degrees.

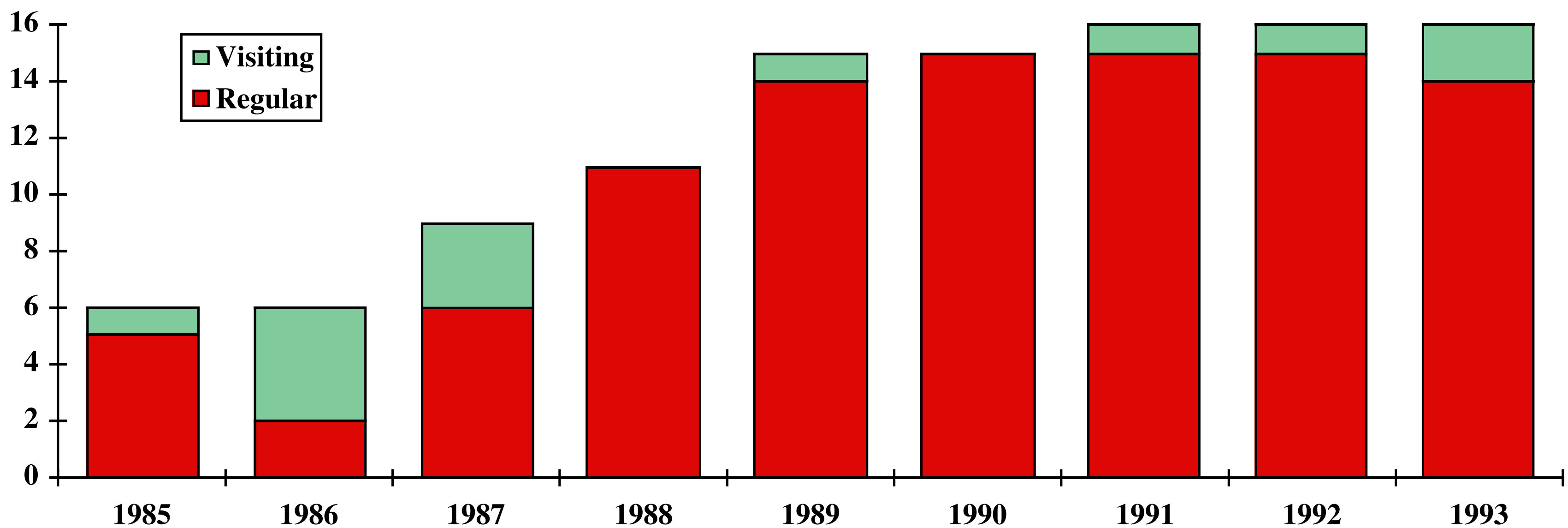
1985 Computer Science Department founded with two full-time and four visiting faculty.

1986 First PhD in Computer Science awarded.

1990 UMBC becomes largest producer of undergraduate Computer Science majors in Maryland.

1992 New *Engineering and Computer Science* building opened.

Computer Science Faculty



	1985	1986	1987	1988	1989	1990	1991	1992	1993
Regular	5	2	6	11	14	15	15	15	14
Visiting	1	4	3	0	1	0	1	1	2

Full-time Faculty

Professor	**PhD**	**Year**	**Rank**
Chang	Cornell	91	Assistant
Ebert	Ohio	91	Assistant
Finin	Illinois	80	Full
Kumar	Yale	81	Associate (Visiting)
Liu	Georgia Tech	92	Assistant (Visiting)
Lomonaco	Princeton	64	Full
Mayfield	Berkeley	89	Assistant
Miller	Berkeley	94	Assistant
Motteler	Maryland	87	Associate
Nicholas	Ohio	88	Associate
Peng	Maryland	85	Assistant
Sasaki	Cornell	86	Assistant
Sherman	MIT	87	Assistant
Sidhu	SUNY Stoney Brook	73	Full
Stephens	Maryland	69	Associate
Turner	Switzerland	93	Assistant
Yesha, Yaacov	Weizmann	79	Full
Yesha, Yelena	Ohio	89	Associate

Adjunct Faculty

- **~ 25 adjunct faculty**
  - drawn from local industry and Government agencies
  - teach about 1/2 of the undergraduate sections
  - Provide a unique practical perspective
- **Examples**

Professor	Degree	Organization
Carlson	Phd, Purdue	Supercomputing Research Center
Edelman	MS, UCLA	Social Security Agency
Katz	MS, Florida	NSA
Lewis	MS, Maryland	NASA
Lyle	Phd, Maryland	NIST
Pleszkoch	Phd, Maryland	IBM
Scott	Phd, Nova	UMBC Academic Computing
Shapiro	MS, Antioch	Westinghouse
Vick	MS, Johns Hopkins	Fanny Mae

Research Programs

- Intelligent Information Systems
- High performance computing systems
- Computer Graphics
- Theoretical Computer Science

Research Programs
Intelligent Information Systems

- **Intelligent text processing**
  - Mayfield, Finin, Nicholas
- **Database and knowledge-based systems**
  - Yelena Yesha, Mayfield, Finin, Peng
- **Neural networks and machine learning**
  - Peng, Motteler
- **Hypertext and Multimedia**
  - Nicholas, Mayfield, Finin
- **Applications**
  - Digital libraries
  - Electronic commerce

Research Programs
High Performance Computing Systems

- **Networking and telecommunications protocols**
  - Sidhu, Motteler, Liu, Kumar
- **Gigabit applications**
  - Sidhu, Miller, Motteler
- **Mass Storage Systems**
  - Miller
- **Algorithms for parallel/distributed systems**
  - Yaacov Yesha, Stephens, Sidhu, Motteler
- **Experimental systems**
  - Sidhu, Motteler, Miller
- **Scientific applications**
  - Motteler, Stephens

Research Programs
Computer Graphics

- **Rendering**
  - Ebert
- **Animation**
  - Ebert, Turner
- **Visualization and Virtual Reality**
  - Ebert, Turner, Stephens, Motteler
- **Imaging Research Center**
  - Collaborations with Visual Arts Department
  - Animation, video, audio, graphic design
  - MFA program in digital image processing

Research Programs
Theoretical Computer Science

- **Cryptography, coding theory and security**
  - Sherman, Lomonaco, Stephens
- **Analysis of algorithms**
  - Chang, Yaacov Yesha, Sherman
- **Computability & complexity**
  - Chang, Yaacov Yesha
- **Programming language semantics**
  - Sasaki, Turner

Research Centers

- **Maryland Center for Telecommunications Research**
  - Deepinder Sidhu - Director
  - Collaboration with other departments, schools and industry
  - Medical image processing applications
  - Gigabit networking testbed (IBM Orbit ring based)
- **Maryland Center for Advanced Information Technology**
  - Intelligent information systems
  - Support from NIST, NASA, NSA, ARPA, AFOSR
- **Imaging Research Center**
  - computer graphics
  - visualization
  - virtual reality

Sponsored Research 1993-94 Awards

94-94	Sasaki	NSF	$80K	Programming languages
94	Mayfield	NSA	$50K	Intelligent agents
94-97	Nicholas/Mayfield	NSA	$300K	Intelligent Info. Systems
94-95	Finin/Yesha	NIST	$80K	Dist. Info. Systems
94-97	Ebert	NSF	$90K	Scientific Visualization
94	Sasaki	Navy	$20K	Real-time programming
93	Peng	IBM	$20K	Expert Systems
93	Motteler	NASA	$21K	Neural Networks
93	Motteler	NOAA	$20K	Neural Networks
93	Yelena Yesha	NIST	$20K	Databases
93	Yelena Yesha	NASA	$60K	Databases

Sponsored Research 1993-94 Awards

93-96	Peng	NSF	$100K	Artificial Intelligence
93-96	Finin	ARPA	$170K	Artificial Intelligence
93	Sherman/Chang	NSF	$4K	Theoretical Computer Science
93	Yaacov Yesha	NSF	$5K	Parallel Algorithms
93-94	Finin	AFOSR	$63K	Artificial Intelligence
93-96	Chang	NSF	$48K	Computational Complexity
93	Sidhu	NSA	$4K	Telecommunications
93	Sidhu	IBM	$10K	Telecommunications

Sponsored Research
Other Recent Awards

92	Nicholas	NSA	$178K	Training
92-95	Finin	AFOSR	$112K	Artificial Intelligence
92	Sasaki	NSF	$5K	Programming Languages
91	Mayfield/Nicholas	MIPS	$37K	Artificial Intelligence
91-94	Yaacov Yesha	NSF	$90K	Parallel Algorithms
90-93	Sidhu	ARPA	$355K	Telecommunications
90	Mayfield/Nicholas	MIPS	$53K	Artificial Intelligence
90	S. Peng	AFOSR	$40K	Parallel Algorithms
90-93	Sasaki	NSF	$44K	Programming Languages
89	Sidhu	NSA	$88K	Telecommunications

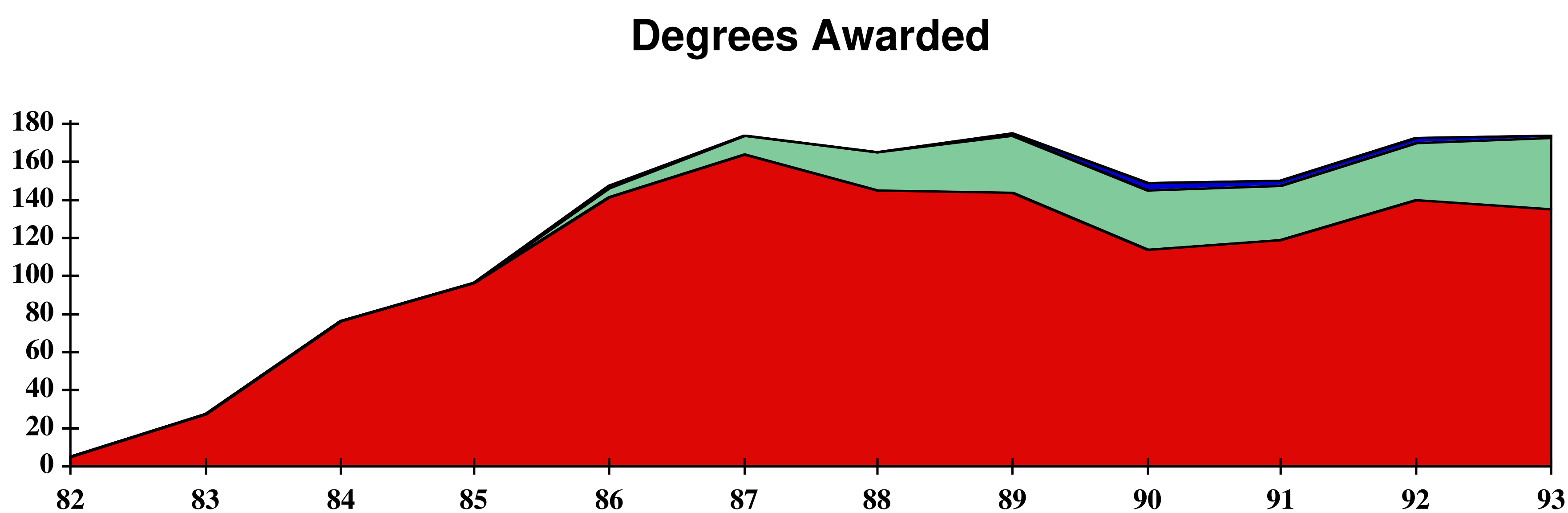
Recent Conferences and Workshops Organized

Conference	Date	Location	Attendees	Topic
Prin. of Document Proc.	95	Baltimore	75	Document Representation and Processing
Digital Library Issues	94	Newark, NJ	100	Information Infrastructure
CIKM-94	94	Gaithersburg, MD	250	Databases and knowledge bases
High Speed Networks ‘94	94	Baltimore	175	Telecommunication and Networks
Digital Libraries for K12	93	Washington, DC	75	Information Infrastructure
ATM - Real Choices	93	Baltimore	125	Telecommunications and Networks
Smart Hypertext	93	Washington, DC	25	Hypertext Systems
CIKM-93	93	Washington, DC	200	Databases and knowledge bases
SIGCOMM '93	93	San Francisco	400	Telecommunication and Networks
High Speed Networks ‘93	93	Baltimore	170	Telecommunication and Networks
Maryland Theory Day	93	Baltimore	50	Algorithms and Theory
CIKM-92	92	Baltimore	225	Databases and knowledge bases
High Speed Networks '92	92	Washington, DC	160	Telecommunication and Networks
SIGCOMM '92	92	Baltimore	300	Telecommunication and Networks
CAIA-92	92	Monterey, CA	300	Artificial Intelligence for Applications
Nat. Lang. Text Retrieval	91	Los Angeles	50	Artificial Intelligence & Info. Retrieval
High Speed Networks	91	Washington, DC	150	Telecommunication and Networks
CAIA-91	91	Miami	350	Artificial Intelligence for Applications
High Speed Networks	90	Washington, DC	140	Telecommunication and Networks
AAAI KB Management	90	Boston	50	Artificial Intelligence and Databases

Educational Programs

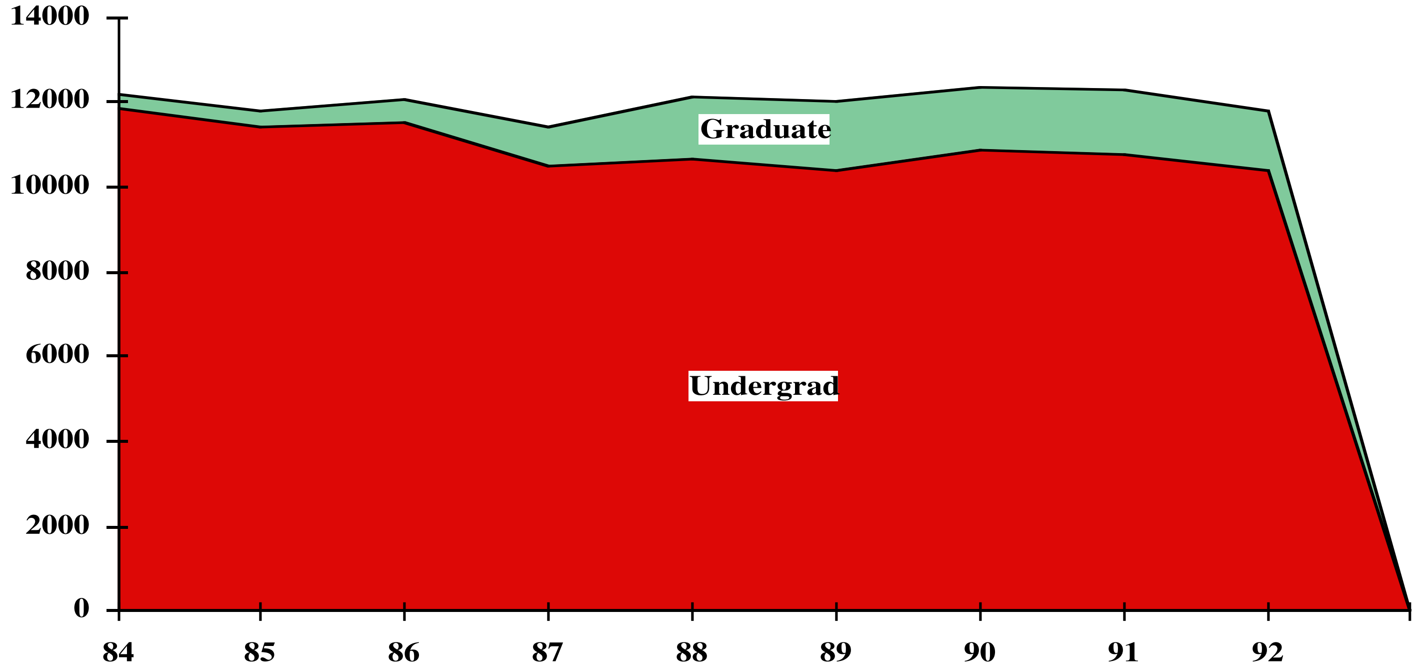
- **BS Program**
  - Technical and rigorous combining theory and practice
  - ~ 625 majors -- largest in Maryland
  - Rigorous minor in Computer Science
- **Five year BS/MS program**
- **MS Program**
  - 84 students
  - 67% full-time, 55% US Citizens
- **PhD Program**
  - 57 students
  - 55% full time, 65% US Citizens
  - 20 PhD's awarded in the first 8 years

Educational Programs
Computer Science Degrees Awarded



	82	83	84	85	86	87	88	89	90	91	92	93
BS	5	27	76	96	141	163	144	143	113	118	139	135
MS					5	10	20	30	31	29	30	37
PhD					1	0	1	1	4	3	3	1

Educational Programs
Credit Hour Production



	84	85	86	87	88	89	90	91	92
Undergrad	11879	11442	11499	10495	10662	10370	10867	10776	10360
Graduate	291	374	582	895	1467	1620	1469	1533	1424

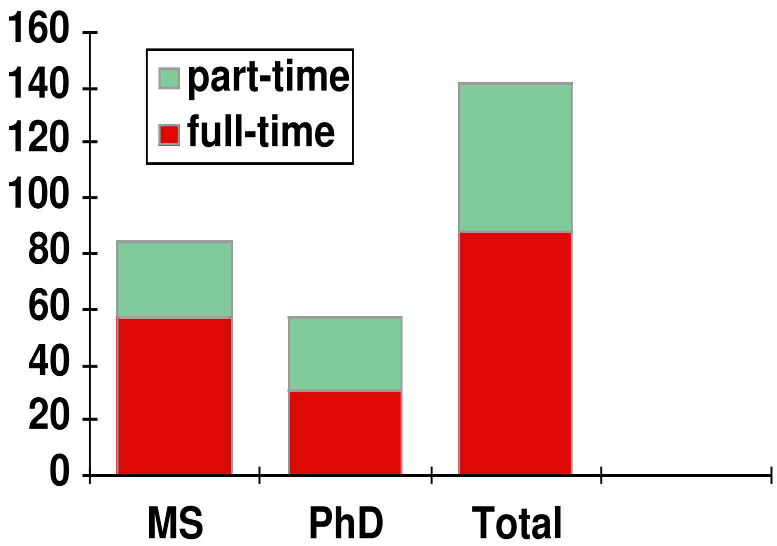
Educational Programs
PhD's Awarded and First Positions

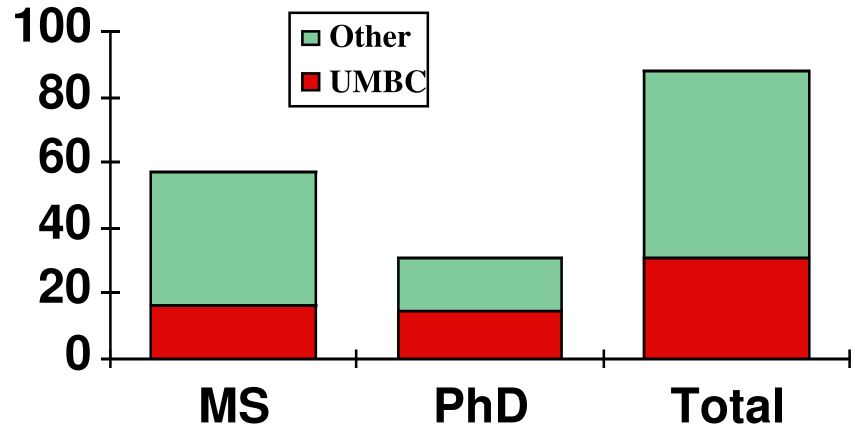
Sanjeev Ahuja	85-86	U. of Maryland Baltimore County
Tom Hudson	87-88	NSA
Moon-Seog Jun	88-89	Morgan State University
Gur Adhar	89-90	U. of North Carolina, Wilmington
Keith Gallagher	89-90	Loyola College
Roberta Sabin	89-90	Loyola College
Yuan-Bao Shieh	89-90	IBM Research Triangle
John Alexander	90-91	Towson State University
Woo Young Soh	90-91	Industry (Korea)
Anthony Chung	91-92	Depaul University
Linda Rosenberg	91-92	Goucher College
Ralph Semmel	91-92	Johns Hopkins APL
Win-Tsung Lo	91-92	Honk Kong Inst. of Science and Technology
Shukri Abdallah	92-93	Seaton Hill College
Raj Nair	93-94	Netrix

Educational Programs
PhD's in 93-94

Student	Year	Area	Position
Tom Anastasio	**Spring 94**	**Supercomputing**	**UMBC**
Claudia Pearse	**Spring 94**	**Information Retrieval**	**NSA**
David Flater	**Spring 94**	**Distributed Info. Systems**	**NIST**
David Wagoner	**Spring 94**	**Algorithms**	**NSA**
Kostos Kalpakis	**Summer 94**	**Algorithms**	**UMBC**
Raghu Vallurpali	*Fall 94*	*Networking*	*Startup*
Rita McCardell Doer	*Sept 94*	*Natural Language Processing*	*NSA*

Graduate Program
Graduate Population by Time and Support

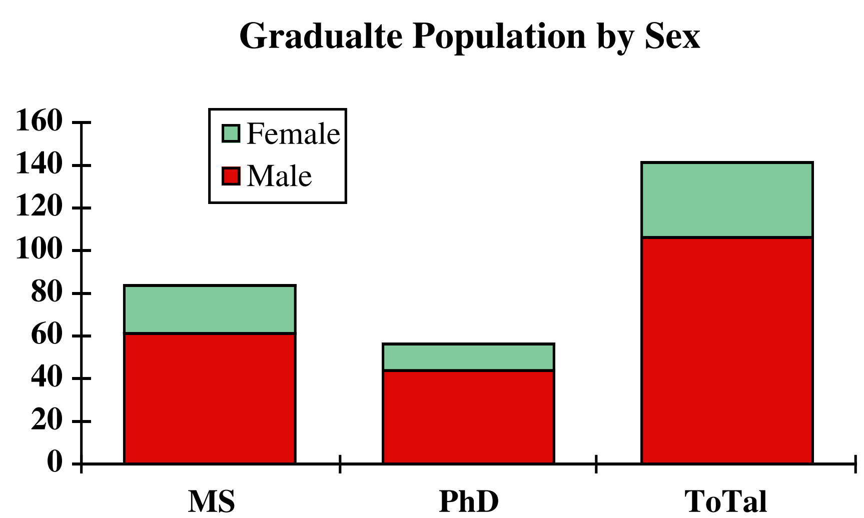




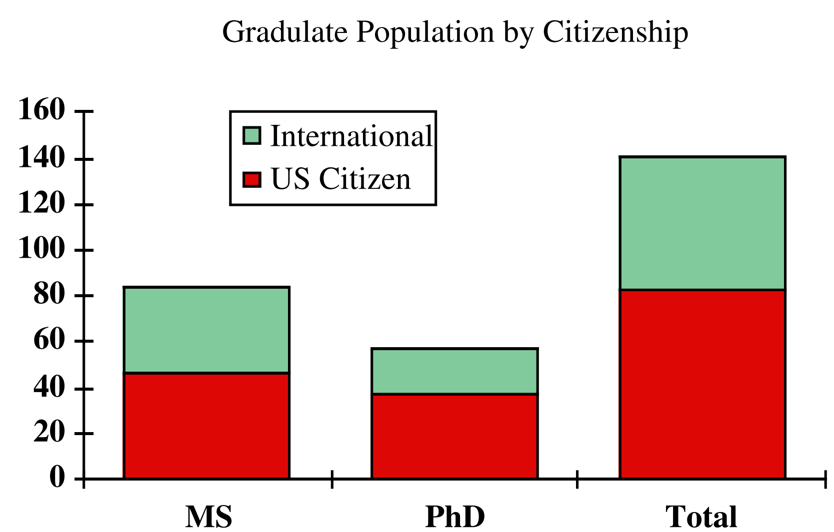
	MS	PhD	Total
full-time	57	31	88
part-time	27	26	53

	MS	PhD	Total
UMBC	16	15	31
Other	41	16	57

Graduate Program
Graduate Population by Sex and Citizenship



	MS	PhD	ToTal
Male	62	44	106
Female	22	13	35



	MS	PhD	Total
US Citizen	46	37	83
International	38	20	58

Graduate Program
MS Program

- **33 credits**
  - Ten regular courses
  - 692 - Communication skills (1 credit)
  - 693 - Research paper (2 credits)
- **10 courses**
  - One theory course
  - Three core courses chosen from 3 of these areas:
    - Systems
    - Languages and Software
    - Databases and AI
    - Numerical Computation
  - Six electives with some area constraints

Graduate Program
PhD Program

- **Nine courses + 692**
  - 692 - Communication skills (1 credit)
  - three courses in each of three of the five areas
    - Theory
    - Systems
    - Languages and Software
    - Databases and AI
    - Numerical Computations
- **Written comprehensive exams**
  - two attempts to take
  - must take and pass three of the five areas
  - each area identifies two core courses
- **Dissertation**

Graduate Program
Typical Admitted Graduate Student

- **BS in CS or related area (e.g., Math, EE)**
- **Good grades (> 3.0)**
- **From a variety of undergraduate schools**
- **Strong GRE scores**
  - > 80th percentile quantitative
  - 50th - 80th percentile analytical
  - verbal scores vary
- **About 1/3 accepted**
- **About 1/3 matriculate**
- **About 30 new students per year**

Graduate Program
Graduate Student Support

- **Teaching Assistantships**
- **Research Assistantships**
- **University Fellowships**
- **Teaching for UMBC Continuing Education**
  - courses for NSA (92-93)
  - course development for CSC (93-94)
  - special short-term technology courses
- **Part-time employment with Government agencies**
  - e.g., NIST, NASA, ...

Research and Educational Facilities

New Engineering and Computer Science Building

- ❍ Opened in November 1992

General Campus Computing Environment

- ❍ ~225 Unix Workstations, most color SGIs & SPARC10s
- ❍ VMS and Unix servers
- ❍ 16 processor SGI Challenge, Cray Y-EL
- ❍ PC labs, Mac labs, T1 Internet connection

Imaging Research Center

- ❍ High-end SGI graphics machines (Onyx Reality Engine)
- ❍ Video systems (VHS, Beta)
- ❍ Scanners, film recorders, etc.
- ❍ Software: Wavefront, Alias (20 licenses each)

Departmental Research Equipment

Unix Servers

- SGI Crimson R4400
- SPARC10, SPARC2

Color Unix workstations

- ~ 30 SGI Indigos, Indys, Indigo2 Extreme
- 11 SPARC 10s
- 5 DECstations

X-terminals

- ~ 20 SUN3s as X-terminals

Specialized equipment

- Transputer laboratory, PDP-11, access to Cray, Maspar, CM-5 and other specialized machines
- Gigabit LAN with IBM R6000's

Macs, PCs, etc.

For More Information

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Undergrad. Director: Brooke Stephens (stephens@cs.umbc.edu)

Information Servers

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web: http://www.cs.umbc.edu/

ftp: ftp.cs.umbc.edu