CATCH THEM YOUNG
CREATING A VIBRANT INTERDISCIPLINARY RESEARCH COMMUNITY
WHAT OTHERS SAY

Georgia State ranked second among national universities cited for “an unusually strong commitment to undergraduate teaching” by U.S. News & World Report.

*U.S. News & World Report Best Undergraduate Teaching: National Universities*

Spring 2018

U.S. News & World Report ranked Georgia State second in the nation among Most Innovative colleges and universities. The university was followed by Massachusetts Institute of Technology, Georgia Institute of Technology and Stanford University atop the list.

*U.S. News & World Report Most Innovative Schools: National Universities*

Spring 2018
UNIVERSITY HIGHLIGHTS

- Annual research awards of **over $122 million** in 2016
- Student body of more than 53,000 with the recent merger with GA Perimeter college
- 250 undergraduate and graduate degree programs in more than 100 fields of study
- Nationally acclaimed for a **first-of-its kind predictive analytics model** called the “Graduation and Progression Success (GPS) advising program” (GPS)
  - High graduation rates and lower time to graduation for minority and low-income students
- A remarkably diverse student body (**40% of the student population is African American and 8.8% is Hispanic/Latino**)  
- Ranked **first in the nation** among non-profit institutions in awarding bachelor’s degrees to African American and disadvantaged students.
- More than 180,000 alumni across the state and around the world.
- Growing **global connections**, with five faculty task forces seeking to collaborate with universities in emerging markets in China, Korea, Turkey, Brazil and South Africa.
MOLECULAR BASIS OF DISEASE PROGRAM (MBD)

Bridging multiple natural and computational science departments under a common vision to create a vibrant interdisciplinary community on the Georgia State University campus.
FOUR OVERLAPPING AREAS OF RESEARCH:

Cell and Molecular Biology and Physiology
Neurobiology and Behavior
Molecular Genetics and Biochemistry
Applied Environmental Microbiology
RESOURCES:

Core Facilities

Genomics core (e.g., next-generation sequencing)

Protein core (e.g., mass-spectrophotometry)

Cellular core (e.g., confocal & electron microscopy)

Animal Facilities

Millions in NIH, ACS, DoD, NSF, AHA, private funding
MANY OVERLAPPING AREAS OF RESEARCH:

Cognitive and Developmental Neuroscience
Computational and Dynamical Systems
Neural Circuits and Neurogenomics
Neural Basis of Behavior
Neuroendocrinology and Neuroimmunology
Neurophilosophy and Neuorethics
RESOURCES:

Neuroscience Core Facility

*Biological assays (RIA, ELISA, EIA, Protein Assays, etc.)*

*Histology (IHC, ISH, autoradiography, Tissue Sectioning)*

*Experimental design and analysis*

Animal Facilities

Shared Facilities with Biology
FIVE AREAS OF RESEARCH:

Analytical Chemistry

Biological/ Biochemistry

Biophysical/Computational Chemistry

Chemical Education

Organic/Medicinal Chemistry
RESOURCES:

NMR spectroscopy

Computation facilities
(e.g., 3.9 TeraFlop, 576 processor IBM p5 575 super computer)

Novel, recently patented, centrifugal fermentation facility

Shared core facilities with Biology

Also generously funded by NSF, NIH, DoD
CHARA is the world's highest angular resolution telescope at near-infrared wavelengths, operated remotely by GSU (facility in Los Angeles).
<table>
<thead>
<tr>
<th>PHYSICS AREAS OF RESEARCH:</th>
<th>ASTRONOMY AREAS OF RESEARCH:</th>
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<tbody>
<tr>
<td>Atomic physics</td>
<td>Extragalactic astronomy</td>
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<td>Bio/neuro physics</td>
<td>Stellar astronomy</td>
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<td>Condensed matter physics</td>
<td>Solar physics</td>
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<td>Nuclear physics</td>
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RESOURCES:

Magnetic Resonance Imaging lab
Semiconductor Optoelectronics lab
Positron annihilation lifetime spectrometer (measures particle lifetimes in fractions of nanoseconds)
Helium refrigeration system (perform experiments near absolute zero!)
Telescope facilities (e.g., CHARA array, urban life observatory)
FUN FACTS:
CS students recently visited by Apple Co-Founder Steve Wozniak
Students getting jobs at Google!
March 25th, will host “Big League” Hackathon
RESEARCH AREAS:
Artificial intelligence
Bioinformatics
Computer software systems
Databases
Graphics and human-computer interaction
Networks and parallel and distributed computing
RESOURCES:

XSEDE

a virtual system for accessing computing resources from leading supercomputing centers

CARINA supercomputer

(640 compute cores – 20 nodes each with 128 GB memory and 32 cores)
\[ \int T(x) \cdot \frac{\partial}{\partial \theta} f(x, \theta)dx = M \left( T(\xi) \cdot \frac{\partial}{\partial \theta} \ln u(\xi, \theta) \right) \]
SOME AREAS OF FACULTY RESEARCH:
- Biostatistics
- Biophysics
- Cognitive neuroscience
- Mathematical music theory
- Graph theory
- Commutative algebra
- Algebraic geometry
- Bayesian statistics
- Statistical genetics
RESOURCES:

Shared facilities with computer science
ONE-ON-ONE MENTORING
MATCHED WITH A LAB IN THEIR CHosen field
INTENSIVE STUDY

8 HOURS/DAY m-f 8 WEEKS
**BENEFITS**

**BENEFIT TO STUDENTS**
- Free to student
- Valuable learning opportunity
- First-hand lab experience
- University experience
- Work with a mentor

**BENEFIT TO MENTORS**
- Mentoring experience
- Fresh perspective

**BENEFIT TO MBD**
- Outreach objectives
- Showcases capabilities infrastructure
- Attracts future students
APPLICATION PROCESS

- Application Form
- 2 Letters of Recommendation – at least one from the student’s science or math teacher
- Official high school transcript
- Essays:
  - Tell us why you chose your top choice and what makes it exciting for you
  - Tell us why you are interested in science and why you believe you are a good candidate for this program
QUALIFICATIONS

3.5+ GPA

Georgia State University
Molecular Basis of Disease