PROGRAMS

the best

The School's academic programs are geared toward providing students with the best undergraduate and graduate instruction in the principles of chemical & biomolecular engineering. Classes generally are limited to 30-40 students, they are taught by tenure-track faculty members, and required undergraduate courses are offered two or three times per year. Although the focus is on development of technical capabilities, classes also help students enhance their communication, teamwork, and business skills.

The degree programs are designed to provide students with the flexibility required to succeed in an enormously varied set of career paths. Graduates have become corporate executives, plant engineers, professors, inventors, physicians, lawyers, researchers, bankers, money managers, consultants, financial officers, and sales engineers, and they have also succeeded in countless other professions. The School also offers several unique opportunities for specialized instruction, including international study in England and France.

QUICK FACTS ABOUT ChBE AT GT

• Undergraduate Enrollment Average	550
• Graduate Enrollment Average	200
• Number of Faculty	40
• Percentage of Female Students	40%
• Percentage of Minority Students	15%
• B.S. ChBE Average Starting Salary	$63,600
• M.S. ChBE Average Starting Salary	$70,000
• Ph.D. ChBE Average Starting Salary	$95,000

visit www.chbe.gatech.edu for all the details!

WANT MORE INFORMATION?

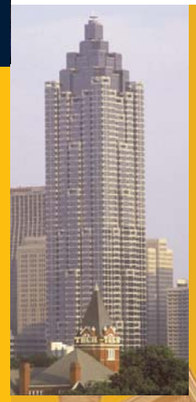
For an on-line application, general information, or to plan a campus tour, visit the Georgia Tech website at **www.gatech.edu**.

For updated and detailed information about the School of Chemical & Biomolecular Engineering, visit **www.chbe.gatech.edu**.

Email us at **ugrad.info@chbe.gatech.edu** or **grad.info@chbe.gatech.edu**

Or write to this address:

School of ChBE, Academic Office
Georgia Institute of Technology
311 Ferst Drive, N.W.
Atlanta, GA 30332-0100



come see for yourself
this is Georgia Tech

Georgia Institute of Technology

this is Chemical & Biomolecular Engineering

CHEMICAL & BIOMOLECULAR ENGINEERING

Georgia Tech's School of Chemical Engineering was established in 1901, making it one of the first chemical engineering programs in the country. With 550 undergraduates, 200 graduate students, and 35 faculty members, it is also one of the largest.

Chemical engineering is a broad and versatile discipline in which chemical engineers work on the development and application of processes that change materials either chemically or physically. This branch of engineering was originally based on the applications of chemistry, combined with the principles of physics and mathematics. Over time, and with increasing speed, it has evolved so that biological sciences ***and*** chemistry now fill the position once uniquely held by chemistry. This evolution led the School to add "biomolecular" to its official name in 2003. Revised undergraduate and graduate curricula reflect and support the diversification of the discipline.

Chemical engineers use their knowledge to manipulate molecular properties of matter, and in this process, they integrate product and process design, process control, and optimization. Economics and business principles also play an important role in chemical engineering, for it is the chemical engineer who develops economical and environmentally safe applications of discoveries made in the laboratory.

Chemical engineers play a key role in a multitude of industries, including microelectronics, oil and gas, chemical and petrochemical, pharmaceuticals, pulp and paper, food, and textiles. Some of the products they have generated are ubiquitous throughout modern society: recording media, communications hardware, detergents, medical devices, glasses, paper, fibers, fertilizers, medicines, paints, food additives, and countless other inventions that are often taken for granted.

state-of-the-art

CURRICULA

The undergraduate curriculum emphasizes in-depth education and training in the fundamental areas of chemical and biomolecular engineering. The program also allows students to tailor their education to individual interests and plans for their professional careers. Students are encouraged to use elective hours to earn a minor or certificate, or to focus on a specialized area.

The School offers graduate programs of advanced study and research leading to the M.S. and Ph.D. degrees, involving a combination of advanced-level courses and independent research. Course selection for both degrees is flexible, with individual plans of study developed for each student.

CO-OP PROGRAM

Many ChBE undergraduates participate in the Cooperative Education Program. The program involves alternating semesters between classroom instruction and employment, which provides hands-on professional experience prior to graduation. Tech's program is currently the largest completely optional co-op program in the U.S.

5-YEAR B.S./M.S. PROGRAM

The key components of this program are completion of a substantive undergraduate research project and careful advising and course planning to enable students to begin graduate coursework in the fourth year of study. Students with a GPA of 3.5 may be selected for this program and thus complete all requirements for both the B.S. and M.S. degrees in five years.

MULTIDISCIPLINARY PROGRAMS

The School participates in several multidisciplinary M.S. and Ph.D. degree programs, including bioengineering, paper science and engineering, and polymers. Students may also complete one or more multidisciplinary certificate programs. Certificates are available in more than 50 specialized areas.

FACILITIES

The School is located in the Ford Environmental Science and Technology (ES&T) Building, which was constructed in 2003. The $58 million facility boasts 287,000 square feet, making it the largest academic structure on any campus in the University System of Georgia.

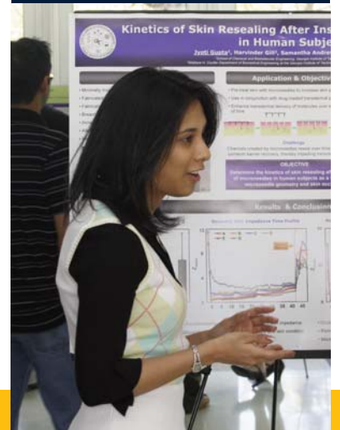
The Ford ES&T Building anchors the Institute's multidisciplinary Biotechnology Campus. The School of Chemical & Biomolecular Engineering shares the building with other environmentally-related academic units. Having multiple departments and schools operating in one location encourages interdisciplinary collaboration and research among students and faculty. Additionally, ChBE faculty members also operate laboratories in other academic buildings and in several research centers on campus.

RESEARCH OPPORTUNITIES

Cutting-edge research opportunities abound for both graduate and undergraduate Chemical & Biomolecular Engineering students. The School actively participates in Georgia Tech's undergraduate research program by offering a variety of opportunities for its students to work with professors and graduate students as they pursue new knowledge through inquiry, investigation, and discovery.

Research is the primary focus of the graduate experience. M.S. and Ph.D. students select a faculty member as their principal advisor to direct their research projects. Students also benefit from the numerous research and multidisciplinary centers on campus.

success



KEY RESEARCH AREAS

- **Biomedical Engineering** — use of engineering methods and technology to solve problems in medical research and clinical healthcare
- **Bioprocessing** — use of biological sources to solve engineering challenges via bioreactor design, biocatalysis, and bioseparations
- **Catalysis, Reaction Kinetics, & Engineering** — methods for designing catalysts, reactors, or reaction processes; kinetics and mechanism of reactive processes
- **Complex Fluids & Multiphase Flow** — investigating the structure, rheology, and flow of complex fluids such as colloidal suspensions, emulsions, hydrogels, and polymer solutions
- **Electrochemical Engineering** — developing fuel cells, batteries, solar cells, electrodeposition, and membranes for inorganic and bioseparations
- **Environmental Engineering & Sustainable Development** — achieving sustainable systems and processes that are not only environmentally beneficial, but also economically advantageous
- **Microelectronics** — materials and processes used in the fabrication of electronic/optical/microfluidic devices, integrated circuits, and microelectromechanical systems
- **Microfluidics** — systems that manipulate fluids in microchannels and microdevices ranging from nanometers to hundreds of microns in size
- **Nanotechnology** — development of nanoscale and nanostructured materials, and their organization into functional devices for technological applications
- **Polymeric Materials & High-Performance Fibers & Composites** — design, manipulation, and characterization of polymers and composites
- **Process Systems Engineering** — integrated design of products and processes spanning across length scales from molecular to enterprise-wide
- **Pulp & Paper Engineering** — application of chemical engineering principles to enhance products and processes in one of the largest industries based soley on renewable resources
- **Separation & Purification** — recovering species from mixtures and isolating them in desired forms, especially using supercritical fluids, crystallization, membranes, and extraction
- **Thermodynamics & Intermolecular Interactions** — phase equilibria and thermophysical properties in separations, chemical and bio-processing, particle formation, and environmental applications; solution chemistry at the molecular level

FACULTY

Pradeep Agrawal, heterogenous catalysis
Mark Allen, microsystems, MEMS
Sue Ann Bidstrup Allen, polymers, microelectronics
Sujit Banerjee, environmental, pulp and paper
Sven Behrens, polymers, colloidal species, nanotechnology
Andreas Bommarius, biocatalysis, bioprocessing
Victor Breedveld, complex fluids, microfluids
Eliot Chaikof, tissue regeneration
Ronald Chance, energy applications, molecular separations
Rachel Chen, biocatalysis, bioprocessing
Yulin Deng, polymers, nanomaterials, papermaking
Charles Eckert, thermodynamics, separations
Eric Felner, bioengineering
Larry Forney, transport processes
W. J. Frederick, Jr., sustainable process technology, kraft chemical recovery
Tom Fuller, electrochemical systems for energy conversion and storage
Martha Grover Gallivan, process control, interfacial science
Cliff Henderson, microelectronics
Dennis Hess, microelectronics
Jeffery Hsieh, pulp and paper engineering
Kristiina Iisa, forest biorefinery, combustion and gasification chemistry, air pollution control
Christopher Jones, catalysis, polymerization
Paul Kohl, microelectronics
William Koros, polymers, ceramics, membranes
Jay Lee, process control
Charles Liotta, chemical reactions and processes
Hang Lu, biological systems, MEMS
Pete Ludovice, polymer science

Larry McIntire, bioengineering, cellular and tissue engineering
Carson Meredith, polymers, thin films
Sankar Nair, novel materials, nanoscale systems
Athanasios Nenes, atmospheric modeling
Robert Nerem, cell and tissue engineering
Mark Prausnitz, bioengineering, drug delivery
Matthew Realff, process design
Elsa Reichmanis, plastic electronics, organic semiconductor materials and processess, lithographic materials
Ronald Rousseau, crystallization, separations
Athanassios Sambanis, biochemical and biomedical engineering
David Sholl, energy applications, computational and materials modeling
Lakeshia Taite, biomaterials, drug delivery, tissue engineering, bioengineering
Amyn Teja, thermodynamics and separations, nanomaterials
Ajit Yoganathan, biomedical engineering

cutting edge