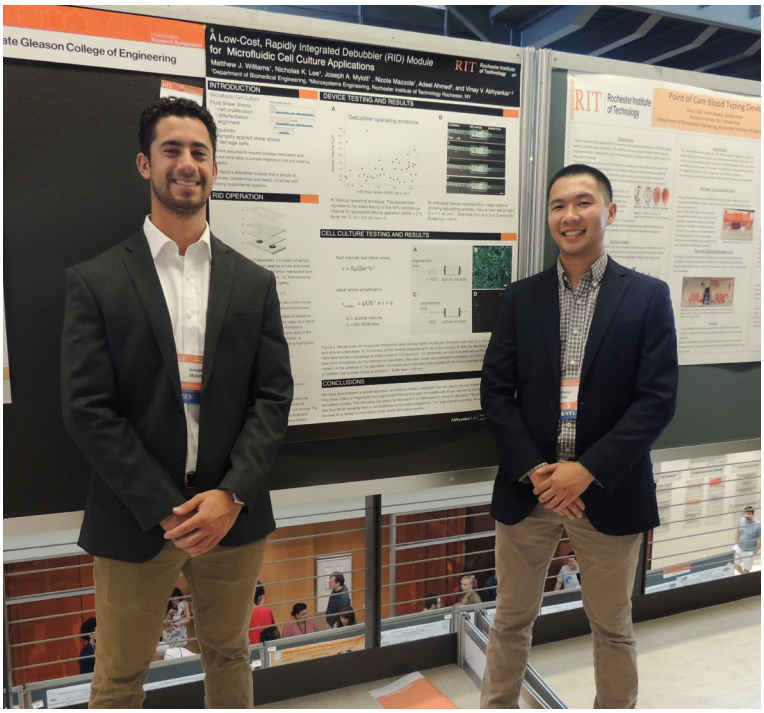
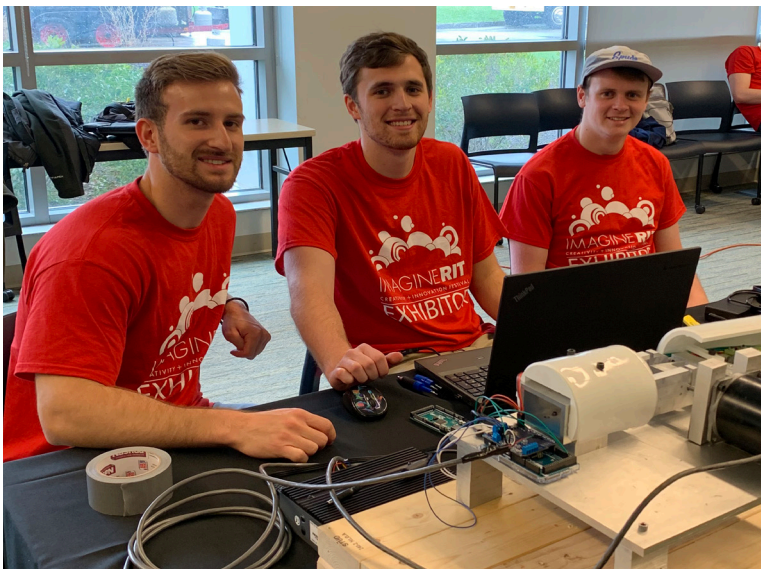
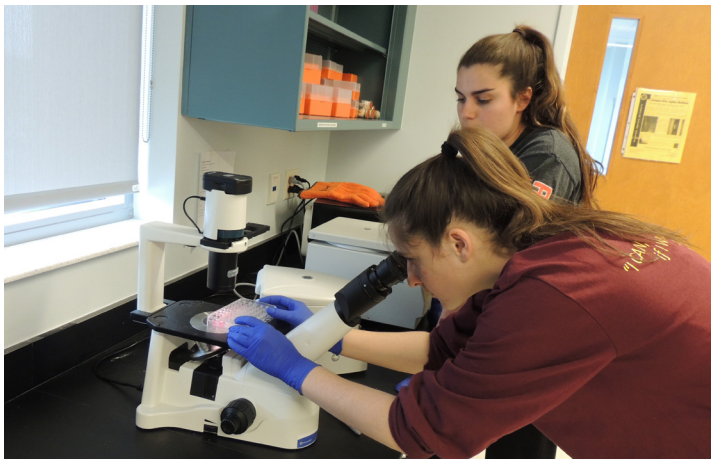
RIT | Kate Gleason College of Engineering Department of Biomedical Engineering







Are you interested in healthcare and problem solving?

Learn about the various opportunities the Biomedical Engineering program at RIT has to offer!

Biomedical engineers focus on technological solutions to treat or alleviate biological or medical problems.

Biomedical engineers are intimately involved in the development of system devices and techniques to address health issues. This is a multidisciplinary endeavor requiring expertise from a wide range of professionals, including engineers from the classical disciplines such as chemical, electrical, and mechanical engineering. To be fully successful, the multidisciplinary team must have at least one member who possesses a comprehensive understanding of the highly variable and intricate nature of the biomedical system along with the quantitative and analytical engineering skills needed to precisely define the challenge that is being addressed. This combination of skills allows the team to assess the relative effectiveness of plausible solution strategies. The biomedical engineer brings this special combination of skills and education to the team.

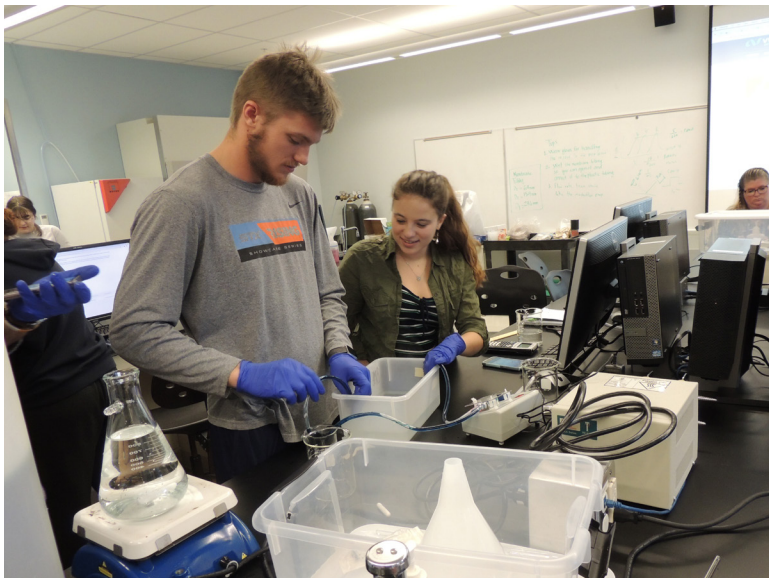
The RIT Biomedical Engineering Program produces graduates who:

> Draw upon the fundamental knowledge, skills, and tools of biomedical engineering to develop system-based engineering solutions that satisfy constraints imposed by a global society.

> Will enhance their skills through formal education and training, independent inquiry, and professional development.

> Will work both independently and collaboratively, and demonstrate strong leadership skills, accountability, initiative, and ethical & social responsibility.

> Can successfully pursue graduate degrees at the Master's and/or Ph.D. level.



Biomedical Engineering

Bachelor of Science Degree

The purpose of the BS degree program in Biomedical Engineering (BME) is to deliver a focused undergraduate engineering curriculum that targets the biomedical enterprise from a highly quantitative and analytically rigorous perspective. Undergraduates will have the ability to contribute significantly to the development of new knowledge, understanding, and innovative solutions in the health care industry across a wide variety of health-care related applications. The Biomedical Engineering BS degree is a five year program. It culminates in the fifth year with a full multidisciplinary capstone design experience that integrates engineering theory, principles, and process within a collaborative environment that bridges engineering disciplines.

Accreditation

Rochester Institute of Technology is fully accredited by the Middle States Association (MSA) of Colleges. The Biomedical Engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

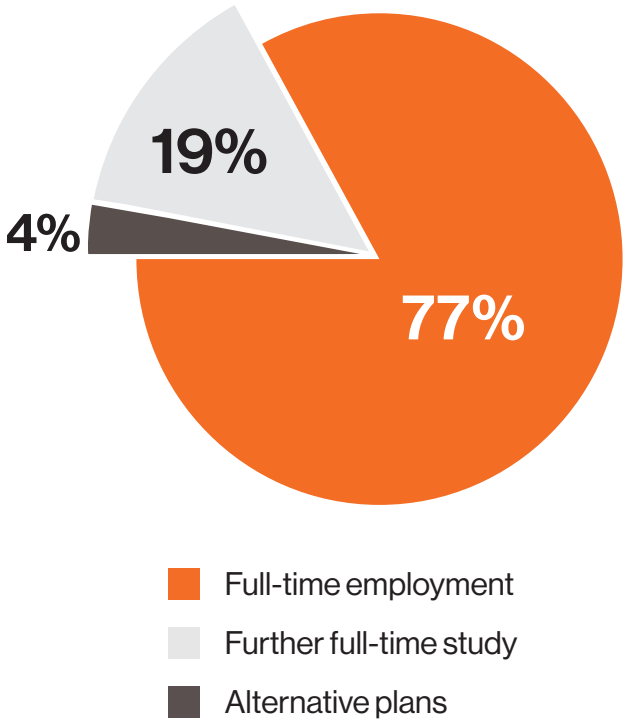
Job Outlook

Employment of biomedical engineers is projected to grow 23% from 2014-2024, much faster than the average for all occupations. Growing technology and its application to medical equipment and devices, along with an aging population, will increase the demand for the work of biomedical engineers. (Source: U.S. Bureau of Labor Statistics O.O.H.)

Where are they now?

And where are they going?

At RIT, our BME students and graduates are doing great things! Learning in the classroom and gaining real world experience prepares our students to make a difference. From conducting research, working in laboratories, becoming trauma surgeons, and even crash safety engineers, our graduates are making a postive impact doing what they love.



Class of 2021

- 48 graduates
- 2,789 accumulated co-op weeks

Class of 2022

- 45 graduates
- 2,692 accumulated co-op weeks

335
Total BME Graduates

121
Total employers of BME graduates

Companies that have hired 20 or more BME co-ops!

Baxter | Alcon, a Novartis company | REGENERON science to medicine | Rheonix | Johnson & Johnson | BAUSCH + LOMB VALEANT | ZIMMER BIOMET Your progress. Our promise. | Medtronic | Ortho Clinical Diagnostics

Cooperative Education

Experience That Pays

RIT co-op gives you the chance to test what you've learned in the classroom in real world situations. When you're in the lab testing a new theory in quantum physics, reading a textbook on cognitive psychology, or computing net present value in a finance problem, you may wonder how your studies fit your future career. Our co-op program gives you a chance to find out. If you're like many RIT students, understanding how theoretical knowledge is actually used in the real work place will give you the incentive you need to work harder when you come back to campus for your academic terms.

Work with the Best

Your RIT co-op experience will be as exciting and interesting as you make it. You may choose to work for one of nearly 2,000 employers that annually hire RIT students, or you may design your own co-op with a company we have not worked with in the past.

Last year about 3,500 students completed more than 5,700 co-op assignments across the United States and in nearly 30 foreign countries. Students held positions in private business and industry as well as government agencies and nonprofit organizations.

While you're working on co-op, you'll meet other professionals in your field. You'll be able to consult on professional issues and talk with them about your goals. These professional contacts may help you identify job openings in your field and get you started on the road to your lifetime career goals.

Co-op may help you pay for your college education. At RIT, no tuition is charged for the semesters/summers you are employed as a co-op student. Instead, your employers may pay you a full-time salary. Last year, RIT co-op students earned more than $34 million. You'll find that your co-op earnings can go a long way towards helping finance your RIT education.

RIT's co-op program is the 4th oldest and one of the largest in the world.

Co-op gives you experience to set yourself apart from other graduates in your career field!

Work Abroad Program

Join Us in a New Global Partnership!

Consistent with RIT's institutional vision and strategic direction, we are working to expand the opportunities for our students and graduates to broaden and enhance their global perspectives and experiences.

Our Work Abroad Program, the program is designed to expand our employer partnerships to offer more international cooperative education, internship and other related work experiences.

With one of the oldest and largest co-op programs in the world, RIT sends students abroad each year to complete co-op assignments. Our goal is to ensure that at least 10% of our more than 3,500 co-op students work abroad annually. This includes not only U.S. citizens seeking global experience but also international students seeking to return to their home country or region.

Selected Corporate Partners

Employers

Briggs of Burton PLC
Box International
FOGRA, Germany
Schott
Cunard
Wooga
Xerox, UK
University Hospital of Wales in Cardiff, Wales

Partnerships

Cultural Vistas
DAAD German Academic Exchange Service
Dream Careers
Global Experiences
IASTE
A Door to Italy

Work Abroad Contact

Maria Richart, Associate Director for International Outreach

585-475-5479
mjroce@rit.edu

BS IN ENGINEERING +
MS IN SCIENCE, TECHNOLOGY, & PUBLIC POLICY =

AN ENGINEER WITH A DIFFERENCE!

"I did the BS/MS to gain a broader perspective on topics that may be useful for my career. This program taught me how to critically evaluate FDA policies and develop creative and realistic solutions to improve them."

Krista Stanislow
Process Sciences Associate at Regeneron
BS, Biomedical Engineering, 2020
MS, Science, Technology and Public Policy, 2020

Easy Application Process
Most Can Finish Both Degrees In 5 Years

RIT | Kate Gleason College of Engineering

RIT | College of Liberal Arts Department of Public Policy

More information

For more information contact Graduate Director/ Professor Franz Foltz at fafgsh@rit.edu

BME Course Map

FALL	SPRING	FALL	SPRING	SUM	FALL	SPRING	SUM	FALL	SPG	SUM	FALL	SPRING
BIME 181 Intro to BME 1	**BIME 191** Intro to Program BME 3	**BIME 200** Musculoskeletal Biomechanics 3	**BIME 370** Biomaterials Science 3			**BIME 410** Systems Physiology I 3		**BIME 411*** Systems Physiology II 3			**BIME 497** Multi-Disc Senior Design I *Co-op +5th year standing* 3	**BIME 498*** Multi-Disc Senior Design II 3
CHMG 141 Gen Chem I 3	**CHMG 142** Gen Chem II 3	**BIME 250** Biosystems Process Ana. 3	**BIME 391*** Biomechanics & Biomat. Lab 2			**BIME 407** Medical Device Design 3		**BIME 491** Syst. Physio. & Signals Ana. Lab 1			**Prof Tech Elective** Lower 3	**Prof Tech Elective** Upper 3
CHMG 145 Chem Lab I [CHMG 141] 1	**CHMG 146** Chem Lab II [CHMG 142] 1	**BIOG 140** Cell & Molecular Bio Eng I 3	**BIOG 240** Cell & Molecular Bio Eng II 3			**BIME 360** Biomed Signal & Analysis 3		**BIME 450** Analysis of Complex Biosys. 3			**BIME 460** Dynanmics & Ctrl Biomed Sys. 3	
YOPS 1 RIT 365: RIT Connections 0	**PHYS 211** Univ Phys I 4	**PHYS 212** Univ Phys II 4	**BIME 320** Fluid Mechanics 3								**BIME 492** Quant. Physio. Sig. Ana. Lab 1	
MATH 181 Project-Based Calculus I 4	**MATH 182** Project-Based Calculus II 4	**MATH 221** Multi Var. & Vector Calculus 4	**MATH 231** Differential Equations 3			**MATH 251** Prob & Stats for Engineers I 3		**ISEE 325** DOE for BME 3			**Open Elective** 3	**Open Elective** 3
Lib Arts & Sci* 1st Year Wrtg 3	**Wellness I** 0	**EGEN 099** Co-op Prep Seminar 0	**BIME 099** BME Career Seminar 0	CO-OP			CO-OP	**Open Elective** 3		CO-OP	**Wellness II** 0	**Lib Arts & Sci** GE Elective 3
Lib Arts & Sci Perspective I 3	**Lib Arts & Sci** Perspective II 3		**Lib Arts & Sci** Perspective III 3			**Lib Arts & Sci** Perspective IV 3		**Lib Arts & Sci** Immersion I 3			**Lib Arts & Sci** Immersion II 3	**Lib Arts & Sci** Immersion III 3
Credits: 15	18	17	17			15		16			16	15
												129

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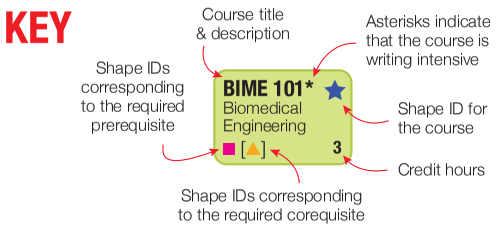


Curriculum

The Biomedical Engineering BS degree is a five-year program consisting of the following course requirements:

- Biomedical Engineering core (41 credits)
- Professional Technical electives (6 credits)
- Science and Mathematics (43 credits)
- General Education core (27 credits), including immersion courses
- Open Electives (6 credits)
- Cooperative Education (48 weeks minimum)
- Two semesters of multidisciplinary design, a capstone design experience which integrates engineering theory, principles, and processes within a collaborative environment
- Minors are possible

First Year

- Intro to Biomedical Engineering (BIME-181)
- Intro to Programming for BME (BIME-191)
- General Chemistry I & II and labs (CHMG-141/145/142/146)
- University Physics I with Lab (PHYS-211)
- Calculus I & II (MATH-181/182)
- First Year Writing
- Arts & Science Perspective (2 courses)
- Wellness Education
- Year One

Second Year

- Intro to Musculoskeletal Biomechanics (BIME-200)
- Biosystems Process Analysis (BIME-250)
- Intro to Biomaterials Science (BIME-370)
- Fluid Mechanics (BIME-320)
- Biomechanics & Biomaterials Lab (BIME-391)
- BME Career Seminar (BIME-99)
- Cell & Molecular Biology for Engineers I, II (BIOM-140/240)
- Differential Equations (MATH-231)
- Multiple Variable & Vector Calculus (MATH-221)
- University Physics II with Lab (PHYS-212)
- Co-op Prep Seminar (EGEN-099)
- Art & Science Perspective (1 course)
- Co-op Summer

Third Year

- Co-op Fall
- Systems Physiology I (BIME-410)
- Biomedical Signals & Analysis (BIME-360)
- Medical Device Design (BIME-470)
- Probability & Statistics for Engineers I (MATH-251)
- Arts & Science Perspective (1 course)
- Co-op Summer

Fourth Year

- System Physiology II (BIME-411)
- Numerical & Statistical Analysis of Complex Biosystems (BIME-450)
- Quantitative Physiological Signal Analysis Lab (BIME-491)
- Design of Experiments for Biomedical Engineers (ISEE-325)
- Arts & Sciences Immersion (1 course)
- Open Elective
- Co-op Spring
- Co-op Summer

Fifth Year

- Multidisciplinary Design I & II (BIME-497/498)
- Dynamics & Control of Biomedical Systems (BIME-460)
- Systems Physiology Control & Dynamics Lab (BIME-492)
- Professional Technical Electives (2 courses)
- Arts & Sciences Immersion (2 courses)
- Open Electives (6 credits)
- Gen Ed Elective (3 credits)
- Wellness Education

RIT's College of Engineering is named in honor of Kate Gleason, recognizing her significant personal and professional accomplishments and the ongoing support of the Gleason Foundation. Ms. Gleason, who died in 1933, was America's first female engineering student and the first woman to be elected a member of the American Society of Mechanical Engineers. Today, RIT's Kate Gleason College of Engineering proudly continues a tradition of equal opportunity and excellence in engineering.

Support Services

> **BME Academic Advisor** assists students with their academic needs, which includes providing accurate information, solutions to academic challenges, and setting goals and expectations.

> **Office of Career Services and Cooperative Education** provides services to cover every aspect of the job search and the career development process.

> **Bates Study Center** provides free tutoring services each semester in the areas of mathematics, chemistry and physics.

> **Academic Success Center** offers a variety of services for students experiencing academic difficulty and suspension.

> **KGCOE Engineering Student Services Office** provides a place for engineering students to find advising, support, and counseling.

> **Engineering Support Services** offers a wide variety of services for engineering deaf and hard of hearing students.

Student Health Service, Wallace Center, Center for Religious Life, Public Safety, Counseling Center, Disability Services Office, English Language Center, The North Star Center for Academic Success & Cultural Affairs ...and many more.

Faculty and Staff

Steven Day, Ph.D
Department Head
Professor

Megan Andrews
Academic Advisor

Tabitha Vick, MS
Academic Advisor

Shannon LaJuett
Lab Manager

Renee Milliken, MS
Office Manager

Vinay Abhyankar, Ph.D
Assistant Professor

Iris Asllani, Ph.D
Associate Research
Professor

Jennifer Bailey, Ph.D
Principal Lecturer

Edward Brown, Ph.D
Associate Professor

Thomas Gaborski, Ph.D
Professor & Director
of PhD Biomedical &
Chemical Engineering

Blanca Lapizco-
Encinas, Ph.D
Professor

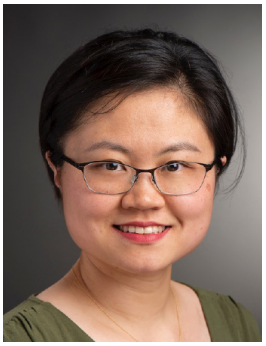
Cristian Linte, Ph.D
Associate Professor

Travis Meyer, Ph.D
Lecturer

Michael Richards, Ph.D
Assistant Professor

Cory Stiehl, Ph.D
Senior Lecturer

Karin Wuertz-Kozak, Ph.D
Professor



Zhi Zheng, Ph.D
Assistant Professor

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