TAKE ON THE WORLD!

That’s the title of our new Hajim School recruitment brochure, and we can all take pride that we are now preparing record numbers of students to do just that.

Thanks to the collective efforts of our Hajim School faculty, staff, students, alumni, and friends—efforts that I am deeply grateful for—we have more than doubled our undergraduate enrollment in the last seven years, from 744 students to 1,543.

Despite the inevitable growing pains, this has benefited the Hajim School—and our University—in important ways:

• A larger student base multiplies the opportunities for our students to interact with talented, diverse peers.

• It increases the potential pool of candidates for innovative programs like the MS programs offered through the Center for Medical Technology and Innovation and the Technical Entrepreneurship and Management Program.

• The increased tuition revenue has enabled us to reduce an untenable drain on the University endowment. We are now solidly in line with the rest of Arts, Sciences & Engineering.

• We’re gaining the critical mass of students we need to attract top engineering companies here for recruiting.

With the help of recent faculty hires, we still register a 15:1 student-faculty ratio, right in line with peer institutions such as Dartmouth, the University of Pennsylvania, Vanderbilt, and Washington University.

We’ve renovated labs and built new classroom space to help ease the growing pains. We’ve developed a way to quickly assess the math skills of incoming freshmen—and to provide additional instruction to those who need it—to help ensure these students are ready to take on our rigorous curriculum.
So now we find ourselves at a crossroads. Do we sit back and pat ourselves on the back, or do we keep finding ways to improve? I respectfully submit that we have no choice. In the spirit of Meliora, we must continue to make the Hajim School ever better in ways that set us apart from our peers.

Why?

COMPLACENCY IS NOT AN OPTION

Earlier this fall, SUNY—New York State’s public university system encompassing 64 campuses and 459,550 students—announced it would seek a 25 percent increase in the number of its students studying abroad by 2020.

Sound familiar? Five years ago, the Hajim School set a goal of increasing student participation in study abroad to 25 percent.

In other words, other schools are taking aim at many of the same goals we’ve targeted. In the competition to attract top students, no university—no engineering school—can afford to be complacent. We either keep moving ahead, enhancing the quality of the programs and opportunities we offer our students, or we fall behind.

We must set realistic goals—and meet them. If we don’t, other institutions will. And that’s where the best students will go.

So what goals are we talking about and why?
TRAINING GLOBAL STUDENTS TO MEET GLOBAL NEEDS

Let’s start with study abroad. At the national level, only 4 percent of engineering students pursue study abroad. We’ve increased the Hajim School study abroad experience to 16 percent of our students, but we need to continue our efforts here for a number of reasons.

I don’t think anyone would dispute that we live in an era of unprecedented globalization. Anyone who embarks on a career in engineering will likely work with engineers in other countries. A résumé that includes study abroad will give our students an advantage when they compete for jobs.

Sixty percent of our entering freshmen tell us they want to study abroad. Those students who do study abroad tell us it is one of the best decisions they ever made. “The most helpful skill I gained from studying abroad is meeting new people,” recent BME graduate Louisa Bauer said of her semester in Dublin. “It was an excellent experience, and my communication skills and confidence have improved dramatically as a result.” Students like Louisa come back more confident in themselves and more self-reliant—literally ready to take on the world!

Study abroad was once problematic for engineering students because engineering-specific study abroad opportunities were few and far between. Students couldn’t study abroad without falling behind academically. We now have pre-approved courses lined up at 23 universities in 15 countries so that students can keep up with their course loads. Students do not pay any more for tuition than they would here; we’ll even pay the travel costs for those students with financial need. And we have our own study abroad advisor, Rohan Palma, to help students and departments find a good match overseas.

I urge faculty and staff to join me in letting students know that study abroad is indeed a viable option and one that we encourage. Working together, we’ll meet our goal.
SETTING A NEW STANDARD OF FEMALE ENROLLMENT

A major priority of our Hajim School strategic plan is to continue to strengthen the diversity of our school. For example, we are already ahead of our peers in enrollment of female students, who make up close to 30 percent of our undergraduate enrollment compared to 18 percent nationally. However, any percentage that is less than representative of women in our overall population (50 percent) is a net loss—to our school and to our profession. We can no longer afford to ignore such a large pool of talent.

So we have set a goal of reaching greater than 40 percent female enrollment among our undergraduates by 2018—not only to strengthen the educational experience of all our students but also to help expand the pool of qualified engineers to deal with society’s most pressing problems.

Granted, to a large extent, the number of potential female engineering students accepted at the University of Rochester each year is a function of the application/admissions process; however, there are things we can do—as a school and as individual departments—to welcome and support the female students who do enroll in our school and to encourage more women to apply.

For example, the Department of Computer Science has obtained corporate support to pay the travel expenses for its female students to attend the prestigious Grace Hopper Conference for women in computing each year. This is a great opportunity for students to network, interview with potential employers, and attend workshops on a range of career and academic topics.

Terel Purevdorj '16 was one of 14 computer science students who attended this fall’s conference in Phoenix, Arizona. By her second day at the conference she had signed a contract to intern next summer with Apple, the company she’s always dreamed of working for. No wonder she described the conference as “the most meaningful experience for me in terms of my career.”

By offering more such opportunities for our female students—and promoting them on our department websites and other social media—the message will get out.

Similarly, by increasing the number of our female faculty members—and I am engaging several of our faculty members on how best to address that need—the message will be further amplified.

As BME faculty member Diane Dalecki noted recently, we have an opportunity to raise the bar for engineering schools all across the country. Because we are not a large engineering school, we don’t have to enroll as many female students as some of our larger peers to reach our 40 percent goal, indeed to become the first engineering school to achieve a truly representative female enrollment of 50 percent.
If we do so, we will have achieved a truly worthy distinction. We will be known as the school for women engineers, and we will have no shortage of applicants.

We have other goals as well.

![RESEARCH EXPENDITURES](image)

- By increasing our enrollment of master’s students to 400 from 262 today, we will help meet the needs of engineering companies for highly trained students who can tackle the grand challenges of society; in meeting that need we also help to grow the local and national economies.

- Our STEM-Gems program has made great strides in increasing the percentage of our first-generation and underrepresented minority students who successfully navigate their freshman year. But that is just the first step. The four-year retention rate of our underrepresented minorities has lagged 22 percent behind other Hajim students. I’ve asked our departments to help us find ways to mentor these students and provide other support—beyond the freshman year—to close that gap by 2018.

- We all know that research funding, especially from the federal government, is harder to come by. I’m working with other engineering deans to try to convince Congress to reverse this trend. In the meantime, we must compete that much harder to bring in the funding that supports our school in so many ways—in funding PhD students, for example, and driving the innovative research that occurs in our labs. Consistent with our growth in faculty, we’ve set goals of growing the number of proposals submitted and successfully funded.

Given this funding climate, gift giving by our alumni and friends is more important than ever. I am gratified that we continued to grow the Hajim School Annual Fund, which provides a great resource for funding many of our new initiatives such as Study Abroad as well as our Professional Skills Development class. For those who have already made their annual fund commitment, thank you! If you have not had the opportunity to join other alumni and friends in this year’s fund drive, please
consider contributing by visiting www.hajim.rochester.edu/giving.html. Whether you are a first-time donor or consistent supporter, every gift counts!

In regards to other giving, I am pleased to report that we have added three new fellowships (financial aid for graduate students) in the Institute of Optics, all of which were established with a minimum gift of $50,000 or more this past month. I am also speaking with several alumni and friends of the Hajim School about other significant gifts we anticipate closing in early 2015.

WE’RE A WINNING TEAM

Our goals are lofty but certainly not insurmountable. Not in light of what we have already achieved. And not in light of who we are. Just look at how our faculty, staff, students, and alumni have excelled during the past year.

Among our faculty . . .

Riccardo Betti, professor of mechanical engineering and of physics and astronomy and the assistant director for academic affairs at the Laboratory for Laser Energetics, was named the inaugural Robert L. McCrory Professor at the Laboratory for Laser Energetics.

Julie Bentley, associate professor of optics, was one of three recipients of the University’s 2014 Goergen Awards for Excellence in Undergraduate Teaching.

Robert Boyd, professor of optics and of physics, was elected a fellow of SPIE, the international society for optics and photonics, and was recipient of the 2014 IEEE Photonics Society Quantum Electronics Award “for contributions to nonlinear optics, including room temperature slow light and the nonlinear optics of composite materials.”

Suxing Hu, senior scientist in the Theory Division of the Laboratory for Laser Energetics, was named a fellow of the American Physical Society.

Engin Ipek, assistant professor of electrical and computer engineering and of computer science, received the 2014 IEEE TCCA Young Computer Architect Award.

Stephen Jacobs, professor of optics and of chemical engineering and a senior scientist at the Laboratory for Laser Energetics, received the 2014 Education Award from Rochester Regional Photonics Cluster/New York Photonics.

Henry Kautz, professor of computer science and director of the Institute for Data Science, was elected a fellow of the Association for Computing Machinery.
F. Douglas Kelley, associate professor of chemical engineering, was chosen as the Engineering Professor of the Year by the Students’ Association.

Qiang Lin, assistant professor of electrical and computer engineering and of optics, was the first recipient of the Leonard Mandel Faculty Fellow Award from the Department of Physics and Astronomy.

Robert L. McCrory, director of the Laboratory for Laser Energetics, University vice president and vice provost, and professor of mechanical engineering and of physics and astronomy, was appointed a University Professor.

Kevin Parker, our dean emeritus and the William F. May Professor of Engineering, was awarded the University’s Eastman Medal for co-inventing Blue Noise Mask.

Jannick Rolland, the Brian J. Thompson Professor of Optical Engineering and director of the Center for Freeform Optics (CeFO) and of the R. E. Hopkins Center, was named the 2014 recipient of the David Richardson Medal from the Optical Society (OSA).

Ching Tang, professor of chemical engineering, was named one of this year’s 26 Citation Laureates by Thomson Reuters and was also named the 2014 recipient of the Nick Holonyak Jr. Award by the Optical Society (OSA) for his role in inventing the organic light-emitting diode (OLED).

Richard Waugh, professor and chair of biomedical engineering, and professor of biochemistry and biophysics, and of pharmacology and physiology, received the Hajim school lifetime achievement award.

David Williams, the William G. Allyn Professor of Medical Optics; professor of optics, of brain and cognitive sciences, of ophthalmology, and of biomedical engineering; and the dean for research for Arts, Sciences & Engineering, was named a member of the National Academy of Sciences.

Jonathan Zuegel, senior scientist at the Laboratory for Laser Energetics, was elected a fellow of the Optical Society of America.

Among our staff . . .

Per Adamson, director of the teaching labs at the Institute of Optics, received our outstanding staff award. Per is no mere custodian of the 17 laboratory rooms and a fully equipped darkroom on Wilmot’s fifth floor. When the institute hosted its first Photon Camp for high school students, Per worked with others to develop more than 15 separate lab activities to introduce the students to academic and career opportunities in optics. Whenever a prospective student shows up, Per gladly provides a one-on-one tour. Time and again, Per has gone the extra mile to make the Institute, the Hajim School, and our University ever better.

Rachel Monfredo, senior technical associate in ChemE, was the first recipient of our Dottie Welch Student Enrichment Award, and deservedly so. Dottie, who retired last year as the undergraduate coordinator in BME, was always there for her students. So is Rachel. She plays a key role in helping run ChemE’s junior and senior labs and has become the “go-to person” and confidant for many of the department’s students. We are lucky to have her on our team.

At last count, 56 Bravo chips had been awarded this year alone to Hajim School and University staffers to recognize exemplary work done to help our school operate as a model of excellence for the University of Rochester and other institutions.

Among our alumni . . .

Theo Mitsa ’88 (MS) ’91 (PhD), was awarded the Eastman Medal (along with Kevin Parker, above) for the invention of Blue Noise Mask.

Jay Eastman ’70 (PhD) ’74 (optics), founder and CEO of Optel Inc. and an advisor and administrator for our Industrial Associates program, received the 2014 Leadership Award from the Rochester Regional Photonics Cluster/New York Photonics for working with fellow members of the RRPC and the community to advance the region’s optics, photonics, and imaging industry.

Michael Pavia ’87 (optics), cofounder and president of Sydor Instruments, LLC, received the 2014 Entrepreneur Award from RRPC for demonstrating creativity, innovative spirit, and drive in creating an industry-leading company in the optics, photonics, and imaging field. Michael, a member of our Hajim School Visiting Committee, was also awarded the Visionary Leadership Award from Digital Rochester.
Michele Weslander-Quaid ’94 (MS, optics), another member of our Hajim School Visiting Committee, was named one of the “7 most powerful women to watch in 2014” by *Entrepreneur* magazine. Before becoming Google’s chief technology officer (public sector) and innovation evangelist, Michele spent nine years working for various national security agencies where she “shook things up by dropping archaic software and hardware and convincing teams to collaborate via web tools,” *Entrepreneur* noted.

Among our students . . .

Alexander Anderson ’16, an optical engineering major with a minor in biomedical engineering, was one of 10 students to attend the 2014 Harvard-MIT Biomedical Optics Summer Institute, supported by the National Science Foundation (NSF) and the Wellman Center for Photomedicine.

Racquel (Ivy) Awuor, a junior in electrical and computer engineering, was awarded an American Heart Association Founders Affiliate Undergraduate Student Summer Fellowship.

Lauren Bailey ’15 of chemical engineering, star of the women’s swim team, was one of 10 University seniors to receive a 2014 Garnish Scholar-Athlete Award for leading their teams on the field of play while doing outstanding work in the classroom.

Amanda Chen ’14 of BME, received a prestigious National Science Foundation Graduate Research Fellowship.

Luke K. Dalessandro, PhD student in computer science, received the 2013–14 Outstanding Dissertation Award in Engineering for “Preserving the Appeal of Transactional Programming.”

Justin Fraumeni, a freshman in electrical and computer engineering, was a first-place winner in the 2014 Undergraduate Writing Colloquium for his “Music and Artificial Intelligence: A Creative Combination?”

William Green, a junior in mechanical engineering, received a $10,000 Astronaut Scholarship Foundation award.

Rodrigo Gutierrez-Cuevas, a PhD student in optics, received a scholarship from CONACyT, Mexico’s National Council for Science and Technology.

Xiaochen Guo of electrical and computer engineering won a second IBM PhD Fellowship.

Dan Hassin, a sophomore in computer science, was one of 53 recipients selected from among nearly 2,500 applicants as a 2014 KPCB Engineering Fellow by venture capital firm Kleiner Perkins Caufield and Byers.

“You just continue to impress,” said former astronaut Sam Gemar when he came to campus to award MechE junior William Green with a $10,000 scholarship from the Astronaut Scholarship Foundation. MechE alumnus Edward Gibson ’59, a member of the Astronaut Hall of Fame, nominated the University of Rochester for the scholarship program.
Alex Iacchetta, a PhD student in optics, received a 2014 NASA Space Technology Research Fellowship for his proposal, “Astro-Interferometric Modeling and Spatio-Spectral Reconstruction,” in concert with activities at the Goddard Space Flight Center.

Erik Laurin ’15 of chemical engineering won the River Campus Concerto Competition for non-Eastman students and will perform the first movement of Antonio Capuzzi’s Concerto for Double Bass and Orchestra with the UR Chamber Orchestra in April.

Computer science junior Tait Madsen won a first-place prize in the Undergraduate Writing Colloquium Contest, natural and applied sciences category, for his essay, “Vowel Shapes: An open-source, interactive tool to assist singers with learning vowels.”

Jonathan Macoskey, a BME senior, was the recipient of the 2014 Robert W. Young Award for Undergraduate Student Research in Acoustics from the Acoustical Society of America.

Matt Mender, a junior in BME (minoring in ECE), was named to the Capital One Academic All-America Div. III football team.

Koji Muto, a junior in mechanical engineering, won the Kelly Future Engineers Scholarship from Kelly Services and a scholarship from the American Council of Engineering Companies of New York.

Himanshu Shekhar, a PhD student in electrical and computer engineering, was one of two recipients of a Frederick V. Hunt Postdoctoral Research Fellowship in Acoustics from the Acoustical Society of America for 2015–16.

Pedro Vallejo-Ramirez ’16 of optics is one of five students worldwide picked as winners of the “What will you do for IYL (International Year of Light and Light-based Technologies) 2015” contest sponsored by the Optical Society.

Anthony Yee, an optics PhD student, received a 2014 National Science Foundation Graduate Research Fellowship.

The Ovitz Corporation, whose officers and team members include Hajim students Joung Yoon (Felix) Kim ’14 (optical engineering); Pedro Vallejo-Ramirez ’16 (optical engineering); Samuel Steven ’13 (optical engineering), a master’s student in the Technical Entrepreneurship and Management program; Aizhong Zhang, a TEAM master’s student and PhD candidate in optics; and Len Zheleznyak, a PhD student in optics, won the grand prize of $50,000, including $25,000 cash, at the 2014 Rochester Regional Business Plan Contest. The Ovitz team also took second place and $5,000 in the Biotechnology/HealthCare category at the New York Business Plan Competition finals for a hand-held instrument to determine an accurate prescription for corrective lenses.
First place ($10,000 cash prize) in the annual Mark Ain Business Model Competition went to the SmartDialysis team for a nanomembrane technology–based portable hemodialysis unit. Team members are Li (Adam) Deng ’14, MS in Technical Entrepreneurship and Management (TEAM); Steven Gillmer, PhD candidate in mechanical engineering; Kenneth Goodfellow ’14, MS in TEAM and PhD candidate in optics; Aizhong Zhang ’14, MS in TEAM and PhD candidate in optics; and Bowei Zhang ’14, MS in TEAM.

Clearly, our students are talented. They’re eager. They’re willing. Let’s keep working as a team—as faculty, staff, alumni, and friends—to ensure our students have at their disposal all the tools they need to take on the world and make it better!

Meliora!

Robert L. Clark
Professor and Dean
Senior Vice President for Research