A MESSAGE FROM THE DEAN

As you’ll see in this issue, we’ve launched a professional networking class—WRT 273—to help our students put their best foot forward when they seek internships and jobs. We want our graduates to be as skilled at resume writing and job interviews as they are at designing a biomedical device or mining a dataset. One reason I have pushed so hard to require this course of all Hajim School students, quite frankly, is to give them an “unfair” advantage once they leave the University to start their careers.

But WRT 273 is not the only “unfair advantage” we offer our students. Our Technical Entrepreneurship and Management (TEAM) master’s program, which you can also read about in this issue, gives engineering students the business savvy they need to hit the ground running—whether they’re joining a start-up, an established high-tech firm, or starting their own company. This joint program between the Hajim School of Engineering & Applied Sciences and the Simon Business School is a great example of the kind of innovative, interdisciplinary programs we offer at the University of Rochester.

More recently we’ve added other new programs that few, if any, other schools offer: a master’s program in conjunction with the School of Medicine and Dentistry that immerses engineering students in clinical settings before they start designing biomedical devices; an audio and music engineering major in conjunction with the School of Arts & Sciences and the Eastman School, which affords our students opportunities to develop hardware, software, and artistic skills across digital media. These are truly cutting-edge fields where there is high demand for graduates with this kind of background.

We’re not the largest engineering school, to be sure, but we use that to our advantage, cultivating a close-knit, supportive learning environment for our students. As you will also read in this issue, undergraduate coordinator Dan Smith at the Institute of Optics has made it his mission to get to know each and every student, as he and his colleagues work hard to build the undergraduate enrollment. They have gone out of their way to make students feel like they’re “part of something special.”

That’s been a hallmark of the Institute. One optics student recently commented that, “Some of my professors have done really groundbreaking research, but I can still go in and chat with them about a simple physics problem. I really like that. I think that’s pretty unique to Rochester.”

One of our groundbreaking professors—James C. M. Li of the Department of Mechanical Engineering, who is also featured in this issue—is world renowned not only as a researcher, but as a teacher. His former PhD students hold important positions in academia, industry, government, and top research labs. We wish James all the best as he retires at the end of this semester—and thank him for setting a high standard we can all be proud of.

Meliora!

Rob Clark

TEAM program turns engineers into entrepreneurs

After William Finnie completed his BS in electrical and computer engineering, he envisioned a career path “more involved in entrepreneurship” than just engineering.

Likewise for Tome Karo, an Institute of Optics graduate who wants to start his own business someday. Both completed the TEAM (Technical Entrepreneurship and Management) master’s program, and both say it was well worth it.

Finnie’s TEAM degree landed him a job as business development analyst at Siemens’s Technology to Business Office in San Francisco. “I wouldn’t have gotten this job without the TEAM program,” he says.

Karo says his degree is helping him as an electro-optical engineer at SBG Labs in Sunnyvale, Calif., a small company where he’s much more attuned to production cycles and “how all that adds to eventually sustaining the business.”

The TEAM program, offered by the Center for Entrepreneurship, the Hajim School of Engineering and Applied Sciences, and the Simon Business School, is designed for students with a science or engineering background who plan to work at technology-based companies or in research and development or want to launch a new product or business of their own. The goal is to produce “well-rounded, business-savvy engineers and scientists who are prepared to take on both the technical and business challenges of any industry in a global world,” according to the program’s website.

Launched in 2009, the program currently enrolls 24 students, six from the Hajim School. The program can be completed in two or three semesters; the overall placement rate is 90 percent within six months of graduation.

“A lot of the students are interested in going into startups, where you have to wear a lot of hats,” says Andrea Galati, executive director of the program. “You may do some engineering, but you may also become involved in marketing or other aspects of the business operation, and the TEAM master’s equips students for that.”

Other graduates have become business analysts, another works in a tech transfer office, and two others are pursuing PhD projects that could lead to commercialization. “So there is a wide variety of career choices and opportunities for TEAM graduates,” Galati notes.

Karo says he enrolled in the TEAM program because “coming from an engineering background, you might have a great idea, but the other half of that is whether you can make it succeed commercially. You have to be able to combine those two understandings.”

Finnie says much of what he learned in the TEAM program has direct relevance for his work at Siemens, looking for new technologies and projects to partner with. “I have the tools to look at a company’s business plan, to know which technologies are good, and which companies are run well,” he says.

To learn more about the TEAM program, go to the website at www.rochester.edu/team.
For the next few minutes, a class of Hajim School students—who hope their résumés will eventually land them interviews with top engineering or software firms—is going to sit on the other side of the table. They’re going to play the role of Human Resource (HR) evaluators—reading and then ranking the résumés of three fictitious applicants to determine which one will be interviewed.

“This is very similar to what HR professionals do,” explains instructor Catherine Towsley, as she passes around the résumés of “Ima Student,” “Wanda Jobs,” and “Hi R. Menow.”

“I’ve been telling you to think of your audience when you write your résumés and to think of the reader. So today, you are going to be the readers.”

By the way, she adds: “You’ve got about 30 seconds to read each one.”

This is one of many exercises students engage in when they take WRT 273, Communicating Your Professional Identity. It is the centerpiece of Dean Robert Clark’s campaign to give Hajim School students an “unfair” advantage when it comes to applying for—and securing—the best internships while they’re in college and the top jobs in their field after they graduate.

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As a result, starting with this year’s incoming class of freshmen, WRT 273 will henceforth be required of all engineering majors.

WRT 273, the course description states, “teaches ‘real life’ communications skills and strategies that help students present their best professional selves.” Students “explore and articulate their internship and career goals for distinct audiences and purposes as they develop a professional communication portfolio.” That portfolio includes résumés, cover letters, electronic communications, technical project abstracts, online profiles (at LinkedIn, for example), and TED Talks.

Throughout the semester-long course, students refine and revise their written and spoken work based on critical feedback from peers, instructors, alumni, and potential employers.

“Our alumni are probably the most passionate about this,” Clark notes. “They want our students to be more competitive than the students coming out from other universities.”

For example, Lisa Bobich ’04, a biomedical engineering graduate and senior product engineer at Medtronic in Phoenix, Ariz., volunteers as a “real reader” for WRT 273 students. Real readers are available to be interviewed by students (often via Skype) to help them build their networking skills; real readers also provide tips, career guidance, and feedback on the materials the students develop for their portfolios.

“I cannot emphasize enough how important I think this program is,” says Bobich, who was paired with a biomedical engineering student last spring. “I wish it had been around when I was a student. It really is a small commitment of time for the alumnus or industry participant, but it can have such a great impact on the student. . . . I think it is a logical and simple step to help students gain the background and advice to properly target their résumés, presentations, and emails, as well as keep alumni involved and giving back.”

Ryan Puffer ’15, a computer science major in Towsley’s class, said he enrolled because he wanted to develop a professional set of material before he started applying for internships. “I’ve gotten a lot out of it so far,” he adds. “I probably wouldn’t be motivated to write all this on my own if it wasn’t part of the class.”
James C. M. Li
Honoring a brilliant but humble teacher, researcher

In the world of materials science, James C. M. Li, the Albert Arendt Hopeman Professor of Mechanical Engineering and professor of materials science, is an iconic figure. He is a world-renowned researcher who has devoted more than 40 years at the University, his pragmatism, paying it forward and the understanding of how materials deform and become damaged under mechanical loading. He has won just about every award in his field short of a Nobel Prize. “I must say I have been very lucky in my career.”

One of his former students, Fuqian Yang, a professor in the Department of Chemical and Materials Engineering at the University of Kentucky, says Li “constantly emphasized the importance of fundamental research and always encouraged his students to explore the important problems through reading literature and attending conferences. He had a decisive role in shaping my career.”

Former student Paul Vianco, now a distinguished member of the technical staff at Sandia National Laboratory, says that Li “expected a great deal of initiative and self-reliance from his students. When there was a challenge, Li had the talent to provide just the right amount of information that allowed students to make further progress on their own.”

“Even after having graduated from the University of Rochester 27 years ago, I still hold Li as my mentor, who will always exemplify scholarly endeavor and intellectual creativity yet, at the same time, is a decent, considerate human being. Certainly, this combination of attributes is hard to find in this day and age.”

Professor James C. M. Li, at right, receives the Albert Easton White Distinguished Teacher Award from ASM International in 2007.

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“I must say I have been very lucky in my career,” Li has said. However, his University of Rochester students and fellow faculty members know there is a great deal more behind Li’s success. They regard Li—who retires at the end of this school year—as a brilliant but humble, hard-working colleague. For more than 40 years at the University, his pragmatic advice has helped many of them shape their careers. John Lambropoulos, chair of the Department of Mechanical Engineering, is among those who have benefited from Li’s advice. Soon after Lambropoulos joined the department in the mid-1980s, Li urged him to become involved in the materials science program as well. “So I did that. All of a sudden I could recruit from twice as many students for my research purposes,” Lambropoulos says. “That advice was a very important, long-term influence on my career.”

“Over the years,” Lambropoulos adds, “we’ve looked up to Jim Li as a colleague who sets a brilliant example with his outstanding research, his considerate and mentoring attitude towards students, and his stellar contributions of service both at the University and also at the national and international levels.”

Li, who grew up in China before and during World War II, earned his bachelor’s degree from the National Central University in China in 1947 and his master’s and doctoral degrees from the University of Washington in 1951 and 1953, respectively. After his postdoctoral appointment at Berkeley,
Students scrub down in comfortable chairs, while others text their friends or chat about their classes. “Assistant Professor Nick Vamivakas is really fair” is heard as three students talk among themselves.

It’s the weekly Thursday afternoon “pizza with a professor” session for undergraduates, inaugurated last year at the Institute of Optics. The professor on this occasion is Govind Agrawal, who, with a slice of pizza in hand, mingles with about a dozen students. There’s no agenda, Agrawal explains. “It’s a very informal gathering.”

This low-key opportunity for students to chat and feel at home is part of the institute’s recruitment and retention effort that is anything but low key.

To keep up with demand for its graduates, the nation’s oldest optics program is going all-out to build its undergraduate enrollment. Increasing the enrollment also helps the institute by generating additional revenue from tuition and by retaining a strong alumni base. And it benefits the economy and national defense.

“optics is close to the number the institute must maintain to reach Zhang’s goal of graduating 35 to 40 seniors a year. It’s all about teaching students how to network and relate to their professors, says Smith. For example, at one of the lunches, Professor Wayne Knox was talking about China’s Optical Valley. This was news to one of the Chinese students who is from a nearby town—and now is even more excited about completing his degree.

Smith, a former Navy helicopter pilot, is determined to get to know each and every undergraduate student in the institution. He eats at one of the student dining halls at least once a week, looking for optics students he can sit down with. There is an email chat, and find out what’s new and exciting. It’s a way of letting them know that somebody cares. He also has arranged noncredit seminars on personal finance to help prepare students for the “real world” after graduation.

“Part of retaining our students is making them feel like they are part of something special,” Smith adds. “We’ve ordered up special t-shirts, bumper stickers, and sweatshirts to give our students a feeling of camaraderie and esprit-de-corp.”

Smith’s theory is that a lot of people of gently steering freshmen who are interested in engineering, but undecided about a major, to consider optics. They’re automatically assigned institute faculty members as their advisors.

For example, freshman Nicholas Long from Santa Barbara, Calif., arrived on campus this past fall interested in physics, mechanical engineering, or “maybe” optics—and was promptly assigned an advisor in the latter.

“It just kind of sucked me in,” Long says with a smile. And he’s not complaining. “I like it [optics]; it’s interesting. It’s a way of letting them know that somebody cares. He also has

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As of November, Smith had 128 undergraduates on the books. That was up about 40 percent from January 2013 and is close to the number the institute must maintain to reach Zhang’s goal of graduating 35 to 40 seniors a year. It’s all about teaching students how to network and relate to their professors, says Smith. For example, at one of the lunches, Professor Wayne Knox was talking about China’s Optical Valley. This was news to one of the Chinese students who is from a nearby town—and now is even more excited about completing his degree.

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And they never look back. Why would they? Smith is quick to note that optics students are in demand, well paid, and happy in their careers.

“Their future is wide open,” Smith says.

Background chart illustrates increasing undergraduate enrollment at the Institute of Optics.

Smith visits local high schools, taking along a student and the institute’s famed “optics suitcase” to demonstrate eye-opening science. He tries, on average, to visit one school a month.

Institute staff and faculty gladly devote a couple of hours to any prospective student—and parents—who want to tour the institute’s classrooms and labs.

Adamson, the director and coordinator of the teaching labs, joined by Smith and graduate student Hillary Maben, even came up with the idea of handing out ice cream sandwiches in the Park Lot on Move-in Day last summer, in an effort to drum up interest in the institute among incoming freshmen and their parents.

It’s not clear how many, if any, students were swayed by the ice cream, but the individual attention shown to students and parents during institute tours is definitely paying off.

“Wow,” one woman wrote after a two-hour visit with her son. “We were both totally impressed that these faculty were (a) all excited about what they do and (b) willing to spend the time with just one prospective student.” Her son, she added, has decided to apply for admission to the institute and “is more excited than I’ve seen him during this college search process.”

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Faculty Awards

Govind Agrawal: professor of optics and of physics, was installed as the inaugural Dr. James C. Wyant Professor in Optics.

Richard Betti, the Helen F. and Fred H. Gawn Professor of Mechanical Engineering, professor of physics, director of the Fusion Science Center of Extreme States of Matter and Fast Ignition, and scientist at the Laboratory for Laser Energetics, received the Hajim School Lifetime Achievement Award.

Chunlei Guo, professor of optics, was elected a fellow of the Optical Society of America.

Henry Kautz, professor and chair of computer science, was elected a fellow of the Association for Computing Machinery.

Li-Chung Zhang, professor of chemical engineering, was named recipient of the Eduard Rhein Award in Germany and was inducted into the Consumer Electronics Hall of Fame.


Richard Waugh, professor and chair of biomedical engineering, and professor of biochemistry and biophysics and of pharmacology and physiology, received the Biomedical Engineering Society’s 2013 Distinguished Service Award for extraordinary contributions to the society.

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

Meliora Campaign: Making history for the sake of our future
One person, one gift, can make a world of difference.

Cindy Feinberg ’90 (electrical engineering), a member of the Hajim School Visiting Committee, is a professional engineer and founder/partner of Jacob Feinberg Katz and Michaeli Consulting Group, which undertakes large-scale MEP projects in New York as well as 22 other states. She is a member of the George Eastman Circle because “the University of Rochester is very important to me. Without my background there and the skills that the University provided me, I wouldn’t be where I am today. It’s important to give others that same chance. I look at the construction on College Town, at the new Goergen Hall, and the proposal for an Institute of Data Science, and it’s obvious there’s a lot of new development. The University is really focused on growing the student population and advancing technology.”

To learn more, go to www.hajim.rochester.edu/giving.html.

Remember, one person, one gift, can make a world of difference.
That’s the power of one.

James Wyant, a Hajim School alumnus and University of Rochester trustee, recently endowed a professorship in optics. Last October that professorship was conferred upon Govind Agrawal, enabling the University to honor one of its most esteemed faculty members. From left to right, trustees Robert Witmer and James Wyant, Govind Agrawal, Hajim School dean Robert Clark, and president Joel Seligman celebrate Agrawal’s installation as the Dr. James C. Wyant Professor in Optics.

And thanks to its base of 155,000 donors, the University achieved a major milestone in November, joining an elite group of 29 private U.S. colleges and universities to surpass $1 billion in their fundraising campaigns. Alumni, friends, faculty, staff, parents, and students of the Hajim School have contributed more than $68 million to The Meliora Challenge: The Campaign for the University of Rochester. With your help, we can achieve our share of the University’s overall $1.2 billion goal by the end of the campaign in June 2016.

Why give?
1. You’ll be part of a winning team. The support of our alumni and friends has been truly remarkable. Since the Meliora Challenge began, contributions are up 50 percent, and Hajim School memberships in the George Eastman Circle have nearly doubled. (For more information about the GEC, go to www.rochester.edu/giving/gec.)
2. You’ll support a winning program. The Hajim School is on the move. Enrollments are up. We’re offering innovative new majors in audio and music engineering and medical device technology. We’ve refurbished labs, and we will play a major role in the University’s Data Science Initiative. Your contributions are vital to maintaining the momentum.
FAST FACTS

• The Hajim School’s undergraduate enrollment has nearly doubled since 2008–09, exceeding—by a factor of 10—President Obama’s challenge of increasing engineering enrollments nationally by 10 percent.

• The number of master’s students enrolled in the Hajim School increased from 61 in fall 2004 to 268 in fall 2013.

• The number of graduate degrees conferred by the Hajim School has increased from 104 in FY 2006 to 179 in FY 2013.

• Advantageous undergraduate student to faculty ratio of approximately 11:1

• The Hajim School STEM Gems program helped retain 95 percent of first-generation, low income and racial minority freshman engineering students during the 2012–13 academic year.

• The percentage of Hajim students studying abroad has increased from 10.1 percent in 2007 to 18.0 percent in 2013.