INDUSTRIAL **&** SYSTEMS ENGINEERING

ISyE: Then, Now, & the Path Forward

Georgia Tech

Feature Story

20 All in the Family: ISyE students of yesterday and today share ties

ISyE News & Additional Features

On the front cover: Charlene and Zola Zalesky enjoy exploring the Clough Undergraduate Learning Center. See feature story, page 20.

As students arrived on campus this fall semester, I enjoyed seeing the faces of so many new students and helping them to get adjusted to life at ISyE. This is a nostalgic time of year for me, always bringing with it a flood of memories from when I was a student here.

In getting ready for this issue of ISyE's alumni magazine, we have spent a lot of time reflecting on who we were, who we are now, and where we are going. And this year's theme — ISyE: Then, Now, and the Path Forward — hits a very personal note in my life. I have been a part of ISyE, in some capacity, for over 37 years. I enrolled at Georgia Tech as a graduate student in 1976 and received my Ph.D. in 1982, the first woman to earn this ISyE degree. In 1982 I became the first female faculty member in the school, progressed through the ranks, and have been honored to be named the first female school chair at ISyE. It is and has been exhilarating and humbling to see ISyE from all of these perspectives.

When I was a student here, Georgia Tech was in transition from being a teaching institute to a research institute. Now, we are a top-tier research institute. When I was a student, I did my undergraduate work on a slide rule. Today, ISyE is a high performance computing research facility. As a student we did not have rankings, and now ISyE's graduate program has been ranked No. 1 by *U.S. News & World Report* for 23 consecutive years, an incredible feat by almost any standard. Over the years, we've experienced a huge growth in the number students, number of different degree programs offered, and number of specialties and capabilities.

I realize that we are not perfect; we have some challenges to overcome. We currently are working hard to grow our faculty size so we can adequately serve the needs of our students and our educational programs while staying out on the frontiers of research. However, we will always rise to any challenge faced to bring the best education possible to our students as well as continue to make a difference by tackling research issues that improve the quality of life for all.

I hope you enjoy this issue as we navigate the then, now, and our path forward, and that it brings back a flood of fond memories of your time at Georgia Tech.

Jane

Jane Chumley Ammons, Ph.D., P.E.
H. Milton and Carolyn J. Stewart School Chair
H. Milton Stewart School of Industrial &
Systems Engineering
Georgia Institute of Technology

Ammons visited with Patricia Lehrer, widow of Bob Lehrer, ISyE's school chair from 1966 to 1978, in February. Ammons and Lehrer reminisced about ISyE and about the fact that Bob Lehrer was the school chair when Ammons was pursing her Ph.D.

ISyE by the Numbers

#1

U. S. News & World Report ranking for both graduate and undergraduate programs

23 Number of consecutive years the ISyE graduate program has been ranked #1 in the industrial/manufacturing/systems

19 Number of years the undergraduate program in industrial engineering has been #1

1 B.S. in IE degree

With 5 concentrations in:

Economic and Financial Systems

General Industrial Engineering

Operations Research

Quality and Statistics

Supply Chain Engineering

8 Master's degrees

Master of Science in Health Systems

Master of Science in Industrial Engineering

Master of Science in International Logistics

Master of Science in Operations Research

Master of Science in Quantitative and Computational Finance

Master of Science in Statistics

Master of Science in Computational Science & Engineering

Master of Science in Supply Chain Engineering

5 Doctorate degrees

Industrial Engineering with concentrations in:

Supply Chain Engineering

Statistics

Economic Decision Analysis

System Informatics and Control

Operations Research

Algorithms, Combinatorics, and Optimization

Computational Science Engineering

Bioinformatics

315

B.S. IE degrees awarded, FY13

217

M.S. degrees awarded, FY13

30

Ph.D. degrees awarded, FY13

About **1/3** of all FY13 ISyE degrees were awarded to women

107 B.S. **83** M.S. **11** Ph.D.

134 B.S. IE degrees were awarded to underrepresented minorities, FY13

1,617

Undergraduate enrollment, Fall 2013
(includes co-op and study abroad students)

250

Master's enrollment, Fall 2013

137

Doctorate enrollment, Fall 2013

51

ISyE faculty members

31

ISyE staff members

$65,000

Average starting salary with a B.S. in IE

Undergraduate Students, 2012-2013

206 students participated in a study abroad program

724 students participated in a co-op or internship

196 students earned an award, scholarship, or honor

7 freshmen participated in the new Georgia Tech Grand Challenges Living Learning Community

2 students received the President's Undergraduate Research Awards grants

2014 *U.S. News & World Report:*
ISyE Continues No. 1 Ranking

Georgia Tech's ISyE is consistently ranked as the top industrial engineering program of its kind in the nation. In the 2014 Best Graduate Schools edition of the *U.S. News and World Report (USNWR)*, ISyE's graduate program was ranked No. 1 for the 23rd consecutive year, an achievement that is unmatched by any other academic program in any other Georgia college or university. *USNWR* first ranked ISyE No. 1 in 1990 with its inaugural rankings issue and then for 23 consecutive years beginning in 1992. Also maintaining its graduate ranking, the College of Engineering (CoE) ranked No. 4 for the ninth consecutive year.

The ISyE undergraduate program also maintained its top ranking in the 2014 Edition of America's Best Colleges by *USNWR*. This issue marks the 19th year that ISyE has been ranked as the foremost program of its kind in the nation at the undergraduate level. CoE also maintained its fifth place ranking for undergraduate engineering programs. ▪

#1

ISyE Again

Spring 2013 Advisory Board Meeting

The spring 2013 ISyE Advisory Board Meeting was held in Puerto Rico in May in conjunction with the IIE Annual Conference and Expo. This was the first year ISyE hosted an Advisory Board Meeting away from campus and joined forces with the IIE Annual Conference.

Twenty-six ISyE undergraduate students volunteered at the conference and served as hosts at an ISyE alumni reception that was held after the board meeting. Gustavo Oliver, an ISyE undergraduate student from Puerto Rico, made sure that the students got a feel for the local culture and had a chance to see sites while there. Guy Primus, an ISyE alumnus and entertainment industry insider, received the prestigious IIE Captain of Industry Award during the conference. He also gave a keynote speech, providing a look behind the curtain of the entertainment world, and shared case studies that demonstrate the principles of industrial engineering at work in the most artsy of industries.

This event gave participants the chance to experience the diverse and rich history of Puerto Rico with fellow Georgia Tech alumni, family, and friends. ▪

Bolívar hosts ISyE Advisory Board Tour of the Barcardi Plant

While the ISyE Alumni Board was in Puerto Rico, ISyE alumnus Pepin Bolívar, IE 1949, retired vice president of Bacardi Corporation, hosted a tour of the Barcardi Plant.

Young Pepin Bolívar arrived at Georgia Tech late one night after a five-hour bus trip from Saint Leo Preparatory School, only to discover that all of the dorms were closed. After finding an unlocked door, he was able to settle in a dorm room by himself, wondering if the next four years at Georgia Tech would be any better. The year was 1944, and though World War II had not yet concluded, Pepin, being a Cuban citizen, was not drafted.

The industrial engineering degree that Pepin obtained from Georgia Tech was instrumental in helping him achieve one of the most prestigious management positions at Bacardi Corporation, his only employer, where he was trusted with the knowledge of Bacardi secret formula. He inspired two of his children to attend Georgia Tech, along with one granddaughter and five cousins. All told, eight members of the Bolívar family have attended Georgia Tech from 1944 through today.

Of all his achievements, Pepin said his proudest moment was being selected to the College of Engineering Hall of Fame in 2002, making him the first alumnus from Puerto Rico to be recognized with such an award.

Joey Bolívar (his son), an entrepreneur, engineer, and historian, attended Georgia Tech, graduating in 1975 with a bachelor's degree in IE. He owns and operates a wooden pallet company in Puerto Rico along with another Georgia Tech graduate, Roberto A. Oliver, IE 1975. Joey pursued a doctorate in history at the University of Puerto Rico and has published three books on economic and military history. His forthcoming book, published by the University Press of Mississippi, will be available in 2014. His publications are available on his website, www.joselbolivar.com. ▪

José A. "Pepin" Bolívar, IE 1949, retired vice president of Bacardi Corporation; Jane Ammons, ISyE School chair; and José L. "Joey" Bolívar, IE 1975, vice president of Caribe Pallets and Packaging Corporation.

Meet ISyE's
Newest Advisory Board Members

Don Greene	Joaquín González Varela	Neca Holley	Andrew Ibbotson

Charlie Murrah	Jocelyn Stargel	Lou Fouts, Chair

This year, six new faces have joined the Stewart School of Industrial & Systems Engineering's (ISyE) Advisory Board for the 2013–2017 term. Don Greene, IE 1980, Joaquín González Varela, Neca Holley, IE 1986, Andrew Ibbotson, IE 1998, Charlie Murrah, IE 1984, and Jocelyn Stargel, IE 1982, MS 1986, were inducted during the annual spring meeting held in May. Existing board member, Lou Fouts, IE 1990, will now serve as the board's chair.

"ISyE's advisory board is an important piece of the ISyE puzzle," said ISyE School Chair Jane Ammons. "The board is made up of distinguished professionals and community leaders, with each member bringing extensive industry knowledge and unique expertise to the board. We are delighted to welcome our newest members."

This summer, we asked them to share some memories of Georgia Tech and ISyE.

What is your fondest memory at Georgia Tech?

Stargel: I have so many fond memories at Georgia Tech that it is hard to pick one. At the core of all of my fond memories are the bonds and friendships formed as we all worked hard to earn that engineering degree. Many of my lifelong friends are fellow Tech graduates. Including my husband!

Murrah: I would say my fondest Georgia Tech memory is taking a winter weeknight study break to watch Bobby Cremins and the Yellow Jackets create the "Thriller Dome."

Ibbotson: One of my fondest memories from my time at Tech was doing "triple play" one hot summer night, which involved climbing Tech Tower, the stadium lights and the coliseum, followed by a quick dip in the president's swimming pool to cool off after all that physical exertion. I hear that would probably get you kicked out these days!

Fouts: There are too many to count. One of the most memorable would have to be the thrilling 41-38 Georgia Tech victory over Virginia at Virginia when they were ranked No. 1. My brother, Nick Fouts, CE 1992, and I drove all night to Charlottesville to watch the game.

Holley: My fondest memory of Georgia Tech would be all the friendships I made while there. And Saturday morning football games.

Greene: Although our teams weren't great during my years on campus, there's just nothing that would beat a fall afternoon at Grant Field. And the time spent before and after the games with friends at MJ Pippin and Spiro's made Saturdays in the fall perfect days on campus.

What is your fondest memory of ISyE?

Ibbotson: The most fun I had as an ISyE student was senior design. My team worked with the Atlanta Track Club to redesign the finish of the Peachtree Road Race. We built a model to simulate 55,000 runners crossing the finish line and overlaid our simulation on a map of Piedmont Park to demonstrate various scenarios and sell the Track Club on what we felt was the optimal layout for the new finish area in front of Park Tavern. Getting to put some of what we had learned into practice, and then getting to run the Peachtree and experience the result firsthand was very rewarding.

Greene: In a wage and salary administration course, we were assigned to design a wage and salary system for a real company. My group gained permission from The Varsity. So, we went behind the scenes and rated various job factors for cooks, onion peelers, counter workers, and everybody else who worked there. Talk about an interesting assignment! There's a skill to shouting "What'll you have!" Plus, we ate a lot of free chili dogs.

Murrah: My fondest ISyE memory is Nelson Rogers dispensing classroom advice in the old French building. Another good memory is a Quality Control and Statistics class I had under Dr. Jane Ammons. I think this was probably one of the first classes she taught!

> *"In a wage and salary administration course, we were assigned to design a wage and salary system for a real company. My group gained permission from The Varsity. Talk about an interesting assignment! There's a skill to shouting 'What'll you have!' Plus, we ate a lot of free chili dogs."*
>
> *- Don Greene, IE '80*

Fouts: My fondest memory of ISyE would be my senior design team and how much fun we all had working together.

Stargel: My fondest memory of ISyE is of a business case oriented class that I took as a senior. I cannot recall the formal course name but it was taught by Professor Callahan in the old ISyE building. I took the class at the end of my senior year and enjoyed it because it reinforced many of the concepts I had learned in the ISyE program. I remember that we were required to get a subscription to the Wall Street Journal in that class and encouraged to keep up with business related news and developments. I received a different view of how my skills fit into the workplace in that class and still subscribe to The Wall Street Journal today.

Holley: I loved Ergonomics class.

What motivated you to serve on the ISyE Advisory Board?

Greene: As CEO for the Institute of Industrial Engineers, I see the differences industrial engineers are making. I am passionate about our profession. I am proud of my alma mater as the top-ranked ISyE department, and appreciate that my degree has enabled me to make a living doing something that I love. If I can help the department in any way, thereby enabling them to provide similar opportunities to today's students, I am honored to have that chance.

Varela: The ISyE program at Georgia Tech has a recognized leadership position in its field, but the bar continues to be raised every year. I'm hopeful that my professional experience both here in the United States and in Latin America will help ISyE remain in the top ranks of educational institutions worldwide. And I'm also hopeful

Meet the New Board Members

Don Greene is the CEO and executive director of the Institute of Industrial Engineers (IIE). Prior to becoming Executive Director, Greene served as managing director of the International Gas Turbine Institute. He has also been the director of member services and operations for Polaris International. Earlier in his career, Greene worked at IIE for ten years in a variety of positions including staff industrial engineer, product development manager, and membership manager. He got additional experience from his employment at Scientific Atlanta, where he worked as an industrial engineer. Greene became a registered Professional Engineer in 1988 and is also a Certified Association Executive. He is a member of the Institute of Industrial Engineers, American Society of Association Executives, Georgia Society of Association Executives, and the Council of Engineering and Scientific Society Executives.

Joaquín González Varela is executive vice president of Walmart and president of Walmart Stores, Inc.'s East Business Unit, representing nearly 1,600 stores in four divisions spanning from Maine to Puerto Rico. He is responsible for establishing the strategic direction of all

growth opportunities including execution of store innovation, supply chain, real estate and people development. Before joining Walmart's U.S. operations, González held a variety of positions with Walmart de México, in which he has worked across some of the company's most important divisions including operations, merchandising, logistics, and finance. His efforts in Mexico led to a handful of important milestones and achievements, including the development of a new store format, Bodega Express, which today is one of the main growing vehicles for Walmart de México. He implemented a cold supply chain network for all fresh merchandise — the first of its class in Latin America — including operations standards, procedures and the grand opening of the first distribution center in Mexico.

Neca Holley is an area manager with Outside Plant Engineering and Planning Design where she manages the central and western parts of Georgia for AT&T. Her group designs and implements facilities to supply high speed data and Ethernet services, which allows AT&T to meet bandwidth needs for cellular and U-verse customers. She has been with AT&T/BellSouth/Southern Bell for

27 years and started her career as an outside plant engineer designing copper cable, fiber optic, and digital systems. During her career she has served in various capacities, from managing budgets to staffing the Cooperative Education Program for the BellSouth region where she recruited students from diverse schools around the country. Holley has a Professional Engineering License, is a member of the National Society of Professional Engineers, and The Institute of Industrial Engineers. She attended Dr. W. Edwards Deming's course in quality, productivity and competitive position, which was taught by Dr. Deming himself.

Andrew Ibbotson is the founder and CEO of Digital Assent, a healthcare technology company that helps physicians and brands more effectively engage patients at the point of care. Under his leadership, Digital Assent has earned significant recognition. Highlights include being selected by *Forbes Magazine* as a finalist for its list of "America's Most Promising Companies" and winning the Cool Technology of the Year award presented by TechAmerica and the Technology Association of Georgia. Digital Assent's rapidly growing

that my day-to-day work in the retail environment will allow me to share insights into new dynamics that will keep ISyE graduates among the most qualified and employable as they enter the workplace.

Ibbotson: Surrounding yourself with a team of highly motivated and capable people is critically important when starting a new business. Georgia Tech and ISyE have played a key role in the success of my last two technology companies by providing easy access to a never-ending pool of exceptional talent. I've had the pleasure and privilege of working with dozens of Tech ISyEs over the past decade – from co-ops and interns to members of my senior executive team. One of the lead investors in my last two companies is also a GT ISyE. So when I was asked to serve on the ISyE advisory board, I jumped at the opportunity to give back to the school in a small way. So far, it's been a great opportunity to reconnect with the school and get to know more really impressive students and alumni.

Holley: Giving back to Georgia Tech is important since being a graduate has provided me with so many opportunities.

Murrah: I am interested in sitting on the ISyE Advisory Board because it gives me the opportunity to stay plugged in and give back to the school I love so much.

Fouts: I enjoy serving on the ISyE Advisory Board because it allows me to stay connected to the School and to participate in some small way to the continuing development of the next generation of student engineers and leaders.

Stargel: I am incredibly proud of my ISyE degrees from Georgia Tech. Serving on the ISyE Advisory Board is an opportunity to give back to the program and school that equipped me so well and to participate in the future success of our students and faculty. ▪

PatientPad® Network now spans every major metropolitan market in the country. Andrew was named 2012 Business Person of the Year by the Metro Atlanta Chamber, Entrepreneur of the Year at TiECON Southeast, and Mobile Marketer of the Year at the 2012 Tech Marketing Awards. He was also recognized as one of Atlanta's "40 Under 40″ business leaders by the *Atlanta Business Chronicle*. Ibbotson is an active member of the Atlanta technology community. He sits on the Board of Directors for Venture Atlanta, serves as a mentor to first-time entrepreneurs, and regularly speaks at events throughout the country to promote innovation and entrepreneurship.

Charlie Murrah is executive vice president and president of Southwire's Energy Division, which serves customers in the electrical utility industry primarily in the United States. Murrah began his career with Southwire in 1984 as an industrial engineer in the Carrollton Utility Products Plant. He subsequently held numerous engineering and management positions in Southwire's energy cable and copper operations, serving most recently as the company's vice president of supply chain. Murrah is a Georgia registered

Professional Engineer and a certified production and inventory manager. In 1996, he was inducted into the Council of Outstanding Young Engineering Alumni of Georgia Tech.

Jocelyn Stargel is the manager of business assurance at Southern Company Services. With 4.4 million customers and nearly 46,000 megawatts of generating capacity, Atlanta-based Southern Company is the premier energy company serving the Southeast through its subsidiaries — Georgia Power, Alabama Power, Mississippi Power, Gulf Power, Southern Power, Southern Nuclear, Southern Telecom and SouthernLINC Wireless. In her role, Stargel oversees the Southern Company program focused on minimizing or eliminating the impact of events that have the potential to disrupt critical business operations, functions, or services. Stargel currently serves on the board of the Georgia Tech Women's Alumni Network, and the Finance Committee of CHRIS Kids, Inc. She has also served on the Board of Directors of CHRIS Kids, Inc, the marketing committee of Heating Energy Assistance Team, and on the Board of Directors for the Spruill Center for the Arts.

Lou Fouts is a partner at Water Street Capital, a large Jacksonville-based hedge fund, that manages money for leading endowments, institutions, and family offices. Fouts heads up Water Street's initiatives in the commodity, energy, transportation, and automotive industries. Water Street is known for taking large stakes in under-appreciated growth opportunities such as Apple Computer in 2003 and commodities (fertilizer, crude oil, coking coal) from 2004-2008. Upon graduation from Georgia Tech, Fouts went to work for SysteCon, a logistics and distribution consultancy founded by Georgia Tech's Dean of Engineering, John White, where he specialized in supply-chain restructuring. After two years at SysteCon, Fouts joined The Boston Consulting Group's Russian office in 1993 and participated in the restructuring of the Russian agricultural logistics network. In 1998, Fouts was recruited to New York City to help develop the private equity initiatives of Caxton Corporation, one of the largest hedge funds in the world at that time. Fouts joined Water Street in 2002 and became the firm's youngest partner in 2004.

ISyE Students Participate in
Industry-Focused Projects

From ISyE's undergraduate program to the master's program to the Ph.D. program, ISyE students are working on real-world problems with a variety of companies, non-profits, and government agencies. These students work in teams and individually with faculty members to solve highly complex problems and challenges faced by industry today. These programs and projects help students develop and deepen their skills for living and working in a knowledge-based society, and they provide their industry partners with a group of some of the brightest minds. In this section, you will learn more about some of the industry-related projects these students are tackling in the following articles.

If you would like to learn more about working with these students, contact communications@isye.gatech.edu.

Industry + Team of Bright Undergraduate Students =
Creative Solutions for Real-World Clients

Every ISyE undergraduate student culminates his or her education with the capstone Senior Design project. Considered to be the most important and most challenging undergraduate industrial engineering course, Senior Design pushes students to apply what they have learned in the classroom to solve a complex real-world problem that has a defined bottom-line impact for a corporation. The average project value runs in the six figures. Many of you who are reading this will recall your Senior Design experience. A familiar comment from our graduates is that this was the hardest and most time-consuming course they took. Do you agree?

Here, you can meet several Senior Design teams to learn more about their industry projects.

This Senior Design team collaborated with Pratt & Whitney and won the coveted first place award in the Spring 2013 Senior Design Competition. The team provided Pratt & Whitney with a computer tool to guide transportation decisions for the assembly of Next Generation Product Family engines, composed of an optimization model with a customizable interface capable of providing recommendations under varying operational conditions.

Front row: Shabbir Ahmed (faculty advisor), Megan Sweeney, Leanne Measroch, Christopher Taylor
Back row: Dustin Hsu, Andrew Frazelle, Daniel Forrest

The Senior Design team that collaborated with the Delta Cargo group looked at ways to reduce Delta's high overtime costs and a low on-time shipment delivery rate. The deliverables of the team's project included: estimation of a shipment's processing rate, a demand forecast, a staffing schedule optimization model, and a decision support tool.

Front row: Alyssa Wachs, Kyungha "Diana" Lim, Kevin Coe, Pinar Keskinocak (faculty advisor)
Back row: Jimmy Le, Betsy Calender, Jose Sarmiento, Alexey Zarnitsyn

The Kubota Manufacturing team developed an optimization-based system to decide the routes and modes for shipping parts from 200 suppliers all over the U.S. to Kubota's manufacturing plant in Gainesville, Georgia.

Front row: Abhinav Sawhney, Rozina Merchant, Jason Yeh
Middle row: Shabbir Ahmed (faculty advisor), Jin-Su Kim, Kelly Chen
Back row: David Mun, Yumehito Takimoto, Dhruvik Talaviya

The UPS Worldport team developed a flexible optimization model for aircraft arrival scheduling to address the problem of operational delays due to irregular volume inflow.

Front row: Jianing "Jessica" Le, Yuelin "Lyn" Chen, Doug Bodner (faculty advisor), Sohyun Kim, Diana Chow
Back row: Stefan Ferguson, Zhixun "Herman" Wu, Brandon Wykoff, Nirmit Shah

Master's Students Examine Impact of the Panama Canal Expansion on China-U.S. Transportation Networks

The expansion of the Panama Canal has been the focus of many logistics industry discussions for almost a decade now. The debate over the potential impact of the Canal's considerable development plans begs the question of whether widening this heavily trafficked waterway will lead to a seismic shift in China-U.S. supply chains as some analysts predict or simply have a subtle impact.

Students from two of Georgia Tech's Stewart School of Industrial & Systems Engineering's graduate programs paired up to examine this issue. They were from the Executive Master's Program in International Logistics & Supply Chain Strategy (EMIL-SCS), which leads to a Master of Science in International Logistics, and the Master of Science in Supply Chain Engineering (MS SCE) program. Professor John Vande Vate, who teaches in both programs, pulled together students from the two programs to collaborate on this project.

"The collaboration is valuable to both sides," said Vande Vate. "The executive master's students bring broader perspective and industry knowledge and the MS SCE students bring technical and modeling skills. Combining the qualitative and quantitative perspectives leads to a much stronger result, and working with the executives in the EMIL-SCS program is a valuable experience and networking opportunity for the MS SCE students."

The students recognized early on the value of collaborating as a team. "The group dynamic was critical to the success of our Panama Canal impact modeling project and our graduate degree education as a whole," says Jim Blaeser, publisher of American Shipper magazine and student in the EMIL-SCS program. "Each member of our group brought a unique perspective and complementary skills to the table. The value of this group exceeded the sum of its parts. As a result, our sponsor received a useful and insightful model while the team members were afforded the opportunity to learn and grow in new directions."

The students were able to predict the possible impacts of the Panama Canal expansion by working with a U.S.-based, national big-box retailer and highlighting the variables that would dictate the company's supply chain strategy in the future. Essentially their analysis suggests that a meaningful increase in domestic transportation rates — perhaps stemming from a long anticipated capacity crunch — will increase the total cost but have no impact on shipping decisions.

The team developed a model of the retailer's network to evaluate several scenarios based on changes to key variables (e.g., transportation cost elements, transit times, and service levels). Interviews and third party research provided a picture of how the shipping lines were likely

to change their services after the Canal completed its expansion project. Adjusting the model of the retailer's network to reflect the likely changes to ocean rates and fuel costs suggests that:

- Freight volumes from China to the U.S. East Coast will increase by nearly 50 percent over 2011 level,
- Volumes to the Pacific Northwest will suffer the greatest loss with nearly half of the volume moving elsewhere in the network, and
- The Western limit of territory served by ports located in the U.S. East Coast will expand from the Ohio Valley out towards the Mississippi River.

After adjusting for a 10 percent increase in domestic transportation rates, the model suggests no additional changes to the retailer's network in terms of cargo allocations. ▪

Ph.D. Concentration in System Informatics and Control Proves Advantageous for Students and Industry

By Gary Goettling

In Nagi Gebraeel's lab, success is measured by the ability to anticipate failure.

Gebraeel, the Chandler Family Associate Professor in ISyE, and his Ph.D. students use sensor data from a turbojet simulation to document the various scenarios that predict engine malfunction or failure. Their work will help extend engine life through improved condition-based maintenance scheduling and may also be a source for future design enhancements.

Nowadays, virtually every industrial or engineering system new or in design is embedded with dedicated microelectromechanical devices. These high-speed, highly sensitive sensors capture and transmit data in real time about dozens, sometimes hundreds, of key measures — everything from chemical interactions and energy consumption to product quality and output volume. This information helps engineers fine-tune systems so as to improve efficiency and reliability, and reduce costs.

Sorting, processing and analyzing the enormous amount of sensor output into useful, actionable data requires engineers with a high degree of expertise in a number of areas. Recognizing the growing need for these specialists, ISyE introduced a Ph.D. specialization in system informatics and control (SIAC) in 2008.

The newest of ISyE's Ph.D. specializations, SIAC develops research and education programs that provide a scientific base for the design, analysis and control of complex manufacturing and service systems in data-rich environments, according to Jan Shi, the Carolyn J. Stewart Chair and professor in ISyE.

"The conventional methods for system modeling and analysis are either physical-driven or data-driven. However, each method has its own limitations for a complex system," said Shi, who heads the SIAC program. " The SIAC group emphasizes data fusion through developing engineering-driven statistical methods for system modeling and analysis, which leads to much better performance of system monitoring, diagnosis, and control."

Gebraeel's failure-prediction project relies on a jet-engine simulator — a physical engine would be too expensive — with 21 sensors streaming data 24/7.

"It's a big challenge just handling that amount of data," he said. "We first had to develop a selection algorithm to determine which of the 21 sensors were the most informative. Not all the information you get from all 21 sensors is necessary. Bad information contaminates good information, so you want to exclude data that causes inaccuracies in the prediction."

Next, the data is fused through a sophisticated algorithm called multivariate functional principle component analysis or MFPCA. This is a data reduction process — what Gebraeel calls "dimensionality reduction of the information" — that does not sacrifice the information content.

The final step is to study and model the fused data such that the remaining lifetime of key engine components that are functioning in the field can be predicted accurately and in real-time.

Another applied research project, conducted by Shi and his graduate students, concerned a traditional industry: steel. This work, funded by the Department of Energy and conducted in partnership with OG Technologies of Ann Arbor, Mich., involved the use of in-line sensing devices at a U.S.-based steel mill.

"We analyzed real-time data from the production line and developed algorithms for the on-line measurement of quality in the product, which is very, very hot — a thousand degrees or more," Shi explained. "We also provided suggestions about how to improve production efficiency."

The project substantially reduced the number of defects, thereby lowering energy consumption and environmental costs due to less waste and less product re-work. The steel company client followed up by deploying the quality-control algorithm at its mills elsewhere in the U.S., plus Europe, Japan, and China.

In addition to its research component, the SIAC concentration includes six core courses and a minimum of three courses from related fields such as stochastics and simulation, statistics, and dynamics and control.

Kaibo Liu is a recent graduate of the SIAC Ph.D. specialization. In November 2013 he joined the faculty of the Industrial and Systems Engineering Department at the
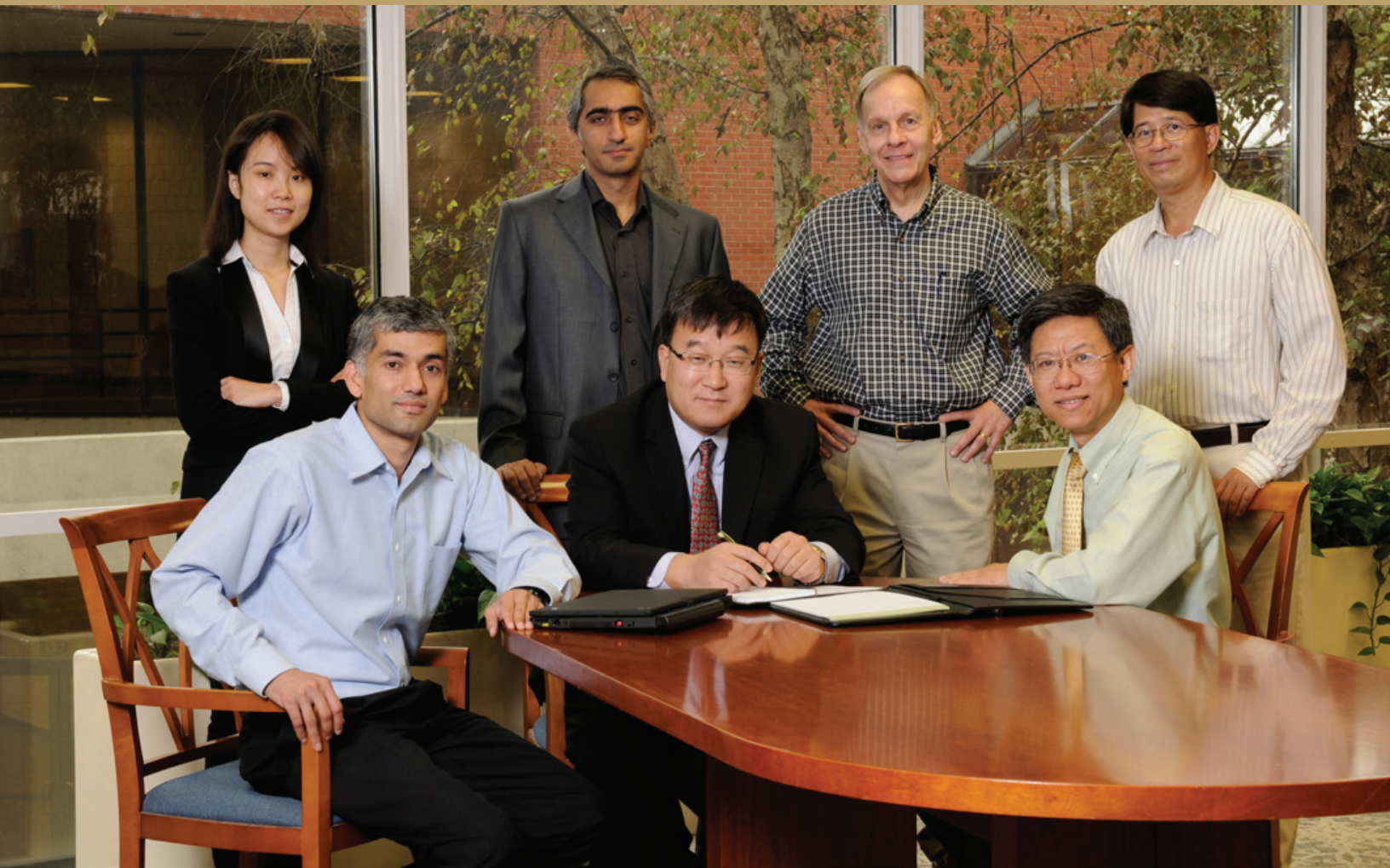
The systems informatics and control faculty develop research and education programs that provide a new scientific base for the design, analysis, and control of complex manufacturing and service systems by combining engineering-driven and data-driven methodologies in a data rich environment. Left to right, seated: Professors Roshan Joseph Vengazhiyil; Jan Shi, Carolyn J. Stewart Chair; and Chuck Zhang. Standing: Yao Xie, assistant professor; Kamran Paynabar, assistant professor; Chip White, Schneider National Chair in Transportation and Logistics; and J.C. Lu, professor. Not pictured: Nagi Gebraeel, Chandler Family Associate Professor; Spyros Reveliotis, professor; and Ben Wang, Gwaltney Chair in Manufacturing Systems.

University of Wisconsin-Madison as an assistant professor. Liu first learned about the SIAC concentration as an undergraduate at the University of Hong Kong, from two of his professors who happened to be former students of Professor Shi's.

"I was very interested in and good at applied statistics," he said. "And as an engineering student, I also had a strong foundation in engineering fundamentals and in-depth domain knowledge. The SIAC program was a perfect match for me, as it requires developing quantitative models to integrate data extraction and engineering knowledge, and employs the models in the analysis and control of complex manufacturing and service systems."

Liu credits the SIAC program with imparting the research skills he needs in his new position. "This program taught me how to develop novel research ideas, formulate and solve interesting problems, and write-up the results for journals and research papers."

Another SIAC alumnus is Ran Jin, who was particularly impressed by the SIAC faculty. "I think the SIAC group has the best scholars in this field," said Jin, an assistant professor of industrial and systems engineering at Virginia Tech. "Although they have very different backgrounds and skills, their areas of expertise are complementary, which makes the courses and research strong." ▪

ISyE Freshmen Make Impact in **Georgia Tech's New Grand Challenges Program**

This past year, Georgia Tech introduced the Grand Challenges Living Learning Community, a new program for incoming freshman that offers students the opportunity to participate in a unique, multidisciplinary learning lab. The program formed a fun and innovative community for these students. They lived together in Howell Hall and worked in cross-disciplinary teams on different projects to solve some of the grand challenges facing society, specifically on the relationship between food, water, energy, and healthcare. Out of the 110 students who participated, seven were industrial engineering students.

During the program, Dima Nazzal, ISyE director of student services, presented a session on the types of projects the Georgia Tech Health and Humanitarian Logistics Center, a unit of ISyE, have been working on with their partnering humanitarian and relief agencies.

"We hope to instill a passion in these students as we help to develop the skills needed to integrate engineering tools and methods with sustainable practices early on in their education so that when they graduate, they will be prepared to make a real difference in this world." said Nazzal.

Shifting Perspectives through Freshman Grand Challenges

By Ethan Smith

Freshmen year could have been daunting, but the Grand Challenges program made my freshmen year more interesting. I got to know such passionate and driven students, and now I'll have many great friends during the rest of my time at Georgia Tech.

Back in high school, I imagined college would mean a lot of independent work and studying by yourself. But Grand Challenges changed that belief. Through the program, I've learned that many things in my future will be a group effort. For example, I didn't realize the benefits of studying with my classmates but it has helped me tremendously during my first year at Tech. If I had problems under-standing a concept, I had a support system to help me, and if I understood a topic, I was there for others who needed help. Future industrial engineering classes will be no different, and I'll continue this tradition of teamwork.

It's interesting but I feel like Grand Challenges made me a much more agreeable person. In high school, I was very headstrong and opinionated. I always took charge in group projects and made sure everything went my way. However, many people in Grand Challenges are just the same way. Everyone wants to succeed and voice their ideas. So I realized that it's not important that I get my way; it's more important that everyone is heard and satisfied. When

everyone agrees, things run much more smoothly. With seven other people on our Grand Challenges team, it was a struggle at first to figure out how to work together effectively, but after a while, it was easy because I work with such talented and hard-working people.

For our project, we are designing an energy recovery system that collects grey water and rainwater. Using gravity, the water will spin turbines to generate electrical power. We hope to find a way to make this concept not only energy efficient, but also cost effective. If the idea is feasible, we plan on installing these machines across Georgia Tech's campus and beyond. The members of my team are Brandon Byers (EE), Edwin Goh (AE), Jacqui Green (ME), Sarah Jones (CE), Colin Kelsall (ME), and Zac Zachow (ME).

My favorite memory was the Grand Challenges banquet where Rob Butera, Wes Wynens, and Kari White, the Grand Challenges leaders, announced that our project would get funding. It was memorable because I got to reflect on all the hard work our group put in to this project. This project has certainly been stressful and took a high level of dedication, but it was definitely worth it, and it was great to celebrate our group's progress at the banquet.

Freshman Grand Challenges: Solving Problems with No Simple Answers

By Misha Desai

The project my group worked on during Freshmen Grand Challenges was titled *Georgia Tech Encouraging Childhood Health*. This project enhanced my freshman experience because it gave me the opportunity to work with other students from a variety of disciplines to solve problems with no known solution. At first, we came into this program expecting ourselves to come up with unquestionable, concrete, and simple solutions to some really difficult world problems. The open-endedness of the program became a very big challenge for many students, including myself, to overcome. Throughout this project, I learned how to analyze information and adapt ideas to fit real world limitations. Because we knew that this project had the potential to be funded, we had to be conscious of setting feasible goals and ensuring that all our objectives were backed up with data and facts. Over time, it became clear that many of the problems that the groups were tackling did not have one specific and simple answer. Instead, we learned that the very essence of solving some of society's problems were in multi-faceted solutions that not only addressed the core issue, but also potential problems that could arise.

The goal of this project is to reduce the prevalence of childhood obesity by using elementary schools as a vehicle to promote healthy lifestyles.

Our program is based on two main concepts: an interactive school play that encourages active learning and an interactive website and pedometer tool that allow students to demonstrate their knowledge and learn more about fitness. Our program targets early elementary school children through use of the arts to teach the importance of proper dietary choices and exercise habits. The program will also use interactive media to promote healthy lifestyles because computers and interactive programs have been shown to be an effective tool for student education. If successful, the implementation of the solution would result in students and parents who are more knowledgeable about healthy dietary choices and physical fitness, and are better prepared for healthier lifestyles.

My favorite memory from last year was when my group was awarded the Best Proposal during the Grand Challenges Banquet and also found out that our project would be funded. It was great to see how our hard work and persistence during the semester paid off. As a group, we encountered a lot of challenges and frustrations during the second semester. However, we made sure to keep our progress moving and we were persistent in making sure that we produced quality work. Now, our project is finally coming to fruition. This year, we added a web

Dima Nazzal, ISyE director of student services, works with undergraduate students Misha Desai and Ethan Smith as they continue the research they began in their freshman year through the new Grand Challenges program at Georgia Tech.

developer to our team to help us complete the development of the website. We have also been working with the mayor of Duluth, a vice principal, two teachers, and two physical education teachers to implement our program in the spring. Over the course of fall semester, we will be working on developing lesson plans, addressing website challenges, attending various conferences, and looking into how to make the program more sustainable through new partnerships and collaborative efforts.

Overall, I learned a lot about teamwork, leadership, and problem solving through the Grand Challenges Living Learning Community. One of the greatest challenges I had to overcome was learning that there was not always a right answer to every problem. While there may not be a single correct answer, my job as a student and engineer will be to find the best one. ▪
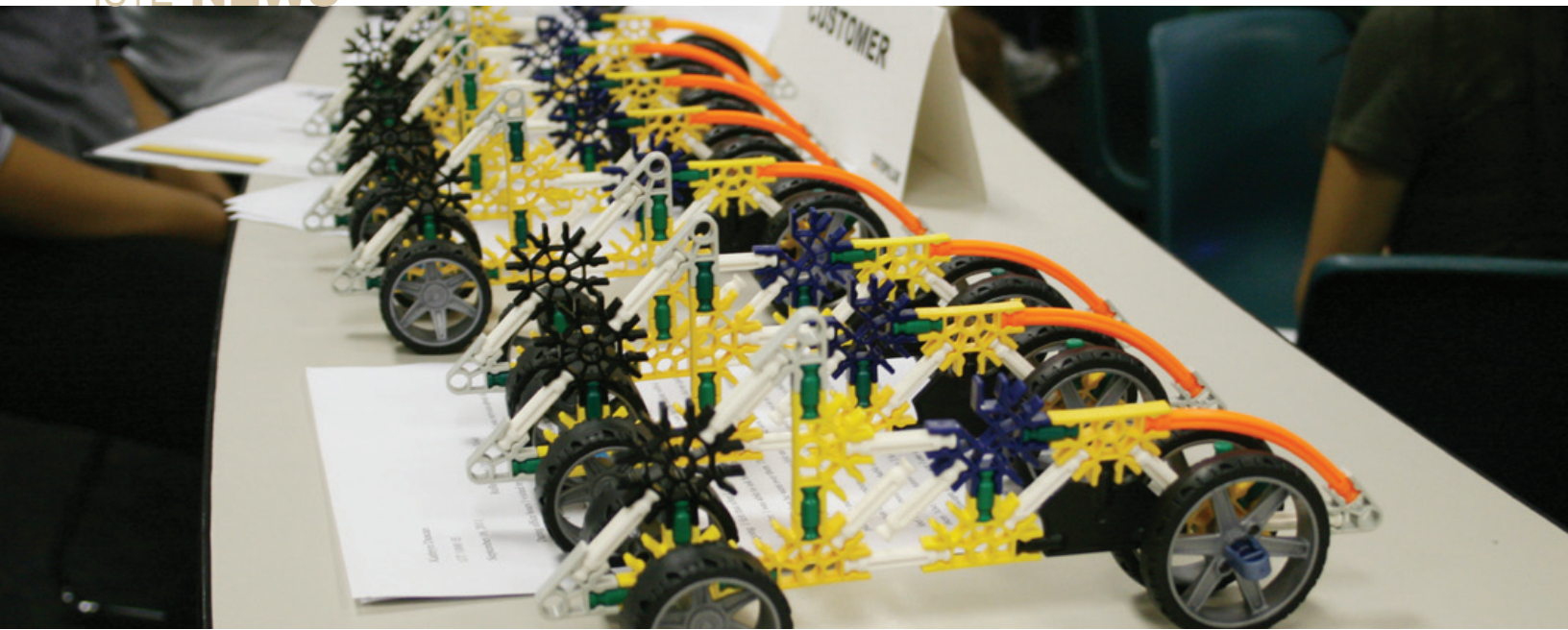
Ten Ways to **Collaborate with ISyE**

The Stewart School of Industrial & Systems Engineering (ISyE) works closely with a wide network of collaborators. Here are 10 commonly employed mechanisms in which ISyE and the professional community are working together for mutual benefit. However, this is by no means an exhaustive list, and we are always eager to explore new and creative ways to collaborate with our alumni and industry friends. For more information, visit **www.isye.gatech.edu/about/how-to-work/**

1 INDUSTRY RESEARCH OPPORTUNITIES

ISyE's faculty and graduate students regularly work with corporations and other organizations to perform in-context research that provides new knowledge, tools, and insights.

2 PROJECT OPPORTUNITIES

ISyE capstone courses, both at the undergraduate and graduate level, provide a unique opportunity for companies and organizations to partner and interact with a team of bright, creative, and dedicated students.

3 PRESENTATIONS AND LEARNING OPPORTUNITIES IN THE CLASSROOM

Industry executives from a variety of fields can interact directly with ISyE students through class presentations, panels, and lectures to inspire and steep students in real-world problems and solutions. For example and as seen in the photos, Caterpillar, Inc. brought its production systems game into the classroom so that students could learn how to run productions efficiently.

4 TOURS OF INDUSTRY FACILITIES

Touring industry facilities, such as warehouses and distribution centers, is a great opportunity for students to see how principles taught in the classroom are put into action.

5 MENTORING STUDENTS

Mentor Jackets is an alumni-to-student mentoring program sponsored by the Georgia Tech Alumni Association and the Georgia Tech Student Alumni Association. Mentoring pairs develop their partnerships through face-to-face interactions, electronic communication, telephone conversations, video and teleconferencing, special events, and programming exclusively designed for members of the program.

6 COOPERATIVE EDUCATION AND INTERNSHIPS

Through undergraduate and graduate co-ops and internships, companies have the opportunity to work with some of the nation's top students while evaluating their effectiveness and potential as future employees. Students also benefit by gaining valuable work experience.

7 RECRUITING

Interesting in hiring one of our students? Companies are encouraged to send job announcements to our various lists.

8 CAREER FAIRS

Participate in one of Georgia Tech's Career Fairs to enhance your company's visibility to future job candidates in ISyE.

9 CONTINUING PROFESSIONAL EDUCATION

The Georgia Tech Supply Chain & Logistics Institute in ISyE offers a comprehensive professional education curriculum in supply chain and logistics. You can select short courses for an in-depth knowledge of a specific topic or enroll in one of the multi-course certificate programs for a complete and highly sought after supply chain education.

10 PHILANTHROPY AND SPONSORSHIP

Outside support through philanthropy and sponsorship allows us to enhance our programs, increase the number of graduate fellowships and undergraduate scholarships, provide endowed chairs and professorships, and much more.

ALL *in the* FAMILY

ISyE students of yesterday and today share ties

By Lyndsey Lewis

Over the past few decades, the H. Milton Stewart School of Industrial & Systems Engineering has seen sweeping changes.

It got a name, for one thing. (Thanks again to H. Milton Stewart Jr., a 1961 alumnus.) Its students and faculty embraced the promises of technology, which has become a constant presence in education. And, of course, the Stewart School itself has grown into a global force that serves business and humanitarian needs alike.

But a few things have remained remarkably consistent — and we're not just talking about high rankings.

One of the defining experiences for industrial and systems engineering (ISyE) alumni of all backgrounds is still the senior design course. A milestone in the IE curriculum, this class offers both real-world project experience and real-world stresses.

"You go through a lot of pain," said Chris Anderson, B.S. IE 2008. Still, he added, "it teaches you a lot in terms of working and meeting deadlines."

His father, Mike Anderson, graduated from ISyE nearly three decades earlier. But his senior design work still stands out to him too, and he cites it as one of the key courses in his Georgia Tech career.

Memories of that class came up time and time again in interviews with ISyE alumni, students and professors. As the Stewart School continues to grow in size and scope, some changes are inevitable, and its stakeholders are optimistic about the future.

But they also know that some things remain steadfast. The core principles that defined ISyE decades ago are still very much alive today.

To explore the ties between the ISyE of yesteryear and the one of today, we spoke to some of its alumni, students and professors — many with ISyE family connections.

EXPERIENCING ISyE

Like countless students before and after him, Ed Rogers grew up loving Georgia Tech. His father, ISyE alumnus and professor emeritus Nelson Rogers (recently deceased), had been taking him to Yellow Jacket football games since he was a boy.

Once he was a Tech student, he decided to study industrial engineering partly as a function of his personality, which is driven to create order out of chaos.

Matlock, IE 2011, and Ed Rogers, IE 1982, MS IL 2002, enjoying a Georgia Tech football game in 2012. Ed is a director of Global Strategy at UPS and Matlock works for Anheuser-Bush as a project manager.

"Frankly, I'd always preferred to be in situations that are run efficiently," he said. "That's just the way I'm wired."

Rogers, now a director of global strategy at UPS, received his bachelor's degree in industrial engineering in 1982. (Twenty years later, he was among the graduates of Tech's very first Executive Master's in International Logistics program.)

He shares his alma mater with his son, Matlock, and he knows their experiences in ISyE share some common themes.

"Georgia Tech undergraduate engineering is by nature rigorous and demanding," he said. "It always has been and it always will be; my son Matlock tells me it's certainly still the case."

Matlock Rogers, who got his bachelor's from ISyE in 2011, said he's grateful for the rigor.

"Georgia Tech undergraduate engineering is by nature rigorous and demanding. It always has been and it always will be; my son Matlock tells me it's certainly still the case."

- Ed Rogers, IE 1982

Although he stresses that "the coursework was challenging," he appreciates the depth at which he was expected to understand material. Early in his college career, his classes focused mostly on theory, but as he advanced in the curriculum, Rogers found himself applying his theoretical knowledge to complex, real-world situations.

ISyE professor Julie Swann (who earned her own industrial engineering B.S. from Tech in 1996) enjoys teaching the undergraduate senior design course for that very reason.

"What I like is that students join together to work on projects, and it's real-world experience," she said.

Matlock Rogers, meanwhile, now works for Anheuser-Busch as a project manager. His years as an ISyE student, he said, "gave me the right tools and the right exposure to industry."

FROM CLASSROOMS TO THE WORKPLACE

As chief executive officer of GameStop, Paul Raines leads a busy life. But something he likes to make time for outside the workplace is Georgia Tech, and specifically the ISyE program.

A 1985 ISyE graduate himself, Raines sometimes meets with high school students to discuss the benefits of a Tech education, and he explains the advantages of studying industrial engineering.

So far, he's had a lot of success with his strategies. Four kids who spoke with him went on to attend Tech. (His daughter, Victoria, is a current ISyE student, and she reports her dad "was ecstatic" about her decision to attend his alma mater.)

Raines laughs when he calls himself a Georgia Tech "closer," but he's serious about the value of industrial engineering.

"ISyE is fantastic, because it is a very broad background," he said. "It's certainly technical, but there is an element of systems thinking and integration that is forced on you."

ISyE's programs emphasize intellectual rigor, but they're also known for grounding students in real-life problems to ready them for the workplace. That initiation can start right at the beginning of students' academic careers.

Last year, Victoria Raines enrolled in an industrial engineering-based section of GT 1000, the Institute's freshman seminar. The class taught her more about what kinds of

companies hire ISyE graduates, and several program alumni spoke about their experiences.

Paul Raines, meanwhile, still vividly remembers the challenges of a course from later in his Tech career: senior design. Back then, Georgia Tech ran on a quarter system, which meant his class was split into two parts. After spring break, Raines said, he returned to school to find the company he was working for had restructured.

"It was pretty scary, when you're about to graduate, to have that happen," he said. But it was also a key learning experience, giving him and his classmates a taste of the last-minute crises that can impact projects in the workplace.

Though his daughter is still in the early phase of her ISyE career, she said she already knows the program will prove "challenging but rewarding." She's eyeing jobs that combine engineering and business – much like her dad.

Some of ISyE's newer offerings are specifically tailored to reflect the modern working world. For example, the Executive Master's in International Logistics & Supply Chain Strategy Program, which leads to an MS in International Logistics, is designed for leaders in an increasingly globalized workplace.

Paul Raines, IE 1985, CEO of GameStop, enjoys meeting with high school students to discuss benefits of attending Tech and especially studying industrial engineering.

Victoria Raines, a current undergraduate student, said her father "was ecstatic" about her decision to attend his alma mater.

Left: Mike Anderson, IE 1979, president and CEO of Georgia Power Foundation, Inc., cites his Senior Design experience as one of the key courses in his Georgia Tech career. Right: Chris Anderson, IE 2008, senior analyst at Consolidated Edison, notes that IEs can work anywhere based on the set of skills they learn.

Participants spend time on four continents over the course of 18 months, meeting for classes in each location about regional influences on logistics.

Ed Rogers, who earned that master's degree in 2002, said it "was the perfect program in order to get a global, more strategic understanding in challenges and opportunities in logistics."

The ISyE school at large is committed not only to logistics in the corporate world, but in humanitarian work as

well. In her research, Julie Swann focuses on humanitarian supply chains and health issues in Georgia and across the world.

"Our current graduates need to be globally savvy," she said, "because even if they take a job in Georgia, their companies may have interactions with suppliers all over the world."

LOOKING TO TOMORROW

In a field that's constantly evolving, the future can be tough to predict. But ISyE alumni and current students alike all pointed to similar ideas in their visions for the program's future.

They said that international experience, which wasn't heavily emphasized at Tech during the college careers of some older alumni, is now very important – and it's only becoming more so.

Chris Anderson noted that in a world dependent on global logistics, ISyE leaders are smart to encourage

study- and work-abroad experiences. And, when students get those experiences early, they gain an advantage for the working world.

"We can work anywhere we want based on our skill set," he said.

Julie Swann also sees a more international bent in the student body itself. Since her days as a student, she said, Tech has become more diverse in languages spoken and nationalities represented.

Another change highlighted by alumni was the very type of humanitarian work Swann is involved in. Mike Anderson, for example, envisions future graduates becoming more involved with nonprofits, and he's looking forward to seeing the impacts today's ISyE students will make in that realm.

 "I see IE doing that on a state, region, national and worldwide level — and being able to provide some solutions," he said.

Julie Swann, IE 1996, is now the Harold R. and Mary Anne Nash Associate Professor at ISyE. She enjoys teaching Senior Design because it offers students a real-world experience.

Then, of course, there's the wildcard: technology. Chris Anderson pointed out that technology has shifted in innumerable ways since his own father was in school, and that more changes will bring more opportunities to ISyE students.

Back when Paul Raines was in school, there was a brand-new program at ISyE: PC rental. Students could sign up to rent one themselves, which Raines found amazing.

"I thought, 'Man, this is the future!'" he said.

Times have changed, but Raines is pleased to see ISyE keeping up with technology and growing to meet the modern world's demands.

"It's just such a comprehensive program," he said.

THE ZALESKYS

Charlene and Zola Zalesky are your typical Yellow Jackets, but they're also a million miles from average.

In their family of four, everyone is a Georgia Tech graduate or a current student. But Charlene and Zola also share an ISyE connection: Charlene earned a bachelor's in health systems in 1977, and Zola, her daughter, is now an ISyE student herself.

"Recognizing my mom's career success across four different industries is what initially sparked my interest in industrial engineering. I saw how the IE degree led to a wide variety of career opportunities," Zola said.

Although they share many of the same ideas about and passions for ISyE, the generational divide between them underlines the changes the school is making to face its future.

When Charlene was a student, computations were done on slide rules, and computers took up whole buildings. These days, personal laptops rule the classroom.

And, when she began at Georgia Tech in 1973, there was just one female student for every 20 male students. By the time she graduated, the ratio was 1:12, and now that Zola is a student, it's 1:3.

These days, there are new chances for students to learn outside the classroom too.

"We didn't have the internship or international opportunities they have today," Charlene said, noting that these opportunities help students "recognize what they don't want to spend a career doing as much as what they do want to do."

Zola, for example, has already studied abroad in Germany. Fluent in German, she hopes to return to the country for an internship.

As the fourth member of her family to attend Georgia Tech, Zola is proud to be part of the ISyE program. But she's also excited to carve her own path at Georgia Tech — and beyond.

"Industrial engineering, more than some of the others I've noticed, is more influenced by women," she said.

As Zola grew up, Charlene said, she made it a priority to show her "the role of women" in the field. Her daughter was inspired and encouraged by meeting female engineers. Teachers often discouraged her from pursuing a career in math or hard science because she excelled in social sciences, but Charlene introduced her to professionals in various fields and made sure Zola knew that engineering was an option for her too.

Now she's at Tech all on her own, Zola is eager to make ISyE her own.

"This is my IE degree," she said, "my Georgia Tech experience and my path to an exciting career in medicine or logistics or finance or what dream I decide to pursue." ▪

When Charlene Zalesky, IE HS 1977, was a student, computations were done on a slide rule. For Zola, a current undergraduate student, computers are the standard.

Georgia Tech ISyE Alumni Receive a **10% Discount** on Professional Education Courses

The Georgia Tech Supply Chain & Logistics Institute (SCL) enjoys a long-standing reputation for educating and training the best critical thinkers and problem-solvers in the world. Participants, like you, bring real-world issues to our programs and leave with practical solutions. Here are some upcoming highlights of our course offerings.

Professional Education Short Courses offered in Atlanta at the Georgia Tech Global Learning Center:

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April 29-May 1, 2014

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Aug. 5-8, 2014

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Oct. 21-23, 2014

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April 8-10, 2014, Oct. 14-16, 2014

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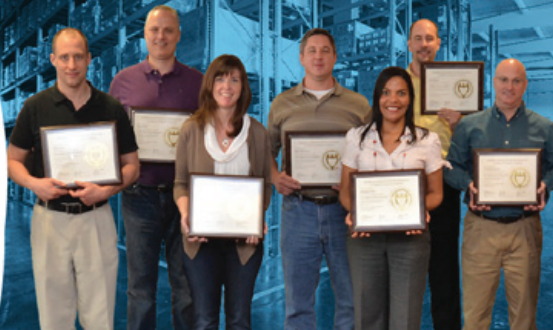
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Beyond the Classroom with Valerie Thomas

In the classroom, Valerie Thomas, Anderson Interface Associate Professor of Natural Systems, and her students investigate energy and materials efficiency, sustainability measures, and industrial ecology. At home, she and her family apply sustainability science to everyday life by experimenting with a unique approach to cooking. If you were to visit Thomas for a weekend meal, you might find her in the backyard next to an odd cooking contraption, a stove that looks like something the Jetsons would have used. In fact, it's a parabolic stove that uses the energy of the sun as fuel.

CLARK THOMAS/NASHVILLE

What motivated you to begin cooking on a parabolic stove?

I've been cooking with a solar oven for several years now. The solar oven works great, but I wanted to be able do stove-top type cooking, so I got a parabolic stove.

What kinds of things do you cook or not cook on it?

We boil water for tea and coffee. I cook hamburgers, sausages, eggs, and vegetables. Basically it's exactly like a gas burner on a gas stove. However, mine is a bit harder to manage than my gas stove. Generally, I end up having the hot spot a bit more on one side rather than exactly in the middle. Also, it is a bit over-focused so to get even cooking I need to swivel the pan back and forth a little. I don't use it for gentle, slow simmering.

One limitation is that the sun has to be up. Even in the summer, if I wanted to rely on it for morning tea, I would usually have to wait until 10 a.m. or so.

How often do you use the stove?

I only use it about one day a week, on the weekends, because most days I'm not there much before sundown. It would work in the winter, but I don't use it then because it involves going in and out of the house a lot. I use it like other people use an outdoor grill. It's a fun way to cook.

How is cooking on this different/similar to cooking on a regular stove?

Since I'm relying on the sun, I really do have to strike while the iron is hot. Using a solar stove leads me more toward cooking food in the middle of the day, and being mindful of how late it is in the afternoon and how much sun is left.

Describe the process from set up to shut down for cooking one of your favorite recipes.

The first step is to get the stove into the sun and pointed at the right angle. That could involve picking it up and moving it to a sunny spot. Then I tilt the parabola back and forth until the heat is focused on the cooking ring. Once I get the angle to the sun about right, I wave my hand through to feel where the heat is to see if I need to make some adjustments to the angle. Next I put the pan on the cooking ring and look underneath to see exactly where the bright sunny spot is on the bottom of the pan. I continue to make small tilts and turns to get the bright spot to be in the middle of the pan. Then, I proceed as usual. Let's say I'm making a stir fry. I'll pour some oil in the pan, wait a bit, tilt the pan around to cover the bottom of the pan with oil, add some spices, stir a bit with a spatula, add some onions and garlic, add the other ingredients, stir around a bit more, and it's done. To shut down, I just swivel the parabola a bit to the side ▪

Mission Possible: High School Students Participate in the 2nd Annual ISyE Summer Enrichment Program

Following a successful first year, ISyE hosted the second annual Mission Possible STEM Summer Enrichment Program, designed to introduce rising 10th to 12th grade students to the world of industrial engineering. The program was so popular last year, ISyE offered two separate week-long summer sessions to accommodate a larger number of interested students this year. Students had the opportunity to attend either a June or July session.

Mission Possible is open to students who excel in math and science, with a special focus on recruiting under-represented minority students from schools across the country. This year, a total of 52 high school students participated in the program, where they interacted with industry representatives from companies such as Coca-Cola and Caterpillar Inc. They also work with and gained insight from ISyE students, faculty, and academic advisors.

"The energy was phenomenal. They really enjoyed the interactive activities and we even had students who came back for the second time," said Valarie DuRant-Modeste, academic advising manager in ISyE and program director for Mission Possible. "This year we had students not only from metro Atlanta, but also from as far as Puerto Rico, Taiwan, and El Salvador."

For more information about the program, contact DuRant-Modeste at vrd@isye.gatech.edu. If you would like to help sponsor this program, contact Nancy Sandlin, ISyE director of development, at nsandlin@isye.gatech.edu. ▪

Stay in touch! Drop us a line. Share your story.

The Alumni News section highlights promotions, awards, scholarship, fellowships, publications, and general stories of interest. We enjoy promoting our alumni. Please share your news updates and stories. We hope to hear from you soon.

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Retired ISyE Professor Jerry Thuesen Reflects on Tenure with ISyE

It has been over 40 years since Jerry Thuesen first stepped foot on the Georgia Tech campus as an associate professor in what is today the Stewart School of Industrial & Systems Engineering (ISyE). In 1968, with just 16 faculty members, industrial engineering at Georgia Tech had grown to become the largest academic program of its kind in the United States.

At that time, industrial engineering was housed in the A. French Building, located behind Tech Tower. To get to any of the three floors, one could use the button-controlled freight elevator that was enclosed with wooden slats, or take the stairs (which was preferred by faculty). There was only one restroom in the A. French Building, which had stalls, but lacked doors. The whistle from the nearby power plant, which sounded five minutes to the hour, alerting students it was time to change classes, "made your head swivel," Thuesen recalls. Though the building lacked in modern conveniences, it was impressive in those days that an industrial engineering school simply had a building of its own.

Hired by Bob Lehrer, ISyE School chair from 1966 to 1978, Thuesen came to Georgia Tech to teach engineering economics, an area of expertise he shared with Lehrer. During his career, he taught four courses within the engineering economics discipline to both undergraduate and graduate students in ISyE, as well as those in other engineering schools on campus. Class sizes ranged from 25 to 35 students in the ISyE classes and up to 200 students in classes from other departments.

In 1971, Thuesen revised and released the 4th edition of *Engineering Economy*, originally written by his father, H.G. Thuesen, a pioneering IE professor at Oklahoma State University. That same year, Thuesen received notice of tenure via "a handwritten note slid under his office door," and later in 1977 he was promoted to full professor in ISyE. During his career, he served on the American Society for Engineering Education Board of Directors and the IIE Board of Trustees, and he was the editor of *The Engineering Economist*.

Aside from his research, Thuesen spent much of his career giving back to the School, by contributing his time as well as through financial support. In 1983, the same year ISyE moved across campus to the Groseclose Building, Thuesen worked with a group of faculty and staff to start the Evelyn Pennington Endowment, the first endowment fund in ISyE. The fund was created in memory of Evelyn Pennington, who worked as an academic advisor and secretary in the chair's office and continues to support student activities in ISyE today.

"To have a high level of expertise, you must have outside funding. Philanthropic donations allow the School to be competitive and maintain a group of faculty that are respected around the world," said Thuesen. "Georgia Tech has a strong loyalty from alumni, which is the very basis of being successful at fundraising."

While at Stanford undergrad, Thuesen played varsity basketball for three years. To this day, he still holds the free throw career percentage record. With his sports background, it comes as no surprise that Thuesen was actively involved in athletics at Georgia Tech. He organized an industrial engineering intramural volleyball team, comprised of faculty members and undergraduate students. The team played so well together they reigned as the School champions from 1970 to 1980. He also played on the Georgia Tech ISyE intramural basketball team and served on the Georgia Tech Athletic Board.

Thuesen retired from Georgia Tech in 1996 after nearly 30 years of service. He continues to support the School through contributions to various funds, and encourages faculty to become active in fundraising efforts on campus. ▪

Surviving Drownproofing 101

By Paul Flood, IE 1958

If you wanted to learn how to survive in the water, Georgia Tech had just the course for you. From 1940 until 1987, drownproofing, a method for surviving in the water for long periods of time, was a required course for Georgia Tech students. Coach Freddy Lanoue, who taught the class until the mid-1960s, developed the drownproofing technique in response to events happening in the world at that time. He indicated that more navy sailors had drowned during World War II than were killed by artillery fire because they could not survive in the water for long periods of time if their ship was sunk.

The objective of the course was for the student to be able to float in deep water for as long as he could stay awake. For most, this could be well over 24 hours. The key to survival is to be able to vertically lie in the water with only the top of your head exposed. It's possible to float this way because most individuals' body density is 98% water. The process is to take a deep breath, let your body go limp while 98% of it is submerged, let out about a third of your breath, and allow yourself to "hang" in the water. When you are ready for another breath, exhale, and move one arm or leg enough so that you can lift your head out of the water and take another deep breath. Again, let your head submerge with only the top back part of it above the water line. By repeating this procedure, you can float in the water as long as you can stay awake.

Throughout the course, we had several tests, including the first test which was to tie your hands behind your back and your feet at your ankles, drop into the deep end of the pool, and float for one hour. We all felt that if we could pass that test, we could not only pass any swimming test, but we could pass any test in any school at Georgia Tech! Each student had a partner when we took the tests. The partner would jump into the pool and pull us out of the water if our heads went under and we were not able to make it back up to the top. This kept us from drowning!

My partner was a heavyset boy who was a football running back in high school. His body was denser than water; therefore, when he went limp, his body would sink! The first time he did the first test with his hands and feet tied, he sank nine times in a row and I had to go in and pull his head up and out of the water to keep him from
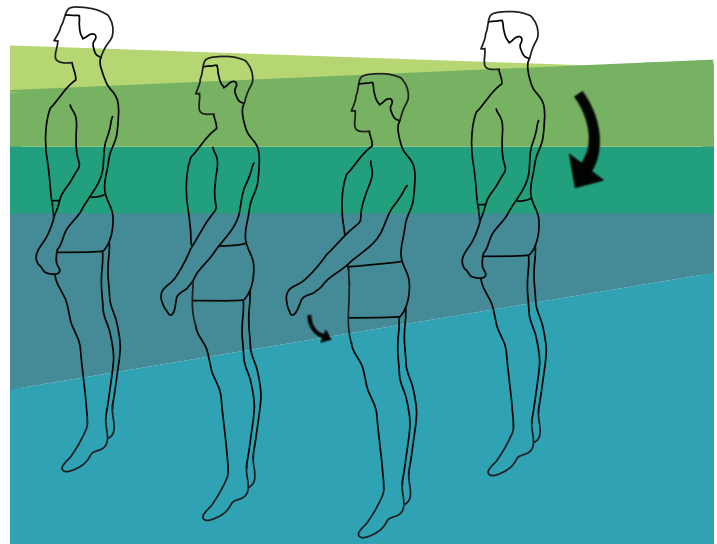
"Drownproofed" Swimmer
Using ONLY "drownproofing" techniques

1. Jump in clad, stay up one hour.
2. Dive in clad, swim one mile without touching sides or bottom.
3. ARM EFFICIENCY: With crossed ankles tied together and then tied to the waist, first stay up half an hour, then swim 100 yds., then untie knots and get out.
4. LEG EFFICIENCY: With wrists tied behind back, stay up half an hour, then swim 100 yds., then swim to shallow water to be untied.
5. Jump from high board.
6. Dive deeply from side then swim across pool underwater (30 to 40 ft.).
7. Surface dive and recover object in at least 8 ft. of water.
8. Do recognizable crawl stroke for pool width.

drowning. Coach Lanoue would not let me go in until my partner was almost out of breath. After attempting the first test, I recall my partner yelling as he came out of the water, "Where the 'H' were you? I almost drowned!"

With his heavy body density, he had to fight through every test. When he completed the course, Coach Lanoue gave him a good grade because he kept fighting and never gave up. Over the years, I have found that life is a lot like that swimming course. ▪

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Paul Flood is the chairman and CEO of Chattahoochee Health Resources. His clients include hospitals, state hospital associations, and large physician practice groups. Flood continues to stay in touch with Georgia Tech, and has served on the ISyE Advisory Board since 2012.

Passing the time...with ISyE

1

1924–1950s

1924
Industrial Engineering (IE) first appears as the "Industrial Option" in the mechanical engineering curriculum.

1945
Georgia Tech President Blake Van Leer oversees creation of a Department of Industrial Engineering housing 15 students and three professors working in two borrowed rooms in the Swann Building. Frank Groseclose, who will later become known as the "father of industrial engineering" at Georgia Tech, becomes the first professor.

1946
Groseclose becomes the first director of the Department. The Department awards its first Bachelors of Industrial Engineering.

1947
The department begins its graduate program offering a Master in Industrial Engineering.

1948
The Georgia School of Technology is renamed to the Georgia Institute of Technology, and the department becomes the School of Industrial Engineering. The School establishes a chapter of the Institute of Industrial Engineers, and awards its first Master in Industrial Engineering.

1949
The School grows to 500 undergraduates and 30 graduate students. The School relocates to the A. French Building. The School founds the *Journal of Industrial Engineering*.

1950
Robert Lehrer and Joseph Moder are the first two Ph.D. recipients to join the IE faculty.

1951
The School begins its tradition of offering continuing education courses by hosting short courses to increase industry application.

1956
Diane Michel, one of the first two women to enroll at Georgia Tech in 1952, completes her IE degree and becomes one of Georgia Tech's first two female graduates *(photo 1)*.

1958
The School initiates its doctoral program with a class of six students. Harold Smalley joins the School and founds a Health Systems program.

1960s–1980s

1966
Robert Lehrer becomes the second school chair and leads the School into the era of operations research and systems engineering.

1969
The School adds the word "Systems" to its name, becoming the School of Industrial and Systems Engineering.

1971
The School begins offering a Master of Science in Operations Research.

1974
The School adds a Senior Design course to its undergraduate curriculum.

1978
Michael Thomas becomes the third school chair and develops the School's research and graduate programs.

1979
John White founds the Material Handling Research Center to expand material handling research and industry outreach. John Jarvis and Don Ratliff create the Production Distribution Research Center to develop logistics optimization systems for the military.

1982
Jane Ammons becomes the School's first female Ph.D. recipient and faculty member.

1983
The School moves into the new Frank Groseclose Building on West Campus.

1984
The School creates the ISyE Alumni Advisory Board.

1985
The School establishes its first endowed chair, the A. Russell Chandler III Chair, and awards it to George Nemhauser.

1989
John Jarvis becomes the fourth School Chair and moves the School to a computer-based program.

2

3

1990s

1990
The graduate program obtains a No. 1 ranking by *U.S. News & World Report*.

1991
The School contains 1,000 undergraduates and 250 graduate students. The Manufacturing Research Center opens, setting the hallmark for corporate research cooperation.

1992
The School merges several research centers into The Logistics Institute with Don Ratliff as the executive director, Edward Frazelle, Ph.D. IE 1989, directing the professional education activities, and George Nemhauser directing the research activities. The graduate program obtains a No. 1 ranking again by *U.S. News & World Report* and begins an impressive consecutive run of years in the top spot.

1994
Professor Thiruvenkatasamy "Govind" Govindaraj becomes interested in the new presentation format called the World Wide Web. He develops a Web page that included information for his courses and research starting the initial efforts for the School to have a Web presence.

1995
The faculty is rated the best in the nation according to the National Research Council.

1996
Leon McGinnis founds the Keck Virtual Factory Laboratory to develop detailed models to support system design and operation in the manufacturing domain.

1999
H. Milton Stewart, Jr., IE 1961, and Carolyn J. Stewart, Honorary Alumnae 2008, establish the H. Milton and Carolyn J. Stewart School Chair as Georgia Tech's first endowed School Chair. Georgia Tech adopts the semester system. The School collaborates with the National University of Singapore to open The Logistics Institute-Asia Pacific for research and education programs in global logistics. An 18-month Master of Science in International Logistics (known as the Executive Master in International Logistics & Supply Chain Strategy program) is established.

2000s–present

2001
William Rouse becomes the H. Milton and Carolyn J. Stewart School Chair, making him the fifth school chair and leads the School's efforts in enterprise transformation and globalization.

2002
The School initiates a Hong Kong-Singapore undergraduate summer study abroad program that becomes the Beijing-Singapore study abroad in 2004. The School offers Dual MS degree program with NUS.

2003
The School expands into the old College of Management Building, now the ISyE Main Building, following the opening of Technology Square *(photo 2)*.

2005
Chelsea "Chip" White III becomes the H. Milton and Carolyn J. Stewart School Chair, making him the sixth school chair.

2006
Through the generosity of H. Milton Stewart, Jr., IE 1961, and family, the School becomes endowed as the H. Milton Stewart School of Industrial & Systems Engineering *(photo 3)*. The Logistics Institute is renamed the Supply Chain & Logistics Institute (SCL).

2009
The Trade-Chain Innovation & Productivity Center in Costa Rica is established, making this the second center in SCL global network.

2010
The Georgia Tech Panama Logistics Innovation & Research Center is launched, increasing SCL's global footprint.

2011
Jane Chumley Ammons is named the H. Milton and Carolyn J. Stewart School Chair. She is the first female to be named chair in the College of Engineering. The Georgia Tech, Tecnológico de Monterrey Open Trade & Logistics Center is established. This is the fourth addition to the SCL's global network of centers. ISyE establishes a one-year Master of Science in Supply Chain Engineering.

2013
See page 2 "ISyE by the Numbers" for a glimpse of what ISyE looks like today.

Leaders in the Making: **IE SGA Presidents**

Graduates of ISyE are known for making an extraordinary mark in the world as leaders in the field. However, many students in ISyE begin making an impact as leaders long before graduation, serving in various roles across campus. Dan Blitch, IE 1953, Carey Brown, IE 1969, Tiffany Massey, IE 2003, and Eran Mordel, IE 2013, all served as president of the Student Government Association (SGA) during their time at Georgia Tech. They recently took a moment to reminisce about their individual experiences in this role and how it shaped their futures.

Dan Blitch, IE 1953

I served four years on the SGA and in 1953 I was elected president by the SGA officers. Back then, the environment at Georgia Tech was a lot different than it is today. ROTC was very active on campus, with many cadets leaving after graduation to serve their country. In the fall of 1953, Georgia Tech welcomed its first female students, after a close Student Council vote the previous year.

As president, one of my responsibilities was leading the student government in tasks such as distributing student fees across campus, most of which went to football and sports. I was responsible for setting up committees who worked to improve relations among Georgia Tech students and students at other universities, including Auburn and the University of Georgia. While serving as president, I also helped collect money for the original Alexander Memorial Coliseum (now the Hank McCamish Pavilion). I remember going from classroom to classroom speaking to students about the coliseum and taking up spare change they contributed to the project.

The interaction with other students, particularly those on student council, was a wonderful experience that helped me develop my leadership skills. One of the greatest benefits of serving as SGA president was having the opportunity to get to know outstanding men, such as Bobby Dodd and Dean George C. Griffin, dean of students from 1946 until his retirement in 1964. I also felt that my involvement in student government was a key factor in having the opportunity to go to Harvard Business School after graduating.

-Dan Blitch, IE 1953

Carey Hall Brown, IE 1969

I was elected student body president in the fall of 1967. Dean Jim Dull worked closely with me and the Student Government. He was very much a hands-on dean of students as well as a supportive, wonderful, caring man. The SGA controlled all the student activity fees: Athletic Seating, Student Parking, Concerts, Freshman Camp at Rock Eagle (with the YMCA), Honor Board, and Ramblin' Reck Club. Anything that had to do with student life and affairs was controlled and run by the SGA committees with direction from the Dean of Students office.

Once elected, I immediately engaged Dean Dull and stated I wanted to make a difference while in office. He handed me several copies of his recent annual reports to the president. The theme he repeated every year was there were ashamedly few facilities for students to exercise and participate in intermural sports athletics. What followed were plans for the SAC '70 (Student Athletic Complex), which was born believing we could convince Governor Lester Maddox's office to authorize the funds for building such a facility on campus by 1970. We had previously gained authorization from the School of Architecture to assign 5th year student Bo Powell to create a design for SAC. Bo and I traveled to several schools at our own expense to view other student athletic facilities. Bo had created such a wonderful design and a presentation that when we visited with Maddox, he immediately stated he would ask Georgia Tech President Edwin Harrison to place the capital request for the building at the top of his list. In the years that followed, successive student leadership, which included John Hayes, Chris Bagby, Bruce Milligan, and others kept the dream alive. SAC '70 finally became a reality. For me, getting the Student Athletic Complex project off the ground was definitely a highlight during my time as SGA President.

-Carey Hall Brown, IE 1969

Eran Mordel, IE 2013

My tenure as student body president was the busiest, sometimes most frustrating, and most rewarding time during my years at Georgia Tech. Seeing the results of our efforts unfold over the year, working with students from every background imaginable, traveling, and many other opportunities were incredibly rewarding. Beyond the time and crisis management, and people skills that I learned, the biggest takeaway was appreciating being a student at Georgia Tech. Even the simplest thing -- a football game -- has endless politics, balance sheets, and countless miscellaneous responsibilities behind scenes that make the experience a reality. This behind the scenes action sealed my appreciation for Georgia Tech and made me proud to be a Yellow Jacket.

During my time as president, I worked to revamp commencement policy with the President's Office to increase ticketing; released Course Critique 2.0 under a more stable platform with many added features, which has seen over 153,000 page views from over 5,900 visitors in one month; hosted the inaugural "Friday Buzz" stress-relief pep rally event with over 500 attendees; implemented the inaugural "Buzzinga" competition, encouraging team-styled campus improvement competition with $10,000 of funding/support for implementation; hosted the first-ever "GT Wreck the Vote" campaign with 300+ first-time registrants and 700+ attendees over a few events; secured approximately $500,000 in additional Student Activity Fee funds through the Budget Office; and advocated and lobbied against Sequestration (fiscal cliff), for the Higher Education Opportunities Act, Student Center expansion and renovation, and more.

While my classes have prepared me to do my future job, it's the students here that have taught me how to make a difference in the world. The true value of college isn't only the traditional learning, but also the process of maturing and growing as a person. Becoming involved outside the classroom and taking advantage of every opportunity is the most beneficial experience for any career. There are two qualities in IEs that coincide with leadership. First, the fast-paced, difficult curriculum pushes IEs to critically think, work hard, and be resourceful. Second, the program at Georgia Tech emphasizes working with others while being individually productive. Approaching the professor during office hours, forming study groups, Senior Design, are all experiences that teach us to work well with others. Still, we must be valuable members of the team. The IE program fosters a challenging curriculum and a collaborative environment that lends itself to the qualities of leaders.

One story really captures my approach to the role and the type of people and environment we had at Georgia Tech. Two weeks after being sworn in, Dr. Paul Kohn, the vice provost for enrollment services, invited Amit, the vice president of SGA, and me for lunch. Towards the end of the hour, I gracefully managed to launch ketchup all over Dr. Kohn's shirt and tie. To make things better, Dr. Kohn was on his way to Georgia Tech President G.P. "Bud" Peterson's office with other Georgia Tech executive leadership. Needless to say, Amit's and my time in office started off on an interesting foot! Amid the humor, I took away a few lessons from the experience: not to take ourselves too seriously, the students, administrators, and faculty are all a pleasure to work with, and remember to focus on what is important.

-Eran Mordel, IE 2013

Past IE SGA Presidents

Dan Blitch, IE 1953
Patrick Edward Bolger, IE 1957
Hazard Earl Reeves, IE 1958
William J. Vanlandingham, IE 1959
Oscar Newton Persons, IE 1960
Ronald D. Stallings, IE 1965
Carey Hall Brown, IE 1969
Greg Williams, IE 1974
Ross Mason, IE 1992
Susan Sutherland Pina, IE 1993
Jim Mason, IE 1997
Chris Kavanaugh, IE 2002
Tiffany Massey, IE 2003
Nick Wellkamp, IE 2009
Alina Staskevicius, IE 2010
Eran Mordel, IE 2013

Tiffany Massey, IE 2003, was Georgia Tech's first African American student body president.

**Tiffany Massey
IE 2003**

"During my time as student body president, Georgia Tech was in the midst of the transformation. It was a great time to be engaged with the continual improvement mindset we ISyEs share. I remember meetings with institute leadership examining existing processes — whether it was the stinger schedule or process class registration. We would collaboratively explore ways to improve the experience for all Georgia Tech students. This was spot on in my ISyE wheelhouse and it definitely felt very rewarding to be a part of creating a better Georgia Tech for students to come."
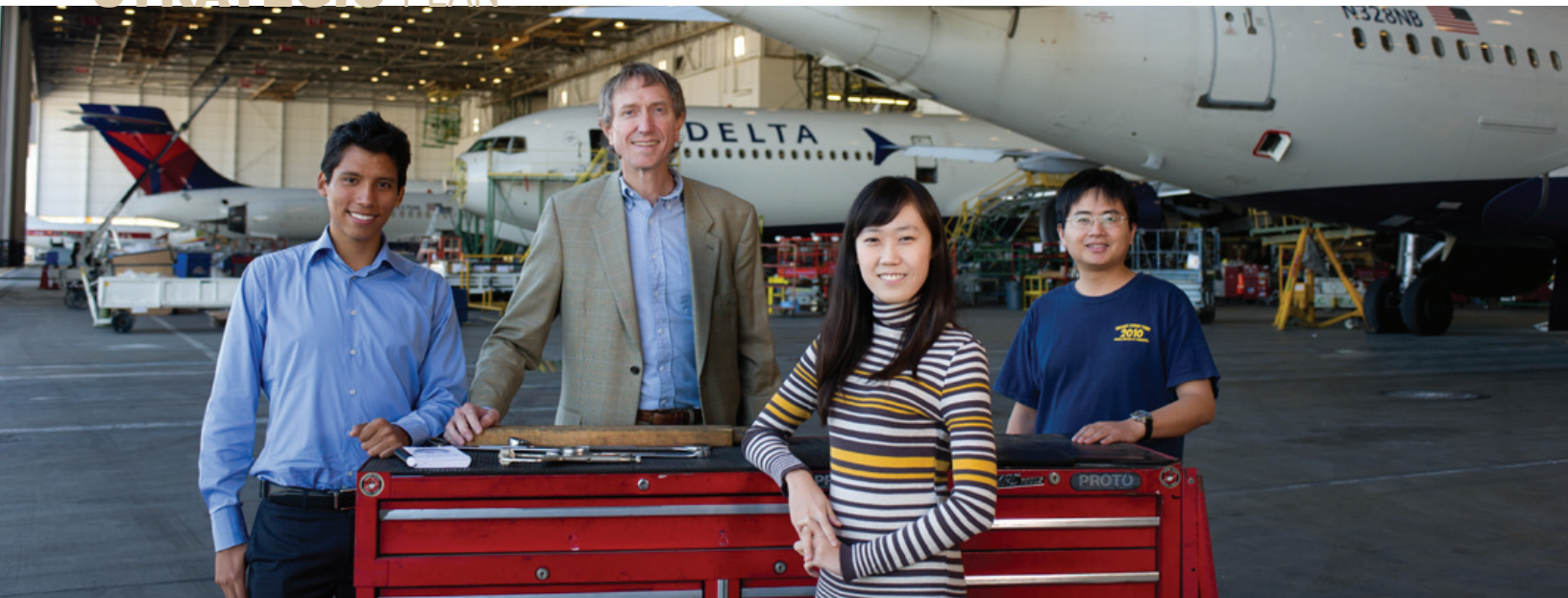
Engineering Our

FUTURE

A STRATEGIC VISION AND PLAN

for the Georgia Tech Stewart School of Industrial & Systems Engineering

Vision

Based on its values, current capabilities, and future aspirations, ISyE proposes the following vision:

*The Stewart School of Industrial & Systems Engineering at Georgia Tech will be
the world's leader in expanding and communicating engineering knowledge and innovation associated with designing, operating,
and improving processes for acquiring, producing, selling, and delivering sustainable products and services,
and graduating future global leaders in these areas.*

Mission

In order to realize its vision, ISyE will undertake the following mission:

*ISyE's mission is to create, assimilate, integrate, and disseminate knowledge
involving industrial and systems engineering.*

Objectives

1. Prepare and train our students to be leaders in industry, academia, and government,
2. Sustain and enhance excellence in scholarship and research,
3. Ensure innovation, entrepreneurship, and public service are fundamental characteristics of ISyE graduates,
4. Expand ISyE's global footprint and influence to ensure that it is graduating global citizens, and
5. Relentlessly pursue institutional effectiveness.

Objective 1

Prepare and train our students to be leaders in industry, academia, and government.

- Continuously improve curricula to ensure student success
- Increase student learning by developing and implementing improved teaching methods
- Ensure that students have the mentoring, advising, and resources necessary for success
- Enhance the diversity of our faculty and students at all levels
- Foster strong, lasting relationships with our graduates
- Improve placement of students in industry, academia, and government
- Encourage faculty interaction with industry and government leaders

Objective 2

Sustain and enhance excellence in scholarship and research.

- Cultivate an intellectually stimulating environment
- Develop and cultivate a creative and impactful faculty
- Hire outstanding scholars and researchers
- Recruit the best and brightest young minds to become ISyE students
- Provide competitive funding support to students
- Mentor junior and mid-career faculty
- Attract preeminent scholars through endowed faculty chairs
- Evaluate research and scholarship achievements of faculty members through transparent promotion and tenure criteria
- Encourage collaborative interdisciplinary research and scholarship
- Explore opportunities for new research directions and partnerships

Objective 3

Ensure that innovation, entrepreneurship, and public service are fundamental characteristics of our graduates.

- Create an environment that fosters entrepreneurship and innovation
- Identify and share best practices in innovation and entrepreneurship
- Investigate development of undergraduate and graduate courses on entrepreneurship
- Encourage participation in competitions that promote entrepreneurship, innovation, and public service
- Encourage participation in lecture series, workshops, or programs on innovation, entrepreneurship, and public service
- Inform students about programs in other Georgia Tech units that provide opportunities in public service
- Increase problem-based learning in courses
- Encourage entrepreneurship experience
- Communicate opportunities and successes in entrepreneurship, innovation, and public service
- Assure incentives and criteria for annual review, reappointment, promotion, and tenure align with those developed by the College of Engineering to promote innovation, entrepreneurship, and public service

Objective 4

Expand our global footprint and influence to ensure that we are graduating global citizens.

- Enhance programs and initiatives that are part of ISyE's current global footprint
- Clearly articulate the emerging needs for global engagement
- Define and encourage opportunities for global outreach
- Monitor developments pertaining to global outreach
- Monitor opportunities and challenges of technological capabilities in higher education for global outreach
- Seek visitations by international eminent scholars, business, and technology leaders
- Enable faculty to visit international institutions and centers of excellence
- Encourage students to be global citizens and leaders in a world

Objective 5

Relentlessly pursue institutional effectiveness.

- Reduce student/faculty and student/advisor ratios
- Maintain faculty and staff levels needed to fulfill School's primary responsibilities
- Develop a rolling forecast of potential need in each of the key ISyE strategy areas
- Provide incentives and reward exceptional performance
- Host regular support team meetings on current status, potential measures, and definition of progress

New Faculty Hires

Four new faculty members have joined ISyE this August for the Fall 2013 semester. **Marco Molinaro**, **Alejandro Toriello**, **Yao Xie**, and **Enlu Zhou**, joined as assistant professors.

Marco Molinaro's research interests are broadly in discrete optimization, and in particular, integer programming and optimization under limited information. He was the recipient of an IBM Ph.D. Fellowship, the Brazilian Computing Society award for best master's thesis in Computer Science, and the Gerald L. Thompson Doctoral Thesis Award in Management Science. Molinaro received his Ph.D. from the Algorithms, Combinatorics and Optimization program at Carnegie Mellon University in 2013.
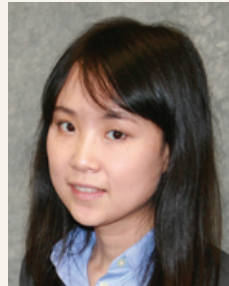

Yao Xie's research interests are in sequential statistical methods, statistical signal processing, big data analysis, compressed sensing, optimization, and she has been involved in applications to wireless communications, sensor networks, medical and astronomical imaging. Xie previously served as research scientist in the Electrical and Computer Engineering Department at Duke University after receiving her Ph.D. in Electrical Engineering (minor in Mathematics) from Stanford University in 2011.

Alejandro Toriello's research interests lie in the theory and application of supply chain management, logistics and transportation, and in related optimization methodologies. Prior to joining ISyE, he served as an assistant professor in the Epstein Department of Industrial and Systems Engineering at the University of Southern California. Toriello received his Ph.D. in Industrial Engineering from Georgia Tech in 2010.
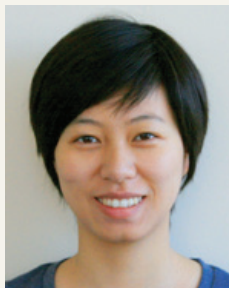
Enlu Zhou's research interests include simulation optimization, stochastic control, and Markov decision processes. Prior to Georgia Tech, Zhou served as an assistant professor at the Industrial & Enterprise Systems Engineering Department at the University of Illinois Urbana-Champaign from 2009 to 2013. She received her Ph.D. in electrical engineering from the University of Maryland, College Park, in 2009.

Christos Alexopoulos was promoted to professor in August 2013.

Professor **Sigrún Andradóttir** and associate professor **Seong-Hee Kim** have been awarded the Naval Research Logistics 2013 Harold W. Kuhn Award for their manuscript *Fully Sequential Procedures for Comparing Constrained Systems via Simulation*.

William J. "Bill" Cook, Chandler Family Chair and professor in ISyE, resigned from Georgia Tech on December 31, 2012 after ten years of service. He accepted a position at the University of Pittsburgh.

Santanu Dey has been appointed a Fouts Family Assistant Professor for a three-year term of service, beginning August 15, 2013.

Ton Dieker was appointed Fouts Family Assistant Professor for a three-year term of service, beginning August 15, 2013. He was also awarded an IBM Faculty Award, a competitive worldwide program intended to foster collaboration between researchers at leading universities worldwide and those in IBM research, development and services organizations. He was also awarded the prestigious National Science Foundation CAREER Award for his research project *Stochastic Processes in High Dimensions: from Asymptotic Analysis to Algorithms,* and the prestigious Erlang Prize at the 2012 INFORMS Annual Conference.

Özlem Ergun was appointed the Coca-Cola Associate Professor at ISyE for a three-year term of service, beginning August 15, 2013.

Jaymie Forrest, managing director of the Supply Chain & Logistics Institute, was selected by *Supply & Demand Chain* as one of the top female supply chain executives.

Nagi Gebraeel was appointed Chandler Family Associate Professor at ISyE for a three-year term of service, beginning August 15, 2013.

Xiaoming Huo, professor, will serve as program director of Statistics at National Science Foundation for one year. However, he will be returning to ISyE regularly to maintain his research and education projects.

Ronald L. Johnson, OR 1985, retired two-star general, has been appointed to serve as the managing director of the Tennenbaum Institute and as a professor of the practice in ISyE effective January 1, 2013. He was also nominated and inducted onto Goodwill Industries International Board. He also served as the ISyE liaison as well as keynote speaker for the United States Military Academy's first ever Leadership, Ethics, and Diversity in STEM (LEADS) conference held in October at the Georgia Tech Student Center.

Andrea Laliberte, IE 1982, MS IE 1984, joined ISyE as the Edenfield Executive in Residence on January 1, 2013. She offers ISyE students experiential learning opportunities that reflect real-world business and enhance students' leadership skills through class projects.

Eva Lee has been selected as a finalist for the 2013 Daniel H. Wagner Prize for Excellence in Operations Research Practice for her work entitled *Modeling and Optimizing Emergency Department Workflow.*

Dima Nazzal, PhD IE 2006, is now serving as the director of student services in ISyE.

Judith Norback recently published a book titled *Oral Communication Excellence for Engineers and Scientists* to help guide oral communication based on input from executives from different settings.

Amar Ramudhin, director of Supply Chain Management & Technology at Georgia Tech's Supply Chain & Logistics Institute (SCL), and Don Ratliff, executive director of SCL, authored a study. Titled *Assessment of Port Performance and Port Connectivity Study in Belize, Central America, and the Dominican Republic*, it evaluates the performance of 18 ports and suggests initiatives that could improve trade in the region.

Don Ratliff, executive director for Georgia Tech's Supply Chain & Logistics Institute, contributed to the 2013 World Economic Forum's *Outlook on the Logistics & Supply Chain Industry.* He discusses the barriers to improving global supply chain performance by using "Big Data."

Alexander "Alex" Shapiro was the recipient of the prestigious Khachiyan Prize for his life-time achievements in the field of optimization.

Jianjun "Jan" Shi, the Carolyn J. Stewart Chair and professor in ISyE, was elected an Academician of the International Academy for Quality at the European Organization for Quality Congress on June 19, 2013. He also gave a keynote lecture, *Data Fusion for In-Process Quality Improvement*, during the 5th Manufacturing Engineering Society International Conference on June 26. Also, Shi and his co-authors, Ran Jin, PhD IE 2011, and Chia-Jung Chang, PhD IE 2012, were selected to receive the Best Applied Paper Prize in Quality and Reliability Engineering

by the IIE Transactions for issues from July 2011 through June 2012 for their paper,*Sequential Measurement Strategy for Wafer Geometric Profile Estimation.*

Joel Sokol was appointed as the Fouts Family Associate Professor for a three-year term of service, beginning August 15, 2013.

Craig Tovey was appointed the David M. McKenney Family Professor in ISyE for a three-year term beginning January 1, 2013. This professorship was created by David McKenney, Physics 1960, IE 1964, to enhance ISyE's ability to "attract and retain eminent teacher-scholars to this position of academic leadership in the field of sustainability, energy, and environmental initiatives."

Roshan Vengazhiyil was promoted to professor in August 2013.

Chip White, Schneider National Chair in Transportation and Logistics in ISyE, was part of the planning committee for the E.U.-U.S. Transportation Research Symposium on City Logistics Research held May 30, 2013 at the National Academy of Sciences in Washington, D.C. Professor Alan Erera, who was one of the U.S. invitees, also attended the Symposium. White was also elected to serve on the Industry Studies Association Board of Directors.

C.F. "Jeff" Wu, the Coca-Cola Chair in Engineering Statistics and professor in ISyE, received the 2012 U.S. Army Wilks Award during the Army Conference on Applied Statistics on October 24. He also gave the W. J. Youden Memorial Address titled Quality Technology in the High Tech Age at the 56th Annual Fall Technical Conference.

Ming Yuan resigned as the Coca-Cola Junior Professor in ISyE, but will continue to serve as an adjunct professor. In addition, he accepted a new position at the University of Wisconsin.

IN MEMORIAM

We are sad to announce that Georgia Tech engineering alumnus and Professor Emeritus, **Nelson Kimball Rogers**, MS IE 1956, passed away on September 15, 2013. Rogers worked for Georgia Tech for twenty-nine years, starting as a lecturer and then as the associate director of undergraduate programs. His responsibilities were vital to the ongoing thrust of excellence at ISyE and worked to enhance the reputation of the school. He won the Outstanding Professor Awards in ISyE the year of 1979, 1981, and 1984, as well as the George C. Griffin Award — Outstanding Teacher at Georgia Tech in 1985, awarded by the Georgia Tech Student Government. Rogers retired in 1993. He was admired and respected by students, faculty, and staff and will be greatly missed by those whose lives he touched.

"Nelson was a wonderful human being and was invaluable to the quality of the undergraduate program. In the 1980s we had about 600-700 undergraduates in ISyE and he seemed to know every one of them. Not once did I go to talk to him about an undergrad, whether because they were doing very well or doing very poorly, that Nelson did not know. He always knew how good a job we were doing in our teaching because he talked to so many students and they trusted him. If your teaching got worse, he told you, and if your teaching got better, he told you. A typical Nelson Rogers story: one of our juniors was still doing well in her courses in the winter quarter, but was slipping a little and was not as perky as usual. Nelson knew that she had taken courses two summers in a row and saw that she was in danger of burning out. He arranged a good-paying summer job for her in the shipping business. When she came back she was her old self, and she had an excellent senior year. For Nelson, that was all part of a day's work. I'll miss him."

- Craig Tovey,
  David M. McKenney Family Professor

1. **Roberto Castro**, IE 2007, a professional golfer who plays on the PGA Tour, shot a 63 in his debut round at The Players Championship on May 9, tying a record held by golf greats Fred Couples and Greg Norman.

2. **Brad Edwards**, IE 2006, MS Stat 2007, has collected more than 1,000 Georgia Tech football ticket stubs dating back to 1921. He plans to donate a portion of his collection to the Georgia Tech Library. View his full collection at georgiatechticketstubs.com.

3. **Susan Bonds**, IE 1984, received the Academy of Distinguished Engineering Alumni Award at the 2013 College of Engineering (CoE) Alumni Awards Ceremony. The award recognizes alumni who have provided distinguished contributions to the profession, field, Institute, or society at large. Bonds is the co-founder and CEO of 42 Entertainment, a production company specializing in immersive entertainment that invites audiences to participate in connected experiences.

4. **Andrew Ibbotson**, IE 1998, received the Council of Outstanding Young Engineering Alumni Award at the 2013 CoE Alumni Awards Ceremony. The award recognizes alumni who have distinguished themselves through professional practice and/or service to the Institute, the engineering profession, or society at large. Ibbotson is the founder and CEO of Digital Assent, a healthcare technology company that helps physicians engage patients at the point of care. He was also named Business Person of the Year by the Metro Atlanta Chamber.

5. **John Marshall**, IE 1996, received the Council of Outstanding Young Engineering Alumni Award at the 2013 CoE Alumni Awards Ceremony. The award recognizes alumni who have distinguished themselves through professional practice and/or service to the Institute, the engineering profession, or society at large. Marshall is the founder, president, and CEO of AirWatch, the largest enterprise mobility management provider in the world.

6. **Guy Primus**, IE 1992, received the Captain of Industry Award at the 2013 IIE Annual Conference and Expo in Puerto Rico on May 20. He also gave a keynote presentation titled *I, Optimize: The Application of Industrial Engineering Principles to the Business of Entertainment*. Primus is the co-founder and managing director of Thrillerdome Ventures, a company that provides strategic and operational guidance and executive leadership to technology startups.

7. **Jeffrey Sauls**, IE 1995, **Iris (Chang) Sauls**, IE 1995, MS IE 1997, and their son Thomas.

1960s

John B. Carter Jr., IE 1969, was awarded the Joseph Mayo Pettit Distinguished Service Award at the Gold & White Honors Gala on Feb. 21, 2013. He is the former president and chief operating officer of the Georgia Tech Foundation. He is a trustee of the Athletic Association Board, a trustee of the John and Mary Franklin Foundation and a past executive director of the Alumni Association.

1970s

Dean Athanassiades, IE 1979, received the 2012 Excellence in Healthcare Management Engineering and Process Improvement Award and was elected to the board of directors of the Society for Health Systems. He is the senior director of project services at Phillips Healthcare.

Khosrow Behbehani, IE 1975, was named a 2013 IEEE Fellow for her contributions to the development of respiratory therapy devices in chronic pulmonary diseases.

Joseph B. Cofer, IE 1972, was named a Tennessee Medical Association Public Health Champion. He is a general surgeon at Erlanger Medical Center in Chattanooga, Tenn.

Tim Heilig, IE 1975, retired from Norfolk Southern Corporation as vice president of mechanical after 41 years. He is now senior vice president of customer solutions for Progress Rail Services, a Caterpillar Company.

Bryant Mason Stone, IE 1972, retired after a 30-year career as a civilian engineer in the Air Force.

1980s

Dr. F. Perna Carter, IE 1989, was named the dean of the School of Business and Technology at Saint Augustine's University in Raleigh, N.C.

Ric Gray, IE 1987, was named president of AdTech Global in Alpharetta, Ga. He serves as a mentor for local nonprofits and Georgia Tech students. A cancer survivor, he volunteers as a patient coach through the American Cancer Society.

Steve Hopper, IE 1986, and three experienced partners have co-founded StoneCross Group, LLC, a new supply chain management consulting firm headquartered in metro Atlanta.

Andrea Laliberte, IE 1982, MS IE 1984, joined ISyE as the Edenfield Executive in Residence. She was previously a senior vice president of distribution and consumer service for Coach Inc.

Zulma Toro-Ramos, PhD IE 1988, was appointed as provost and vice chancellor of academic affairs at the University of Arkansas at Little Rock. Previously, she was the dean of the College of Engineering at Wichita State University in Kansas.

1990s

Bird Blitch, IE 1997, and his wife, Anna, welcomed son Bird Daniel Blitch Jr. The elder Blitch is a member of the Alumni Association Board of Trustees.

Drew Bolton, IE 1999, married Elizabeth Ellen Richwine on November 3, 2012. "She's a third-generation Bulldawg. I'm a third-generation Yellow Jacket but there's no 'good ol' fashion hate' in our marriage!" Drew is a senior program manager at Precyse Technologies, Inc.

Renee Butler, IE 1996, MS OR 1999, PhD 2003, was selected to be the first department chair for the Systems and Mechanical Engineering Department at Southern Polytechnic State University in Marietta, Ga.

Evan W. Fleisher, IE 1990, was promoted to senior supply chain business analyst at the Vitamix Corporation in Cleveland, Ohio.

Cassandra Johnson, IE 1992, was promoted to senior vice president of operations at CredAbility in Atlanta, Ga.

Errika Mallett, IE 1996, joined the Information Technology Senior Management Forum as membership director. She is a member of the Alumni Association Board of Trustees and the Industrial Engineering Department's advisory board and is a former president of the Georgia Tech Black Alumni Organization.

Anthony Priest, EE 1988, MS IE 1990, was part of the Washington, D.C., Georgia Tech Network who sponsored the addition of the yellow jacket to the Speedwell Conservation Carousel project at the Smithsonian National Zoo.

Heather Smith Rocker, IE 1998, was named executive director of the national headquarters for the Distinguished Young Women scholarship program.

David Rudolph, IE 1996, the chief executive officer of PlayOn! Sports, an Atlanta-based company that broadcasts and digitally streams high school sporting events, talked about the development, success, and future plans of his company in a Q&A with the Atlanta Journal-Constitution.

C. Brent Smith, IE 1999, and **Courtney Robinson Smith**, Mgt 2000, have returned to Atlanta from New York City. Brent accepted a position with Piedmont Office Realty as senior vice president of strategic investments.

Jane L. Snowdon, PhD IE 1994, has been appointed IBM Chief Innovation Officer for U.S. Federal, bringing her 17 years of experience in IBM Research to clients in the government. Snowdon is also a member of the ISyE Advisory Board.

Jamal Starr, MS IE 1999, founded Starr and Associates in Atlanta in 2003 and has since recruited a number of fellow students from ISyE, including **Monte Fowler**, IE 2001, MBA 2012, and **Albert Thomas**, IE 2000. The consulting firm works with companies to provide strategic guidance, project management, interim executive leadership and more.

Ashley Turner, IE 1995, graduated from the Kelley School of Business at Indiana University with an MBA focused on international business.

Richard Tyler, IE 1990, was appointed as director of land management for the United States with Lafarge, a global leader in construction materials. He serves as a consultant for the International Olympic Committee.

Damian Warren, IE 1999, and **Callie Cagle Warren**, Mgt 1999, welcomed daughter Julia Elizabeth on Oct. 26. Julia joins sister Lindley, 6, and brother Keegan, 3. Damian is a strategic program manager for SunTrust Banks. Callie is a full-time mom. They live in Powder Springs, Ga.

ALUMNI NEWS

2000s

DuQuay D. Allen, CmpE 2004, and **Myisha Franklin-Allen**, IE 2004, welcomed son Mason on Jan. 2. Myisha is a senior business analyst at Americold Logistics. DuQuay is a technical consultant for Information Insights LLC., and president of the Georgia Tech Gwinnett County Alumni Network.

Kumar Ayyagari, MS IE 2009, and **Pushkala Ayyagari**, MS BI 2009, welcomed daughter Ananya on April 5.

Jonathan Bailey, IE 2004, and Kristen Shaw married on July 21 in Atlanta. Jonathan is an area manager of network process and quality at AT&T. Kristen is a communications officer at Tech's Central Communications.

Nadya Ramel-Barnes, IE 2003, and **Sean Barnes**, AE 2006, MS AE 2007, welcomed their daughter Naima Sanaa on Thanksgiving Day 2012.

Benoit Robinot-Bertrand, MS IE 2001, and his wife, Lisa, welcomed son Julien on March 5. He joins sister Madeleine, 1, at home in Austin, Texas.

Keedick Coulter, IE 2001, celebrated the one-year anniversary of his restaurant, Bobwhite Lunch & Supper Counter, in New York City. He has been recognized in the New York Times and recently reopened Bobwhite after Hurricane Sandy.

Deona DeClue, IE 2006, MS Econ 2007, is officially a triathlete after swimming 400 meters, biking 13 miles, and running a 5k all in under 2 hours and 1 minute on September 15. Her fundraiser has raised $7,260 for Africa Volunteer Corps.

Kimberly Wallace Gantt, IE 2001, and **David Gantt**, MBA candidate, welcomed son Jacob David on December 21. He joins big sister Kendall, 1. David is a C-17 pilot in the Air Force. Kimberly is a solutions engineer with Sprint.

Janae Holmes, IE 2009, earned her master's degree in cost estimating and analysis from a joint program between the Naval Postgraduate School and the Air Force Institute of Technology in March. She is the naval ship cost estimator for Naval Sea Systems Command.

Tim Hur, IE 2005, was appointed by the president of the National Association of Realtors as the liaison to South Korea.

Erin Porter Izen, IE 2001, and her husband, James, welcomed daughter Lauren Ann-Marie on Aug. 17. Erin is the director of strategic projects for The Home Depot.

Ashley Lesko, IE 2000, started a new job with Belk as an Financial Planning & Analysis finance manager. She and her family have relocated to Charlotte, N.C.

Sarah Beckenhauer Lightner, IE 2001, and her husband, Chris, welcomed son Patrick Charles on Oct. 23. He joins sisters Caroline, 5, Catherine, 3, and Victoria, 1. Sarah is a stay-at-home mother. They live in Marietta, Ga.

James Luedtke, MS OR 2004, PhD IE 2007 is the winner of the Prize for Young Researchers for his paper *A Branch-and-Cut Decomposition Algorithm for Solving Chance-Constrained Mathematical Programs with Finite Support.* He is currently an assistant professor in optimization at the University of Wisconsin-Madison.

IN MEMORIAM

Edward Lee Allman, IE 1948
Douglas Keith Ash, IE 1987
J. Paul Avant, IE 1959
Howard Conway Berry, IE 1950
John Edwin Brewer, IE 1966
Daren Douglas Brown, IE 1948
Joseph "Nonno" Cammarata, IE 1960, MS IE 1962
William J. Campbell Jr., IE 1958
Billy Franklin Carver, IE 1969
Thomas Cooper Chitty Sr., IE 1948
David Clifton, Jr., PhD IE 1966
Clinton Eads, IE 1953
Luther "Luke" W. Ellenwood, IE 1950
Thomas Clyde Elrod, IE 1950
Ralph Guthrie Dekle, IE 1960
Lewis Hale Figh Jr., IE 1948
Steven Hubbard Frame, IE 1962
Brian A. Hilburn, IE 1968, MS IM 1972
Thomas N. Gibson III, IE 1959
Bradley Robert Gay, IE 2011
C. Richard Gaddy, IE 1971
Ronald Gilbert, IE 1975
John A. Gillespie, IE 1955
Eddie Washington Gilbreath Jr., IE 1958

James Allen Hale, IE 1950
Paul D. Hammacher Jr., MS IE 1960, MS IM 1962
Joseph W. Habeeb Sr., IE 1960
Frederick E. Henry, IE 1956
Edwin Clark Hill, IE 1949
Charlotte Jacobs, PhD IE 1987
Edward Ernesto Iacobucci, IE 1975
John William Kilgo, IE 1973
William Lassiter Kirksey, IE 1963
John Leonard Kisner, IE 1960
Robert Glenn Larsen, IE 1950
Ralph E. Lawrence II, IE 1960
Wayne A. Lessig, IE 1964
Donald E. Manning, IE 1964
James Carroll Marlow Jr., IE 1958
Hayne "Mac" McCondichie, IE 1952, MS IE 1953
Harold Gene Meeks, IE 1966
John Moran, IE 1952
H. Clay Moore Jr., IM 1951, IE 1952
Homer Lee Newsome, IE 1950
Daniel Pendarvis III, IE 1970
James G. Perkins, IE 1953
David George McNeely, IE 1970

Robert Parson Paine, IE 1972
Thomas Edward Prosser, IE 1957
Terry Redfearn, IE 1964
Gene Rivers, IE 1962
James Thomas Rocker, IE 1964
Patrick Sanders Jr., IE 1948
Robert Hollingshead Small, IE 1947
O.E. "Buddy" Smith, IE 1947
Kenneth Starling, IE 1960
David Alwyn Stivers Sr., ChE 1945, IE 1951
Wilford "Pete" Street Jr., IE 1963
Joseph Brandon Talbird Jr., IE 1959, MS IE 1960
Liz Tarpey, IE 2011
Donald Lee Tavenner, IE 1957
James "Archie" Taylor, IE 1948
Joseph Edward Teahan, IE 1953, MS IM 1954
Chestnut A. Thompson, IE 1949
Cooper R. Tilghman, IE 1956
Thomas Varnson, IE 1953
Arnold Eugene Wise, IE 1949
Edwin Anthony Wray, IE 1971, MS IE 1977

Randy McDow, PP 2005, MS IE 2003, and Lauren Weatherly McDow, Mgt 2003, welcomed son Liam on July 16. He joins brother Eston, 4, at the family's home in Atlanta.

Michael Pink, IE 2001, founded Construx Solutions, a company focused on changing how the construction industry views consultants. He lives in New York City.

John Robert "Bo" Rankin V, IE 2001, and his wife, Becky, welcomed son John Robert "Shea" Rankin VI on Jan. 4, 2012. Bo works for Disney. They live in Orlando, Fla.

Marianna La Vecchia, IE 2000, and Sgt. Justin Michael Kinnee married on Aug. 25. Marianna is a senior manager at International Logistics.

2010s

Miroslav "Miro" Gregorovic, MS SCE 2012, is an operations analyst as a part of the new two-year, college graduate rotational program at SanDisk in Silicon Valley.

Tom Minderman, IE 2010, and Christina Morton, IA 2007, married in March 2012 in Atlanta. Christina works at Booz Allen Hamilton as a senior consultant, and Tom is a manager in energy trading for Competitive Power Ventures.

Eran Mordel, IE 2013, completed his term as SGA President at Georgia Tech this past spring. As a result of his hard work and leadership, Eran was awarded the Potts Leadership Award from the University System of Georgia (USG) this past February. "The Student Advisory Council really focuses on identifying an individual who truly represents the type of leadership values recognized in this award," said Dr. Joyce Jones, the USG's vice chancellor for Student Affairs. "Eran is an excellent choice and role model for students."

ISyE 2013 Distinguished Leadership Lecture Features Entertainment Insider Guy Primus

While entertainment will continue to be dominated by artists, those looking to improve upon the creative process have embraced tools of industrial engineering and industrial engineers have risen to the top of many creative organizations. Primus, IE 1992, has devoted his career to optimizing the technology and entertainment world with a primary focus on "helping them execute their vision." His experiences range from being a patent-pending inventor to providing operational leadership to artists, media, and entertainment companies. During the lecture, Primus provided a look behind the curtain of entertainment and shared case studies that demonstrate how the principles of industrial engineering are apparent in the most artsy of industries. The lecture was first presented at the IIE Conference and was such a success that ISyE knew they had to bring him to campus. Pictured here is Primus (center) with Jane Ammons and Don Ratliff after the 2013 Distinguished Leadership Lecture on October 17. Watch the lecture here: **http://b.gatech.edu/17FwPcv**

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