

Medical Industry Leadership Institute

CARLSON
SCHOOL OF MANAGEMENT
UNIVERSITY OF MINNESOTA



Welcome

The mission of the Medical Industry Leadership Institute (MILI) is to shape the future of the medical industry and drive innovation through cutting-edge leadership education, research, and market development. MILI achieves this mission by offering a “best in class” MBA program with specialized knowledge of the medical industry. Our students are sought in the leadership-track programs of the largest and most creative medical industry firms ranging from insurers to health care providers and medical technology manufacturers.

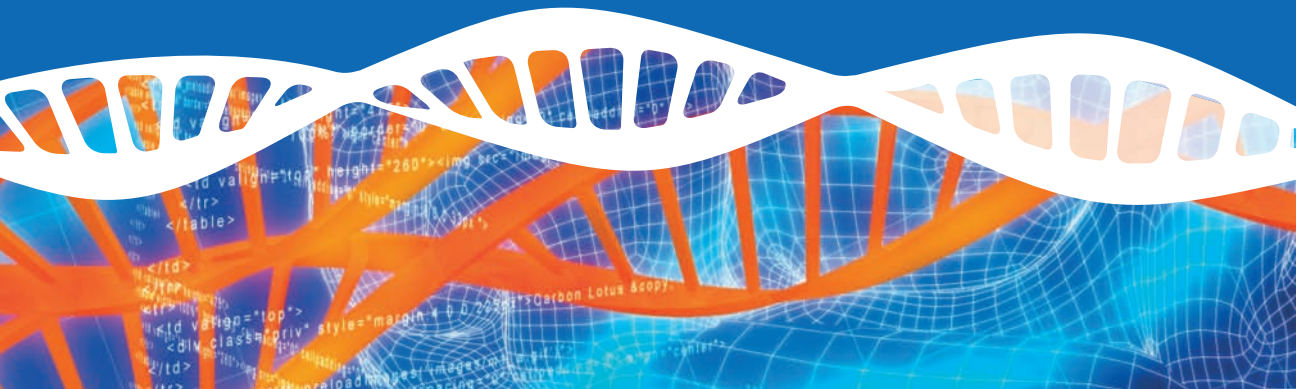


We are committed to creating opportunities for mutual student and industry benefit through industry-related experiential learning that enables and accelerates new industry innovations through formal course offerings with hands-on product development, financing, and market research and authorship of management plans.

MILI also drives professional and social networks designed for a lifetime of benefit. We sponsor a student association as well as an alumni board and serve as organizational partners from national health policy think tanks to life science development consortia. These connections create consistently top-level engagement among students, entrepreneurs, policy makers, business leaders, and financiers all focused on the advancement of medical technology on a sustainable, global scale.

If your passion comes in making a change in the world through the life saving and life enhancing opportunities afforded by the medical industry, the Carlson School’s Medical Industry Leadership Institute is waiting to embrace your drive and propel you and society to the next level. Read on to explore this exciting program.

Stephen T. Parente, PhD
Director, Medical Industry Leadership Institute
Professor and Minnesota Insurance Industry Chair of Health Finance, Department of Finance

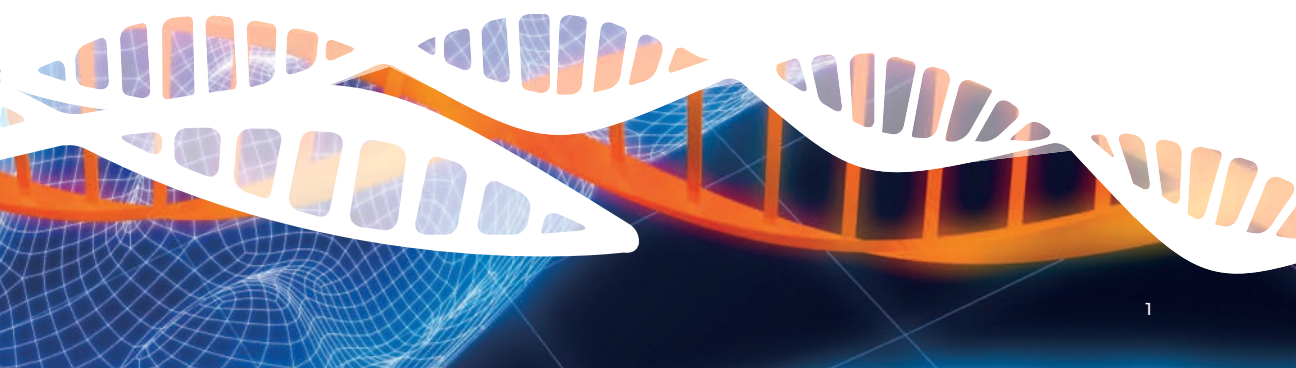


Overview

The University of Minnesota's Carlson School of Management and its Medical Industry Leadership Institute (MILI) are recognized leaders in business education and research. MILI offers students innovative training, knowledge, and experiences through industry-specific courses and unique, hands-on evaluations of emerging technologies from around the globe. Our medical industry specialization draws on the diverse expertise of University of Minnesota researchers working in scientific, technical, legal, and ethical areas and leverages our state's concentration of top-tier companies to create the next generation of leaders.

In turn, MILI offers national and international firms access to the rigorous intellectual community we have established: brilliant faculty with industry experience and academic accolades and focused, promising students who work to bring their expertise to bear on market evaluations, industry problems, and cutting-edge policy conversations.

MILI's unsurpassed faculty, industry affiliates, National Industry Council, and students are shaping the medical industry at every level.





The MILI Experience

The MILI program is as unique as its students: a tailored, timely curriculum for emerging leaders looking to gain hands-on experience in functional areas of the medical industry from finance and marketing to operations, information technology, and market valuation. Unparalleled industry and intellectual access pair with an experiential learning platform to shape our students and the industry into which they will step.

Medical Industry Specialization

The Carlson School and other colleges at the University of Minnesota offer a wide variety of courses intended to enhance understanding of the medical industry and to prepare students for successful and rewarding careers. Specifically, the courses enable students to:

- Understand the landscape of the entire medical industry in preparation for leading initiatives with a broad impact in business and society
- Engage in detailed analysis of specific topics, firms, and industry sub-sectors
- Study with leading scholars engaged in cutting-edge research in partnership with firms located in the Twin Cities and around the world
- Develop skills and knowledge through supervised experiential learning opportunities

Current Carlson MBA students can complement their MBA education with a medical industry specialization. In addition to the Carlson School's MBA requirements, students interested in earning a medical industry specialization must complete:

- MILI 6990: The Healthcare Marketplace
- An experiential learning option with work in the medical industry
- One additional MILI course or other medical industry related elective
- Specialization application

Medical Industry
Valuation Lab
course instructors
Randy Nelson
and Mike Finch.



Courses

Carlson School electives within the medical industry include:

MILI 6990 *The Healthcare Marketplace*

A survey of the \$2 trillion medical industry, this course covers physician and hospital services, insurance, pharmaceuticals, medical devices, information technology, and industry scale, interactions, opportunities, and barriers. This course is also offered as an undergraduate honors seminar (MILI 5990).

MILI 6995 *Medical Industry Valuation Laboratory*

(Also offered to undergraduates as MILI 5995.) See more information on page 6.

MILI 6235 *Pharmaceutical Industry*

Focusing on the unique characteristics of the pharmaceutical industry, including its market, regulation, and policy issues, this course leverages interdisciplinary perspectives and industry leader involvement to develop student skill sets.

MILI 6562 *Information Technology in Healthcare*

This course provides a theoretical and conceptual base for managers, creators, and evaluators of health care information technology, including the application of current and evolving technology systems. Special attention is paid to the design and evaluation of common data structures.

MILI 6589 *Medical Technology Evaluation and Market Research*

Leaders from UnitedHealth Group, Medtronic, and the Mayo Clinic participate in this hands-on experience in creating a value proposition for new medical technologies.

MILI 6726 *Medical Device Industry: Business and Public Policy*

This course, with the insight of industry leaders, addresses public-private sector interactions and the business, public policy, regulatory, and technology management issues that concern medical device and biotechnology companies.

MILI 6991 *Anatomy and Physiology for Managers*

A basic overview of the medical vocabulary and physiology of major body systems for non-clinician managers, this course helps medical industry leaders gain facility with clinical practice and medical technology innovations.



Susan Alpert • MD, PhD

Having recently retired from Medtronic, where she served as senior vice president and chief regulatory officer, Alpert is also one of the founding members of MILI's National Industry Council and is now MILI's executive in residence. In this new role, Alpert helps foster MILI's close working relationships with global medical industry leaders and shares her expertise with students and affiliates.

I am excited to join the MILI program and work with the students and faculty as executive in residence, since I have been involved with the program since its inception. I have watched the growth of this program and its remarkable impact on students in preparing them to "hit the ground running" as they enter health care companies. MILI benefits both the graduates and their employers.



Robert Connor • PhD, MHA

A widely-recognized teacher and scholar, Connor specializes in the structure of the health care sector, insurance purchasing decisions, vertically integrated care delivery systems, and health care reform. Connor is MILI's go-to instructor for the Pharmaceutical Industry and Medical Device Industry overview courses.

The U.S. has always been a leader in medical technology, but regulatory challenges here have grown, and it will take a lot of work and collaboration to ensure our continued international leadership role. Since the medical device industry is the best performing export market, this is important not just for the medical device industry, but for the whole American economy.



Michael Finch • PhD

A principal at Finch & King, Inc., Finch brings a wealth of industry experience to his role as an adjunct associate professor with MILI. Through his work here, Finch influences industry by helping create its up-and-coming leaders in the Medical Industry Valuation Lab.

What we bring to the mix is the business ... Inventors have an idea, and they want to know how to turn it into a business. This is where the Carlson School and our lab excel.

Core Faculty



Jeffrey Hertzberg • MD, MS

A board-certified internist, Hertzberg is president of Medformatics and an adjunct assistant professor in the Health Informatics Division of the University of Minnesota's Medical School.

The unique Anatomy and Physiology for Managers course "offers human biomedical sciences to MBA students, weaving together basic science with a practical approach to identifying opportunities in the health care market. Our students leave better able to communicate effectively and accurately with their clinical colleagues.



Randall Nelson

As the president of Evergreen Medical Technologies, LLC, Nelson has first-hand experience in developing and manufacturing innovative products for the medical industry—and as a lecturer in MILI's Valuation Lab, Nelson puts that experience to work in helping other inventors navigate a difficult market. "Inventors are looking for an analysis to see whether their technology or idea has a good market value," and Nelson helps MILI's students dive right in, researching the market and the product, and ultimately helping to carve out each inventor's path to success.



Stephen T. Parente • PhD

Parente is the Director of the Medical Industry Leadership Institute, Professor and Minnesota Insurance Industry Chair of Health Finance, in the Department of Finance at the Carlson School of Management. While he was instrumental in MILI's early development, Parente takes special pride in the development of the Medical Industry Valuation lab, which, he says, "helps inventors accelerate the innovation pipeline, prepares students for leadership roles in the medical device industry, and greatly benefits our state and our nation's economic development."

Valuation Lab

Most classes don't begin with a boot camp, but the Medical Industry Valuation Lab isn't your average class: it's at least one semester of experience, insight, and transformation for students and inventors alike.

MILI's Valuation Laboratory brings together graduate students from the University of Minnesota's Carlson School of Management, the College of Liberal Arts, the College of Science and Engineering, the Law School, and the Academic Health Center; faculty with both academic credentials and practical industry experience; and industry innovators who pay a project fee of \$15,000 for a top-to-bottom analysis of their medical technology invention and its prospects in the market.

Student Ge Yan ('11 MBA), who was instrumental in creating a memorandum of agreement with the University of Shanghai for Science and Technology that allows for Chinese medical technology evaluations within the lab, says the Medical Industry Valuation Laboratory is "essentially a training ground for us to apply the knowledge we've accumulated. It's a transformation from a classroom to the real world."

In three project cycles over the course of a semester, the student teams and instructors tease out the intricacies of each innovation. As seen in Figure 1, the valuation process involves multiple stages, from assumptions to validations, verifications, challenges, and proposed solutions. Further, each technology is studied not only by that project's team, but by other Valuation Lab students learning how to participate in technology development in consultant roles. This means each student gains familiarity and experience with up to 15 innovative medical technologies and each technology is given a multifaceted evaluation. After weeks of intellectual inquiry, the students prepare a mock client presentation for faculty critique, and as the project closes they give final recommendations to their inventors.

The Valuation Lab is an intense experience but it's worth it for everyone involved. Faculty members put their industry knowledge and research to work and students gain dynamic experience that leaves them uniquely prepared for leadership roles in an ever-evolving industry.

The MILI Valuation Lab was an invaluable experience that gave me an opportunity to combine classroom learning with hands-on experience in order to produce high-value medical innovation valuations for the local medical industry. Not only did the experience and knowledge that I gained from the lab land me my current position, but I continue to use what I learned and the connections I made on a daily basis. I cannot recommend the MILI Valuation Lab enough.



Juli Rubin
'09 MBA
CIP,
Boston Scientific

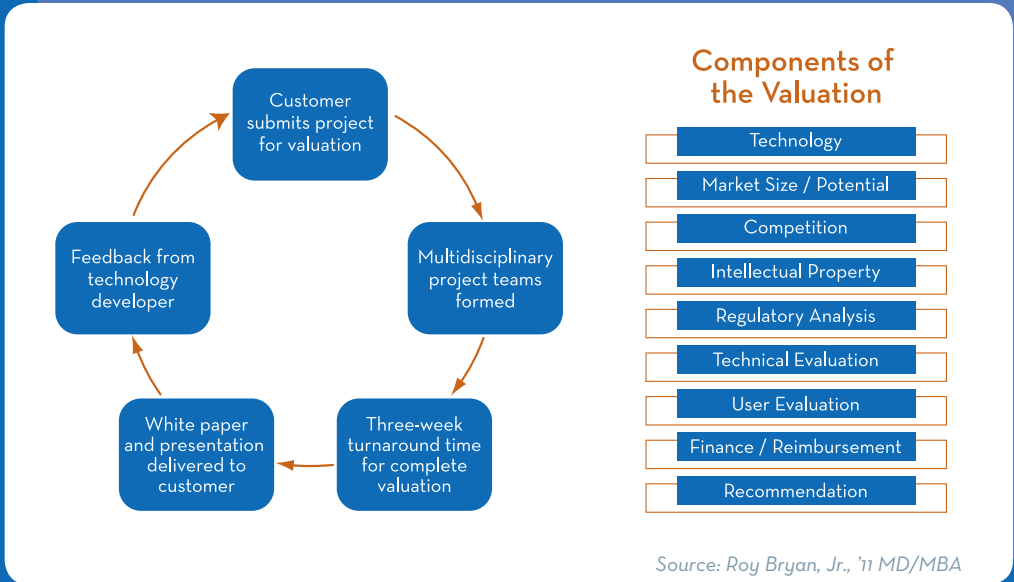


Figure 1: Valuation Components Flow Chart



Roy Bryan, Jr.
'11 MD/MBA

The MILI valuation lab is uniquely positioned at the intersection of medical technology development, marketing, and clinical care. Nowhere in the U.S. is there another program in which students work in interdisciplinary teams to develop a comprehensive strategy for translation of basic research into measurable improvement for patients. During my time at the medical school and business school at the University of Minnesota, I grew to appreciate the framework taught in the valuation lab, since it enables students from all areas of training to tackle the multi-dimensional difficulties inherent to development and adoption of new medical technology. I presented the MILI valuation lab framework at the national MD/MBA conference at Texas Tech University in 2011, taking the top prize in the poster competition. Since the conference, thought leaders from medical institutions from the University of California at Irvine to Sweden's Karolinska Institute have begun taking steps to adopt similar frameworks at their centers. The MILI valuation lab will assuredly be a leader in multidisciplinary and cooperative medical technology development in the years to come.

Roy Bryan, Jr. '11 MD/MBA

John Zentgraf
Vice President
of Product
Development,
Neochord

The students were catalysts, providing new ideas and fresh perspectives at critical development stages. Team members challenged financial and technical assumptions and provided opinions on whether or not to proceed with development. They added value through their analysis of manufacturing, reimbursement, and clinical trial requirements.

The MILI Fellows provide invaluable insight in the business aspects of medical device innovation. It is a match made in heaven.

Marie Johnson PhD, *President and CEO, AUM Cardiovascular*



MILI Fellows Program

Each year, four to six outstanding alums of the Valuation Lab course are selected to work as MILI Fellows alongside the Innovation Fellows of the College of Science and Engineering's Medical Devices Center. In a year-long project, these students work together on new products. As the Medical Device Fellows are developing new products, our MILI Fellows are providing the business case for each product in its research and with any luck, its development phase.

Adrine Chung
'11 MBA

The MILI Fellows Program let me combine classroom and experiential learning with professional networking—and ultimately led to my current employment. I have developed connections with both the staff and students as fellow colleagues and mentors in the medical industry that I could not have found in any other setting.

Michelle Sotak
'11 MBA

The MILI Fellows program is invaluable in learning how to take a multidisciplinary approach to evaluating the commercialization potential of new medical technologies. I have been able to apply the skills I learned from the MILI Fellows program to several projects and will continue to do so in the future.

Archana Balasubramanyam
'11 MBA

The MILI Fellows Program is a wonderful collaboration opportunity with the Medical Device Fellows. It allows for Carlson students to experience some of the exciting research going on at the University of Minnesota outside of our business school.

Matt Stoll
'11 MBA

Participating in the MILI Fellows program represents an order of magnitude in evolution for a student—an experience that demonstrates where the theory of the classroom breaks down and the realities of embracing a new idea begin.

Bryce Meyer
'10 JD/MBA

The MILI Fellows Program was a great way to combine everything I learned in my coursework into a valuable real-world experience. It also gave me the satisfaction of helping to bring cutting-edge technologies out of the university laboratories and into the hands of physicians and patients.

MIL Student Association (MILsa)

The Medical Industry Leadership Institute Student Association (MILsa) works to develop and promote a sustainable network of students and local and global professionals to create opportunities for success in and transition to the medical industry. Along the way, this wide-ranging group fosters intellectual inquiry, interdisciplinary exchange, and a fun, collegial association.

MILsa's activities include hosting the annual LifeScience Alley poster session and Medtronic Interdisciplinary Healthcare Case Competition, setting up tours and other off-campus interactions with professionals at all levels of the health care industry, organizing networking events, lunchtime discussions with high-level executives, and even a health care-related charity event. In all these ways, MILsa helps its members find success, on-campus as students and beyond.

Medtronic Case Competition

In March 2009, MILsa created the Medtronic Interdisciplinary Healthcare Case Competition (MEDIHCC). The competition allows students to apply their skills to a real case challenge presented by a medical device industry leader, and brings together students from various colleges at the University, including the School of Public Health, the Medical School, the Humphrey School of Public Affairs, the College of Science and Engineering, the College of Biological Sciences, and the Carlson School of Management.

Medtronic, which sponsors the annual event, provides the case as well as generous cash prizes—the top prize winners took home \$4,000 in 2011. In the competition, teams work for 36 hours to develop recommendations that will help the company best formulate a strategy, then present it to industry judges and Medtronic representatives in two rounds. A member of the 2011 winning team, Patrick Siegling ('13 MHA/MBA) says, "MEDIHCC provides students with a great learning experience by demonstrating how professionals across several disciplines can come together to develop product strategies and recommendations that benefit not only Medtronic's bottom line, but also the well-being of society."



MILI Awards and Scholarships

Platou Leadership Competition Award

The Carl N. Platou Leadership Competition honors its namesake's vision and leadership by recognizing those qualities in a group of elite students. Each applicant submits a leadership statement illustrating his or her unique interpretation of and contributions to an experiential learning or real-world, firm-based project. Students also use the essay to reflect on the lessons they took away from the project and their plans to implement that valuable knowledge in the medical industry in the future. An external review committee determines the winners and presents awards and cash prizes (\$2,000 was awarded to the 2011 first place winner) for first, second, and third place.

UnitedHealth Group Actuarial Scholarship

UnitedHealth Group has generously presented the Carlson School with a \$1 million gift to support a scholarship program aimed at encouraging more students to pursue careers as health care actuaries. MILI coordinates and manages this scholarship program, convening both faculty and industry advisory boards to set eligibility criteria and plan two professional seminars per year for scholarship recipients and industry representatives.

The UnitedHealth Group Actuarial Scholarships provides up to two semesters of full-time, undergraduate, in-state tuition for as many as 15 undergraduate students per year on the Twin Cities campuses. Applicants must demonstrate math comprehension and skill and are drawn primarily from undergraduate programs in the Carlson School, the College of Liberal Arts, the College of Science and Engineering, and the College of Food, Agricultural, and Natural Resource Sciences.

"Actuaries play a pivotal role in the delivery of quality health care services, and we are proud to foster the talents and skills of the UnitedHealth Group Actuarial Scholars," said Kate Rubin, Vice President, Social Responsibility, UnitedHealth Group. "This partnership is an example of a win-win for both the students and the larger community as we work together to educate future leaders."

Looking to the future, we see a real demand for credentialed actuaries. We're thrilled to be partnering with the Medical Industry Leadership Institute at the Carlson School of Management, one of the leading public research land grant institutions in the country to support this area of study and ensure a strong work force of tomorrow.

Kyle Brua
OptumInsight
Vice President
and Consulting
Actuary



Platou Leadership
Competition Finalists



UnitedHealth
Group Actuarial
Scholarship
Recipients



MILI Affiliate Program

The Carlson School's Medical Industry Leadership Institute (MILI) has been churning out top-performing undergraduates and MBAs with a Medical Industry Specialization since 2007. In that time, it has built its registry of MILI graduates and other industry supporters representing device manufacturers, insurers/payers, care deliverers, health industry investors, research institutions, pharma companies, and more. Now, our MILI Affiliates are invited to private events; gain access to the school's faculty research, lifelong learning programs, and student body; and become part of a network of industry leaders who share skills and knowledge across organizations. We believe that our Affiliate network's avenues for collaboration, research, and education continue to push improvement and innovation within the medical industry.



Stephan Dunning
'10 MBA

The MILI Affiliate executive board meets regularly to plan exciting events from topical monthly round table discussions to site visits with key leaders at affiliate organizations. Stephan Dunning, '10 MBA, Director of Strategy and Business Development in the Chronic Disease Research Group of the Minneapolis Medical Research Foundation says, "My involvement as a MILI Affiliate provides the opportunity for me to repay MILI for the terrific value it brought to me as a student and now, as a medical industry professional. The Affiliate Program has been a great way to maintain my network, establish new industry contacts, and gain new perspectives on current health care topics."

Membership applications and more information can be found online at:
carlsonschool.umn.edu/medical-industry-leadership-institute/mili-affiliates

Additional MILI Initiatives

National Industry Council

The National Industry Council is comprised of senior level executives from national medical, banking, and consulting firms, supporting MILI, its mission, and the Carlson School. Member firms and their representatives provide leadership in several key areas (joint venture research projects, national outreach, general advocacy, and ambassadorship for MILI), engaging in experiential learning, advising on MILI's education agenda, facilitating contact with industry firms to enhance graduate placement opportunities, and offering guidance to MILI on the development of executive education programs.

Member firms include: Allina Hospitals and Clinics, Blue Cross Blue Shield of Minnesota, Boston Scientific, HealthPartners, Mayo Clinic, McKesson, McKinsey & Company, Medtronic, Merck, Pfizer, PiperJaffray, UnitedHealth Group.



Industry and Community Engagement

MILI is, above all, a collaborative forum that supports the medical industry and those who lead it at every stage. As students launch their careers, practitioners and policy makers contribute to academic dialogs, seek out promising young professionals, and access an intellectual community that can guide development of individual technologies and corporate strategy.

MILI also is a member and supporter of such organizations as: LifeScience Alley, AcademyHealth, the American Society of Health Economists, the Design of Medical Devices Conference, and the Healthcare Information and Management Systems Society.



Michael Ramlet, '09 BS

The MILI program has truly given my career a 10-year head start. It seems unfathomable that just two years ago I completed the MILI program and wrote Carlson's first undergraduate honors thesis. Now as the Director of Health Policy at a Washington DC think tank, I use the MILI experience everyday whether it's working with members of congress or explaining an issue to the press. MILI gave me the industry and public policy experience needed to excel.



Anita Messal, '03 MBA
President & CEO, Hospice, OptumHealth

The MBA live case allowed us to quickly gather information and viewpoints on the Medical Tourism opportunity, and the student recommendations were used as support as we continued through the business case process. We did ultimately expand our international footprint, and we continue to review the applicability of Medical Tourism for our business on a periodic basis.



Global Education

The medical industry crosses borders, and so does MILI's education network. MILI works with groups including the University of Minnesota's Center for International Business Education and Research and the Carlson School's Global Institute, while also creating its own innovative programs. In one particularly exciting example, students in the Medical Industry Valuation Laboratory course (MILI 6995) have recently become able to evaluate medical technology innovations and new products from China's emerging health care market. The Chinese medical industry is the single hottest international market, expected to experience double-digit growth for the next five years. And as opportunities like these open up, more and more American companies will look to penetrate the Chinese market. Future leaders will need both international and intercultural experience to shape the medical industry.

As participants in cross-cultural teams and programs, MILI's students develop advanced communication and collaboration skills as they gain exposure to global technology innovations, venture firms, and inventors. Applying their professional expertise across cultures, industries, and cutting-edge markets in real time, students develop a deeper understanding of international business and a long-lasting global network of friends and colleagues. Our current global programs are just the beginning.

Executive Education

One of the most cherished aspects of MILI is its investment in lifelong learning. As students, faculty, and industry executives interact, each benefits. To deepen our offerings for executives, MILI has partnered with the Carlson School and the University of Minnesota's executive education programs to offer professional development opportunities tailored for our constituents as they, too, adapt to an ever-changing industry. Past programs have included:

- Customized, short-course instruction, for example:
St. Jude Medical's week-long Advanced Leadership Program
and a program for UnitedHealth Group executives and general managers
- A moderated Physician Dialogue Experience with UnitedHealth Group
- The webinar "Health Reform: Where are We Now?"
- The day-long course "The Evolving Healthcare Industry: Effectively Navigating through Complexity"
- An intensive, one-day version of the MBA Healthcare Marketplace course for top managers and emerging leaders

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