LEFT BRAIN

SUPERIOR ANALYTICAL SKILLS.
SOLID GROUNDING IN MATH AND SCIENCE.

RIGHT BRAIN

AESTHETIC CREATIVITY.
DIVERGENT RIGHT-BrAIN THINKING.

RATIONAL ANALYSIS.
CONVERGENT LEFT-BrAIN THINKING.

IMAGINATION AND INVENTION.
INTUITION AND MEANINGFUL INNOVATION.
At McCormick, we do more than educate great engineers. We empower our students to become whole-brain engineers. This means integrating the elements of left-brain thinking—analysis, logic, synthesis, and math—with the kind of high-level right-brain thinking that fosters intuition, metaphorical thought, and creative problem solving. To lead effectively, you must master both.

Just as we empower you with whole-brain thinking, we inspire you to do great things with your life. To change the world for the better in material ways. To influence others to do the same. To lead organizations and communities. To have an impact not only with what you make, but with how you think.

Those are more than words. We put our resources solidly behind them. Providing the widest range and most rewarding of experiences in and outside the classroom. Helping you articulate what you want to do most with your knowledge and talent. Supporting you in every way possible to realize your vision.

The McCormick Way.
FRAME THE PROBLEM CORRECTLY.

Listening and understanding are at the heart of problem solving. Unless you can first frame the problem correctly, you could very well find a great solution to the wrong problem.
Solve it collaboratively.

In a complex, interconnected world, finding the precise point where problems and possibilities intersect requires working with others toward common goals across multiple disciplines and divergent points of view.
Collaborative problem solving demands excellent communication. Regardless of scope or scale, communicating the solution, its meaning and application, determines its ultimate, practical value.

COMMUNICATE IT EFFECTIVELY.
“Most people are surprised to learn that I’ve started a venture-funded company while still a student.”

LEARNING TO BE AN ENTREPRENEUR. BECOMING ONE IN REAL TIME.

Nic Roth
Computer Science
Vice President, Product Development, Walkby

Nic credits McCormick’s Farley Center for Entrepreneurship and Innovation as a critical factor in his business success and Northwestern as one of the best places for undergraduates to explore and grow as entrepreneurs. “I learned hands-on about business models, customer relationships, revenue streams, value propositions, and much more.” Nic also participates in the co-op program, which allows him to take a few quarters away from studies to focus 100 percent of his time on his business.

INSPIRED BY WHOLE-BRAIN ENGINEERING. EMPOWERED BY PASSION FOR A CAUSE.

Kelsey Berning
Biomedical Engineering

Kelsey applied the communication skills she gained at McCormick in workshops that empower teenagers to live healthier, more self-confident lives. She used an undergraduate grant to encourage biomedical and public health professionals to address disparities in healthcare, socioeconomics, and biomedical interventions. She also worked on a study of body-powered prostheses that gained global recognition at the 2013 International Society of Prosthetics and Orthotics World Congress in India and has already helped amputees to have a higher quality of life.

“For me, engineering is more than a major. It’s a way of thinking and living.”

A sailor, engineering at sea.
A member of the Northwestern University Sailing Team, Kelsey says, “We’re more than a team, we’re a family—and many of us are engineers. We talk wind dynamics and angle trajectories, applying our engineering on the water, too.”

A mind for business.
Before his stint with Walkby, a company that delivers localized mobile shopping experiences for consumers, Nic launched Sartorial, another app for consulting with friends about fashion decisions.
“Exploring the options. Finding the best of both.”

Justin Luxker
Civil Engineering and Music Composition

Justin came to Northwestern undecided. Drawn to civil engineering because it combines applied science and sustainability, he also wanted to continue to develop his musical talent. The dual degree program at McCormick and Northwestern’s Bienen School of Music gave him that balance and fits his view of whole-brain engineering: “combining knowledge of math and science with an appreciation for art and aesthetics in how we design and what we do.”

“Handling a full engineering course load while expressing myself through music defines what being at McCormick means to me.”

The art and science of moving and shaking.
Justin performs with Boomshaka, Northwestern’s premier drum and dance ensemble, is captain of the NU Drumline, and works in a lab researching electronic monitoring of damage to structures caused by quarry blasting.

“Creative problem solving.
Christina believes that being engaged in both art and science makes her a more balanced person. “It forces me to focus on my right-brain skills and gives me a chance to express my feelings.”

“Broader thinking helps you solve problems that may not have obvious solutions.”

Christina Fuentes
Biomedical Engineering

When Christina looked into programs at Northwestern, engineering stood out, especially the freshman course we call Design Thinking and Communication. She says it was unique because rather than start with only the basic science courses, she could get hands-on experience right away, a real feeling for what it means to be an engineer. “My first quarters at McCormick confirmed I made the right choice to pursue a degree in engineering.” Christina spends much of her time in the lab of materials science and engineering professor Phillip Messersmith, where she is helping to develop new materials for use in photothermal cancer therapy and cancer drug delivery systems. “I’ve learned a lot of skills that I never would have learned in a classroom setting.”
A new twist on knee injury repair.
The idea for their team project came from a discussion that a group of McCormick engineering students had with Professor Yasin Dhaher of Northwestern’s Feinberg School of Medicine about the needs of orthopedic residents learning how to repair torn knee ligaments. Currently, there are two primary training tools: virtual simulations with a computer and working with human cadavers.

Under the direction of Dhaher and McCormick mechanical engineering professor Todd Murphey, the students formed a cross-disciplinary team and launched a project aimed at bridging the gap between the two current approaches. Their goal: combine the best of both to give surgeons-in-training a repeatable and realistic experience.

The team’s solution—a “biomechanically relevant” prototype of the human knee—gives instant feedback on a surgical student’s performance by measuring and displaying the forces that are put on various ligaments during a procedure. This is done using a software program developed by the McCormick team.

“We come from different engineering disciplines, but our project roles were so totally intertwined that we had to collaborate continuously and stay accountable to each other.”

TEAM KNEE
Siddarth Datla Biomedical Engineering
Kevin Go Biomedical Engineering
Lauren Tyndall Mechanical Engineering
Lamar Richards Mechanical Engineering
“Whole-brain engineering is seeing the big picture, the full implications of how your decisions will affect the final outcome.”

Learning in the fast lane.
Since joining the Northwestern Formula Racing team and becoming the project manager, Shonali has seen the highly cohesive group grow to 35 members who build a new Formula race car every year and compete against other university teams.

DRIVEN TO EXCEL. COMMITTED TO THE PROFESSION.

SHONALI DITZ Manufacturing and Design Engineering
As part of an engineering outreach program, Shonali worked with a group of Chicago fourth-graders to bring their idea for a three-part plastic toy to life, delighting them with the results. The next year, wearing her entrepreneurial hat, Shonali team-taught the now fifth-graders how to start a business to sell the toy they’d developed the previous year. She says, “It amazed me how receptive they were to engineering, design, and the start-up culture.”

MOTIVATED TO GIVE BACK. HELPING OTHERS Succeed.

ANDY NWAELELE Biomedical Engineering
For three years in a row—once as new student, then twice as a counselor—Andy has participated in EXCEL, a leadership development and mentoring program for incoming McCormick freshmen committed to promoting diversity. Andy, who serves as vice chair of Northwestern’s chapter of the National Society of Black Engineers, says, “It’s truly an awesome feeling watching ‘my kids’ succeed.”

Squeezed, dropped, punctured, pressure tested, and more.
As a summer intern at Baxter Labs, Andy did performance testing on hospital IV bags and learned firsthand the critical role of quality assurance in the health care industry.

“If you want to be a big-time engineer, this is the place to be.”
“I have an emotional connection with client-focused projects that I just don’t get solving problems in class.”

**MARK FISCHER**  
Mechanical Engineering

Mark’s the kind of guy who played with LEGO® Bricks and K’Nex as a child and rebuilt a 1963 Triumph Spitfire to cruise around in high school. At McCormick he aims higher. He’s interned at Boeing, helped conserve a 1925 Bugatti dredged up from a Swiss lake, and created an online marketplace for buying and selling textbooks. After graduation, he’s leveraging his experience as an assistant in the rapid prototyping laboratory to start an online company that sells decentralized 3D printing.

What’s up now, Mark?

Recently, he launched a weather balloon to test how solar cells behave at high altitudes. The balloon soared to 97,000 feet and traveled 40 miles, and Mark found that solar cells performed best between 50,000 and 60,000 feet.

**ALEX VAN ATTA**  
Industrial Engineering  
Vice President, Associated Student Government

With over 500 student groups on campus, Alex says there’s really no excuse not to get involved, adding that all his activities relate to one of three things: developing leadership, connecting communities, and improving the lives of students. Because many of his classes focus on teamwork, he’s learned to collaborate with diverse groups toward common goals. He says, “The hands-on experience I’ve gained through the McCormick curriculum has been crucial in my development as a leader on campus.”

**DEVELOPING LEADERS.**

**CONNECTING COMMUNITIES.**

Many ways to make a difference. Alex can apply his industrial engineering knowledge and skills across many fields—healthcare, humanitarian aid, management science, manufacturing—and much more to have a direct and positive impact on people's lives.
whatever you want to do, you can do it here.
More than a place.
A philosophy, an approach, an experience.

Just as whole-brain engineering results from the combination of analytical left-brain skills and creative right-brain thinking, many seemingly disconnected factors intersect at McCormick to create a unified experience unlike that at any other school of engineering.

A strong sense of place
All engineering students—1,500 undergraduate and 1,500 graduate students—and 180 faculty members participate in classes, collaborate on projects, conduct research, and share knowledge and experience in one physical location. This closeness brings people with diverse thinking and skills together on a daily basis where ideas can be exchanged, insights gained, perspectives broadened, and life-long professional and personal relationships formed.

Connections across disciplines and schools
That sense of unity that energizes McCormick extends well beyond our walls. Northwestern University, known for its emphasis on collaboration, promotes partnerships among disciplines. In fact, the majority of science and engineering departments are clustered closely together on campus. Our whole-brain approach, of course, takes us even further afield. We actively collaborate with nearly every school at Northwestern, and our faculty and students often extend their research projects and collaborative initiatives around the world.

Your academic experience is also unified by our well-balanced curriculum through which you can take up to a third of your courses outside of McCormick in whatever field of study interests you, from journalism and creative writing to the visual and performing arts to literature and the social sciences.

Where everyone belongs
As a McCormick student, you’re also vitally connected to the dynamic Northwestern community with its more than 500 student clubs, organizations, and activities. Northwestern students also participate in Big Ten athletics (often at a championship level), perform in student theater and musical productions that rival the professionals, and contribute in myriad meaningful ways through community service and student-led volunteer efforts.

And if you’ve ever visited here, you know about our beautiful campus right on the shores of Lake Michigan and a few minutes’ ride to Chicago with all the culture, diversity, entertainment, excitement, and career opportunities that a world-class city can offer.

“We speak more than the languages of engineering. We collaborate among and outside our disciplines. We are whole-brain engineers, and that makes all the difference.”

JULIO M. OTTINO
Dean, Robert R. McCormick School of Engineering and Applied Science

Finding your passion. Jump-starting your career.

Michael Reddick didn’t have to wait until graduation to find out where engineering would take him in life. As a sophomore, he landed a spot in Professor Keith Tyo’s chemical and biological engineering lab working to reprogram yeast cells to serve as inexpensive diagnostic tests for diseases. Michael knew right away that his passion was in research. “Professor Tyo’s lab was how I learned what’s out there,” he says. “It has showed me what I want to do with my career.”

“Formal footwear for the well-heel’d penguin.”

The assignment: design shoes for penguins with sore feet. The outcome: A classic result of design thinking. Using skills learned in first-year coursework, McCormick students framed the problem first: penguins at Chicago’s Shedd Aquarium with painful feet in need of protection. The ultimate solution was less like a shoe and more like a six-winged bandage that protects the sore part yet offers the flexibility penguins need to swim and walk. Penguin “shoes” also captured the McCormick team a feature spot on NBC’s Today Show.
Ellen Worsdall
Assistant Dean for Student Affairs
Creates and manages programs that enhance student experiences.
Adviser to numerous student professional society chapters.

Sara Smith
Mechanical Engineering Member,
Society of Women Engineers.
Participated in co-op program at Kimberly-Clark.

Ebony Calloway
Electrical Engineering Minor in Chinese,
Member, National Society of Black Engineers.

Samantha Stahl
Electrical Engineering, Minor in Music Technology
Member, nu’s Space Technology and Rocketry Society [NUSTAR].

Harrison Briggs
Mechanical Engineering Plays on Northwestern’s men’s club basketball team, winner of the Illinois Club State Championships.

Natalia Majewska
Chemical Engineering Speaks French, Polish, and English.
Arrived at nu’s Evanston Campus from Kraków, Poland, by way of Houston, Texas.

Sara Smith
Mechanical Engineering Member,
Society of Women Engineers.
Participated in co-op program at Kimberly-Clark.

Aliyah Lee
Computer Engineering Member,
Women in Computing.
Spent a summer studying in India.

Joe Holtgreive
Assistant Dean for Personal Development
McCormick alumnus.
Counsels students on how to succeed academically.
Ask him what dancing has to do with engineering.

Bruce Ankenman
Director, Undergraduate Programs for the Segal Design Institute Focuses on the full design process with special attention to meeting human needs with technology.

Jeff Kahn
Health System Engineering Created his own unique major.
Future plans include a master’s degree in Engineering Design and Innovation.

Sara Smith
Mechanical Engineering Member,
Society of Women Engineers.
Participated in co-op program at Kimberly-Clark.

Aliyah Lee
Computer Engineering Member,
Women in Computing.
Spent a summer studying in India.

Samantha Stahl
Electrical Engineering, Minor in Music Technology
Member, nu’s Space Technology and Rocketry Society [NUSTAR].
You not only learn math, science, physics, and engineering, you also learn how to collaborate and solve problems. And you discover who you are.

Tony Guzman

Any top-tier engineering school could teach me thermodynamics and fluid mechanics. McCormick also develops the other skills that round out very versatile, high-potential graduates.

Joshua Kaplan

To be the best, you have to learn from the best. I'm taking a swing-dancing class for credit with an instructor who won an Emmy® and another professor regularly meets with President Obama as an adviser on science.

Andy Nwaelele

I learned so much in my first year, and not only academically. I’ve also greatly improved my leadership and communication skills, and I’ve grown personally.

Ariana Vidana

You not only learn math, science, physics, and engineering, you also learn how to collaborate and solve problems. And you discover who you are.

Tony Guzman

McCormick challenges us, and we challenge each other to make the world a better place.

Drew Levorsen

At Northwestern University I can challenge myself to take chances and turn my ideas into progress. I can treat each day as another opportunity to become who I want to be.

Rachel Weathered

Here’s how interested and engaged our faculty members are: My organic lab professor taught me how to tie a bow tie I had to wear to a formal event.

Ryan Yang

McCormick does more than focus on math and science. They want you to have a well-rounded experience, to take classes outside of engineering.

Alisa White

I wanted to go beyond the school work and apply the knowledge I was learning.

Dan Schuster
Accomplished Alumni

**David Nichols**
BS ’91
Americas IT Transformation Leader, Senior Partner, Ernst & Young US LLC

**Mert Iseri**
BS ’15
Co-founder, SimpleSense

**Ginni Rometty**
BS ’82
Chairman, President, and CEO, IBM

**Lourdes Solla**
BS ’26
Vice President, Corporate Coverage & Solutions, Deutsche Bank Securities

**Ed Vorobii**
BS ’66
Chairman, President, and CEO, Analogic Corporation

**Gwynna Shotwell**
BS ’88
President and COO, SpaceX

**Joe Girardi**
BS ’86
Manager, New York Yankees

**Nikhil Sethi**
BS ’11
Co-founder and CEO, Adaptly

**Matt Levalich**
MENG ’94, KELLOGG ’94
President and COO, Harley-Davidson Motor Co.

**Deepak Ahuja**
MS ’87
CFO, Tesla Motors

**Gary Kremen**
BS ’85
Founder, Match.com and Clean Power Finance

**Tamarah Duperval-Brownlie**
BS ’91
Clinical Assistant Professor in Family Medicine at Texas A&M Health Science Center. Chief Medical Officer/Chief Executive of Clinical Systems at Lone Star Circle of Care

**Mert Iseri**
BS ’11
Co-founder, SwipeSense

**Ginni Rometty**
BS ’79
Chairman, President, and CEO, IBM

**Yie-Hsin Hung**
BS ’84
Head of Institutional Investments, New York Life Investments

**Nikhil Sethi**
BS ’11
Co-founder and CEO, Adaptly

**Aaron Horowitz**
BS ’12
Co-founders, Sproutel

**Ed Voboril**
BS ’66
Chairman, President, and CEO, Analogic Corporation

**Will Evans**
BS ’77, KELLOGG ’81
President, Regions Bank & North Shore Gas

**Tamarah Duperval-Brownlie**
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Clinical Assistant Professor in Family Medicine at Texas A&M Health Science Center. Chief Medical Officer/Chief Executive of Clinical Systems at Lone Star Circle of Care

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Co-founders, Sproutel

**Will Evans**
BS ’77, KELLOGG ’81
President, Regions Bank & North Shore Gas

**Yie-Hsin Hung**
BS ’84
Head of Institutional Investments, New York Life Investments

One of them When you graduate from McCormick, you become a member of our global alumni network, a widely diverse group of individuals who through their talents, professions, and achievements exemplify the concepts of whole-brain engineering.
YOU’RE AT THE CENTER OF IT ALL. THIS IS YOUR COMMUNITY.
COMING TO McCORMICK IN SEPTEMBER. BY DECEMBER, YOU CAN CHANGE SOMEONE’S LIFE.

From the very start of your freshman year at McCormick, you will experience firsthand what it feels like to be a practicing engineer. You’ll work with actual clients, solve complex problems, deliver tangible results, and make a positive impact on another person’s life—all within your first quarter.

Engineering First®

We call this freshman year experience Engineering First®. It’s what distinguishes the McCormick School of Engineering and Applied Science from others: the opportunities you’ll have to make a measurable difference.

The problems you’ll be asked to solve don’t just come from a textbook. Learning how to come up with a predetermined answer to a well-constructed problem may get you good grades, but it has little practical value in situations where the answers don’t appear in the back of the book.

At McCormick, the answers may be harder to come by, but they’re better answers because of it.

A transformative curriculum

McCormick created the innovative Engineering First® program to give our students the fundamentals of a rigorous engineering education and at the same time to jump-start their futures by applying engineering from the very beginning. The program transforms the first year of engineering study into a carefully orchestrated sequence of practical courses and creative design experiences.

The power of communication

To maximize the value of an engineering solution, you must have highly developed communication skills so you can tell others what your solution means to them and how to apply it. That’s why DTC also emphasizes written and oral communication and draws on the expertise of faculty members from the Writing Program in the Weinberg College of Arts and Sciences to teach them in the context of the engineering disciplines and professions.

In the Engineering Analysis sequence, you’ll learn essentials such as computer programming and linear algebra, engineering mechanics, physics, and differential equations, and how to apply the theory to real engineering problems.

The Design Thinking and Communication (DTC) sequence puts you to work on solving a real client’s problems and then communicating your solutions so others can understand, use, and value them.

Through partnership with organizations such as the Rehabilitation Institute of Chicago, you may spend part of this two-quarter course working with clients who have disabilities to help solve a specific problem. For example, recent first-year students designed devices to help their client open a jar using only one hand. Second-quarter projects address a variety of healthcare, industry, and education problems.

In the Engineering Analysis sequence, you’ll learn essentials such as computer programming and linear algebra, engineering mechanics, physics, and differential equations, and how to apply the theory to real engineering problems.
During your first year at McCormick, as part of the Design Thinking and Communication course, you’ll work directly with an actual client—an individual, an institution, or a company—to find a practical solution to a problem or challenge they face.

What I did my first year at McCormick.

**Pivot Power**
Created a device that secures a cordless screwdriver to a prosthetic arm.

**Swivel Shopper**
Created a device that helps people in wheelchairs transport groceries.

**Jarcano**
Created a utensil that helps users to open jars with just one hand.

**Bedside Button Buddy**
Developed a device that helps track the sleeping patterns of the developmentally disabled.

**Handy Lap**
Created a portable hand dexterity workstation that helps patients increase fingertip dexterity.

**Rotagrip**
Developed a device that helps patients rehabilitate their arms and hands and regain motor function in their wrists.

**Zip-It**
Developed a device to help a stroke victim zip her jacket with one hand.

**Servicecell**
Created a device that helps users with vision and fine motor skill impairments use small phones and keypads.

**Tiered Cake Display**
Developed a sustainable store display for greeting cards that is easy to ship and assemble and promotes customer interaction and cross merchandising.

**Lone Roller**
Created a wheelchair-training device for athletes in wheelchairs that could simulate an increase in elevation.

**Scope-X**
Developed a chair-mounted footrest with height adjustment for people with disabilities whose feet cannot reach the floor when seated in a normal chair.

**Dispensetron**
Designed a pill dispenser for a client who does not have use of his arms or legs.

**Backpack Buddy**
Created a backpack to better hold a special-needs child’s communication device.

**Tag Team**
Developed a system that helps people with impaired vision identify and organize their clothing.

**Launch Master**
Designed a low-cost, efficient, and environmentally-conscious boat launch for a local park.
Design thinking.
Putting the whole brain to work.

Engineering teaches problem solving, design teaches problem framing. That’s why McCormick instills design thinking throughout our program. It’s what sets McCormick students apart from their peers at other schools and in the workplace after they graduate.

But what is design thinking? Simply put, it’s the ability to see and solve the real problem rather than what the problem appears to be. In the context of whole-brain engineering, it’s where right-brain thinking comes into its own.

Integrated with well-honed communication skills, design thinking leads to effective problem solving through a logical sequence:

Study the problem
Conduct background research, interviews, and user observation.

Frame the problem
“Design the right thing” instead of “design the thing right.”

Ideate/Prototype/Iterate
Explore the problem fully, make ideas real very early on.

Tell the story
Communicate ideas in meaningful, engaging ways.

Learn
Gather knowledge from success and failure to inform future problem solving.

Segal Design Institute
DESIGN THINKING THROUGHOUT YOUR PROGRAM.

Your opportunities to further develop your design thinking skills extend far beyond your first-year experience. The Segal Design Institute offers courses, interdisciplinary projects, certificates, and degree programs that focus on integrating design in all forms of human endeavor. McCormick also sponsors wide-ranging, design-oriented activities and competitions through academic departments and student-led groups.

Learn more at www.segal.northwestern.edu

The Farley Center
WHERE ENTREPRENEURSHIP AND INNOVATION THRIVE.

Entrepreneurship and innovation. Both are integral to the McCormick culture. Both are the focus at McCormick’s Farley Center for Entrepreneurship and Innovation, which serves as an incubator for student and faculty creativity and a springboard for entrepreneurial, cross-disciplinary ventures. The Farley Center offers courses, sponsors competitions, and provides myriad other resources to help transform innovations into successful business applications and practices. For example, our Nuvention courses draw students from throughout the University to turn innovative ideas into successful business enterprises.

Learn more at www.fcei.northwestern.edu

The Center for Leadership
ASK THE RIGHT QUESTIONS. SOLVE THE RIGHT PROBLEM.

McCormick is home to Northwestern University’s Center for Leadership, which, in addition to its academic offerings, awards a certificate in leadership. The center also provides leadership assessments to student teams in McCormick’s Design Thinking and Communication courses to help them manage their team dynamics and work more effectively together.

Learn more at www.northwestern.edu/lead

“Our students emerge with deep technical knowledge, of course, but we also instill leadership, entrepreneurship, and design thinking to prepare them to have maximum impact on the world.”

JULIO M. OTTINO
Dean, Robert R. McCormick School of Engineering and Applied Science

Developing Right-Brain Skills

Whole-brain thinking is emphasized through overlapping initiatives in the areas of design, entrepreneurship, and leadership. These areas provide opportunities for students to put their education into action and motivate learning outside the classroom.
MULTI-DIMENSIONAL IN SCOPE. BALANCED IN CONTENT.

LEADING-EDGE THEORY APPLIED IN PRACTICE.
As a McCormick student, you’ll soon realize how our dual mission—creating new knowledge through research and engaging and educating our students—directly affects your life and future in very real and practical ways.

You’ll see how the scope and quality of our faculty’s research energize the classroom with new ideas across the full spectrum of engineering disciplines, and how their passion for their work inspires you with new possibilities in your chosen field. It may even draw you into the research lab to work side by side with some of the brightest minds in engineering.

At the same time, our balanced curriculum—including many classes chosen from the humanities, social sciences, and other fields—will expand your perspective and way of thinking. McCormick’s commitment to balance and to the concept of whole-brain engineering will enrich your experience and equip you to become a confident communicator, effective team member, and strong leader for your organization, your community, and society at large.

Teaching really matters
World-class scholars, breakthrough researchers, and committed collaborators across disciplines, the members of the McCormick faculty are also teachers focused on transferring their knowledge and experience to every student. We make sure that transfer happens in real and meaningful ways.

With McCormick’s 1:9 faculty-to-student ratio, your professors know you by name. Because of our relatively small size, you’ll have more opportunities to interact directly with some of our most senior faculty even in your first year. The structure of our first-year program creates connections between students and faculty from the start and sustains them throughout your program and beyond.

Your assigned faculty adviser will also assist you in choosing courses and selecting a major. Our students always meet with their advisers before registering for classes.

Research involvement starts early
As early as your first year, you can join the two-thirds of McCormick students who participate in research with our faculty members. It’s common for our students to be part of a team that publishes notable research results and connects science to solutions that affect people’s lives.

Because new discoveries and innovation often occur at the point where multiple disciplines come together, McCormick encourages collaboration not only among engineering disciplines, but also across the University’s full spectrum of schools and colleges and with our external partners in business and industry. As a result, you could find yourself engaged in research ranging from the latest in biomedical robotics and computerized augmented reality to automotive design and sustainable energy and beyond.

“Our undergraduate research program is a critical part of our curriculum. It fosters learning for the students and enlivens the labs with the students’ curiosity, perspective, and work ethic.”

STEPHEN H. CARR
Associate Dean for Undergraduate Engineering

At the same time, our balanced curriculum—including many classes chosen from the humanities, social sciences, and other fields—will expand your perspective and way of thinking. McCormick’s commitment to balance and to the concept of whole-brain engineering will enrich your experience and equip you to become a confident communicator, effective team member, and strong leader for your organization, your community, and society at large.

The brains behind artificial intelligence.
Professor Birnbaum’s Intelligent Information Laboratory aims to “remove friction from people’s lives” by making sure they “get to the information they need, even before they know they need it or have to ask for it.”

THINKER. FACILITATOR. ENTREPRENEUR.

LARRY BIRNBAUM
Professor of Electrical Engineering and Computer Science

Professor Birnbaum played a major role in helping McCormick undergrads collaborate with their journalism school counterparts on an artificial intelligence platform that can write news articles from statistical data, such as a corporate earnings report or baseball stats.

The work, which led to the start-up Narrative Science, emerged from the University’s Knight Laboratory, where teams of technologists, journalists, designers, and educators collaborate to advance news media innovation through exploration and experimentation.

“It’s not how smart you are or how good your ideas, it’s what will come out of those ideas and how they will impact the world.”
Professor Backman has distinguished himself both as a researcher and collaborator across disciplines and institutions, and as a teacher and mentor who engages and inspires his students. His work has resulted in innovative optical technologies for early-stage cancer detection. Biomedical engineering students have ranked his classes as the school's most useful, and one student who began working in the professor's lab as a freshman published a research paper in Optics Letters, one of the discipline's most prestigious academic journals.

Undergraduate teacher. Research mentor.

Professor Backman collaborates with faculty across multiple engineering disciplines to develop non-invasive techniques for screening, diagnosing, and detecting disease. “This is the most collaborative environment of any university I know,” he says. “The infrastructure is designed to sustain it.”

Interdisciplinary effort. Common goal.

Monica Olvera de la Cruz, among McCormick’s most highly regarded theoreticians, has received one of the greatest honors given to a U.S. scientist: membership in the prestigious National Academy of Sciences. On campus, she serves as director of the Materials Research Science and Engineering Center, one of the nation’s oldest interdisciplinary research centers. “I think we can attribute our school’s success to this strong push for collaboration across disciplines, our regional and global outreach programs, and our partnerships with industries and other institutions.”

Undergraduate teacher. Research mentor.

In addition to teaching the undergraduate introduction to Materials Science course, Professor Olvera de la Cruz supervises undergraduate interns in research projects in the Northwestern Materials Research Center year round.

Learning to do research is like training your brain in a different ‘sport.’ It takes drive and motivation, but it makes you more powerful.”
“Our work goes beyond the minds of the human beings who create science and delves into their hearts and souls.” Professor Grayson is an originator and driving force behind ETOPA—The Engineering Transdisciplinary Outreach Project in the Arts—which uses drama and performance arts to generate awareness about the interdependence of different fields of study and the responsibilities and obligations of engineers and scientists in society. Off stage, Professor Grayson conducts cutting-edge research in thermoelectrics with promising applications for cooling devices and energy use.

MATTHEW GRAYSON
Associate Professor of Electrical Engineering and Computer Science

“Two things drew me here: The opportunity to collaborate with some of the top minds in my field, and, of course, the students.” Recognized for his cutting-edge research in green technology, Professor Notestein hopes to develop alternatives to current catalytic processes that produce wasteful or environmentally hazardous side products. When not in his laboratory, he teaches an introductory chemical engineering course and an undergraduate chemical product design class. His work as an academic mentor earned him the McCormick Adviser of the Year award.

JUSTIN NOTESTEIN
Associate Professor of Chemical and Biological Engineering

L. CATHERINE BRINSON
Jerome B. Cahen Professor of Mechanical Engineering

“Our students are in tune with the world. They want to transform their newfound knowledge into action that can change the world.” Imagine an airplane wing that changes shape in flight from take-off to a more fuel-efficient shape for cruising. It’s possible with shape memory alloys, metals that “remember” their original shape, change, and then revert. They’re the focus of Professor Brinson’s research, and she is using them for bone and joint implants. She’s just as interested in how research shapes her undergraduate students’ academic experience.

ERIC MASANET
Associate Professor of Mechanical Engineering and of Chemical and Biological Engineering

“Sustainability improvements are vital for a clean planet and a healthy economy, but they’re not going to happen on their own.” Making change happen is Professor Masanet’s aim. Whether it’s the carbon footprints of tomato products or the life cycle of a computer, he’s developing hard data to support critical decision making and impact policy making at the national level. At McCormick, he’s introduced three new sustainability courses and is working on a project where students can provide no-cost sustainability audits to local manufacturers.

Degree programs.
A world of options. Freedom to exercise yours.

The concept of whole-brain engineering runs through all of McCormick’s bachelor’s degree and other specialized programs. Each program delivers a balanced education through coursework, research, internships, and extra-curricular activities. You can even design your own program across disciplines by choosing a second major in art, music, or journalism, for example. Our goal always is to help you articulate and pursue your individual goals and develop into a well-rounded engineer capable of achieving your full potential.

Applied Mathematics
emphasizes the development of mathematical models of physical processes to solve problems, provide insight into the physical behavior of systems, and often predict new phenomena—which in turn stimulate new research.

Biomedical Engineering
provides interdisciplinary study in the life or medical sciences, basic engineering, and quantitative training in problem-solving and education, and theoretical computer science.

Chemical Engineering
is concerned with the principles, processes, and practical solutions required to convert raw materials into products vital to modern civilization, and chemical engineers play a major role in the development of methods for protecting or renewing the environment.

Civil Engineering
serves the basic needs of society through research, planning, design, construction, management, and maintenance of public infrastructure systems such as roads, buildings, water supply, reclamation, and power generation.

Computer Science
addresses challenges of interactive, multimedia computing, including operating systems, networking, computer graphics, image-based modeling and rendering, intelligent systems for problem-solving and education, and theoretical computer science.

Computer Engineering
concerns the design of complex digital systems, computer architecture, robotics, micro-processors, software systems, and embedded systems and emphasizes the interrelationships and appropriate roles of hardware and software.

Electrical Engineering
addresses technologies for generating, communicating, and processing information including electronic circuits, electromagnetics, solid-state electronics, optics, lasers, controls, digital signal processing, communications, and networks.

Environmental Engineering
applies science and technology to address environmental problems, for example in our water supply, workplaces, or homes, and to answer questions about the interrelationships between human civilization and the environment.

www.eecs.northwestern.edu
www.civil.northwestern.edu
www.eecs.northwestern.edu
www.civil.northwestern.edu
www.chem-biol-eng.northwestern.edu
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www.civil.northwestern.edu
Industrial Engineering and Management Sciences
applies a broad skill set to address the design, operation, and improvement of organizations that provide vital goods and services and that involve integrating people, processes, materials, technology, and information.
www.iems.northwestern.edu

Manufacturing and Design Engineering
focuses on key areas of process and product design and manufacturing technologies, systems, operations, and management to ultimately integrate design and manufacturing processes into effective systems.
www.segal.northwestern.edu/undergraduate/made

Materials Science and Engineering
explores the development of high-technology materials, combining elements of metallurgy, polymer science, surface science, solid state physics, and chemistry to understand the structure and properties of materials. McCormick’s Materials Science and Engineering Department was the first of its kind in the nation.
www.matsci.northwestern.edu

Mechanical Engineering
ranges from basic research to product development, production, sales, and support in areas such as robotics, biological molecular machines, microelectromechanical systems, nanotechnology, solid mechanics, fluid dynamics, product design, and computer-aided manufacturing.
www.mech.northwestern.edu

Integrated Engineering
allows you to design your own major. Combine engineering with art, Economics, Music, Creative writing, Social science. Whatever your passion, McCormick offers you the opportunity to take whole-brain engineering in almost any conceivable direction. With the approval of your faculty adviser, you can combine fields of study across Northwestern’s schools and colleges to create a major that is uniquely you.

Combined BS/MS Degrees
The combined BS/MS program allows you to work on your undergraduate and graduate degrees at the same time. Your advisers will help you select the necessary courses to fulfill both degree requirements, and during your junior year you will apply to the Graduate School.

Course Requirements
McCormick’s curriculum combines an excellent engineering education with nontechnical courses supporting a theme selected by the student. McCormick requires students to complete:

- 48 courses to earn a degree
- 4 courses in engineering analysis
- 3 courses in design and communications
- 4 courses in mathematics
- 4 courses in basic science
- 5 courses in basic engineering
- 7 courses in the social sciences and humanities, chosen with some thematic relationship
- 16 courses in a chosen major
- 5 unrestricted electives

Certificate Programs
Students have the opportunity to compete for places in the following honors programs and special concentrations:

- Architectural Engineering and Design Certificate Program
- Business Enterprise Certificate
- Certificate in Engineering Design
- Certificate in Entrepreneurship
- Certificate in Entrepreneurship
- Certificate in Entrepreneurship
- Kellogg School of Management Certificates in Financial Economics and Managerial Analytics
- Medill School of Journalism Undergraduate Integrated Marketing Communications Certificate Program
- Some of these programs require a special application. For more information, see www.mccormick.northwestern.edu/prospective/

Combined Degree Programs
If you have the ability and the commitment, McCormick offers a number of options for you to pursue two degrees: one in your chosen field of engineering from McCormick and the other from another area of the University. The Engineering and Music Combined Degree Program offers two degree options and the Engineering and Liberal Arts Degree Program offers a wide range of choices such as economics, mathematics, languages, and more.

Engineering Minors
McCormick offers minors that can be pursued in addition to a bachelor’s degree:

- Biotechnology and Biochemical Engineering
- Computer Science
- Environmental Engineering
- Transportation and Logistics

“McCormick does more than educate great engineers. It inspires us to be interesting people.”

KATIE FANG
Find your place in the world. 
Deliver on the whole-brain promise.

Employers know they can recruit smart, qualified engineering school graduates at many schools nationwide. Time and again, however, they seek out McCormick graduates for that special combination of qualities rarely found elsewhere: Graduates instilled with the principles of whole-brain engineering, skilled problem solvers. Effective communicators. Leaders who know the power of collaboration and working in teams.

The McCormick Office of Career Development helps our students prepare to deliver on this promise to their future employers. We offer career-focused education, services, and advice with one goal in mind: the individual development of each student’s unique career planning pathway.

Each year, 90 to 95 percent of McCormick seniors already have career plans at the time of graduation.

Co-op and internships
Learn and earn from experience

The Walter P. Murphy Cooperative Engineering Education Program, one of the nation’s oldest co-ops, allows undergraduate students to gain practical experience by alternating quarters in school with periods of paid work at one of nearly 200 corporate partners. The Office of Career Development also administers internship, service learning, and research programs and maintains an international employer base.

Global perspective
International experience

You don’t have to go far to get a broader view of the world of engineering. The diversity of national origins and cultures among our students and faculty gives you first-hand experience with global points of view and ways of thinking. For more exposure, join the nearly half of McCormick students who travel abroad during their undergraduate years through research, student projects, the Cooperative Engineering Education Program, study abroad, or internships.

Taking it personally
Living it fully

McCormick is the only engineering school in the country with a formally established Office of Personal Development. We focus on helping our students become more self-aware, empower them to take ownership and responsibility for their learning, and enable them to recognize and take advantage of all the opportunities available here, throughout the University, and in the extended community.

At McCormick, personal development means:

- Exploration of a wide range of experiences and choosing the extracurricular activities most rewarding to you
- Engagement in meetings and seminars where you can discuss your work and development
- Transformation through critical examination of and reflection on your experiences

LEARNING FROM EXPERIENCES.
LOTS OF THEM.

Ibrahim Bengali, an industrial engineering and management sciences major, takes learning from experience seriously. He’s secured six internships across a variety of industries, including Hamilton Sundstrand, PriceWaterhouseCoopers, and two internships each at Coca-Cola and United Airlines. He’s taken well-earned lessons from each: How to confront ambiguity and uncertainty with courage. The value of exceeding expectations. Learning from mistakes and never repeating them. How finding your fit and enjoying what you do transforms even the most mundane jobs into rewarding experiences.

PETER RABBIT AND ROBOTICS?
THE SPIRIT IS THE SAME.

As a child, Timi Chu spoke only Cantonese at home with her family who had emigrated from China. Her mother would take her to the local library, where, she says, she learned to read and write English. To give children in Evanston the same opportunities, she founded Book Buddies, a weekly reading program that pairs Northwestern volunteers with local elementary students. A biomedical engineering major, she also did an internship at the Rehabilitation Institute of Chicago using robotics to help stroke and spinal cord injury patients learn to walk again.

SOME COOL THINKING
ABOUT A HOT TOPIC.

A native of Ghana, Nana Ohene-Adu, a civil engineering major, wanted his Murphy Scholar project to reflect his interest in sustainability—and his love for his home country. Concerned about how energy-intensive cooling houses there can be, his search for a “greener” way to do it took him back to Ghana where he saw his homeland through a new lens. In his final paper, he proposes building strategies for a more sustainable Ghanaian future, and he calls for a “return to environmentally-centered thinking” often intrinsic in traditional societies like Ghana.

A BETTER PLACE TO LIVE.
ONE FAMILY, THE WORLD.

For their 2013 spring break, a group of McCormick students traveled to Nicaragua to build a home for a family in need. As part of Architecture Brigades, a Northwestern chapter of Global Brigades, the world’s largest student-led global health and sustainable development organization, they literally built a new house from the ground up. While their engineering skills came in handy, Ryan Yang, biomedical engineering major, says this kind of effort “doesn’t require complex equations, just the desire and will to help someone out.”
“I appreciate the different groups, activities, and events that students can get involved in. There are so many communities here that anyone can find a place to fit in.”

TAYLOR RICE

Making an impact by giving back

McCormick student projects often have a serious impact on communities in need. For example, one student project developed low-cost x-ray systems for the developing world, where clinics faced the challenges of low budgets and little or no diagnostic technology. Students spent five years working from idea to implementation, and their digital x-ray system has now been implemented successfully at two sites in Guatemala.

McCormick Student Organizations

FROM THE PRIVILEGES OF MEMBERSHIP TO THE RESPONSIBILITIES OF PROFESSIONALISM.

Membership in student organizations at McCormick extends well beyond personal benefits and privileges. Membership is also about promoting professionalism, networking, reaching out to the community, tutoring, and mentoring. All that and more is what membership can mean in organizations like the Society of Women Engineers, the Northwestern Solar Car team, Design for America, the National Society of Black Engineers, and the Society of Hispanic Professional Engineers.

Student clubs, activities, and initiatives:

www.mccormick.northwestern.edu/undergraduates/student-groups/index.html

A MASTER CLASS IN ARCHITECTURAL DESIGN AND ENGINEERING.

McCormick’s Architectural Engineering and Design program consists of three studio courses in which students create progressively more ambitious projects. One group of students in the program had the opportunity to spend a week at the Berlin offices of internationally renowned architect Helmut Jahn, working on a design project and observing the workings of an architecture firm. The assignment was to design an event for the central forum of the Sony Center, a nine-building complex on Berlin’s Potsdamer Platz. At the final review, Jahn gathered the students in his office and said, “What’s important is to clearly state what you wanted to do and how you dealt with the space. You’ve got a problem, and so you design a solution.”

DESIGN FOR AMERICA. INSPIRING NEW GENERATIONS OF CREATIVE ACTIVISTS.

The brainchild of three McCormick students and a faculty adviser, Design for America empowers students to work throughout the school year to tackle significant challenges like childhood obesity, climate change, aging populations, literacy, and other “wicked” problems that plague humanity. Since its founding in 2009, DFA has grown to a network of more than 600 students from all backgrounds and majors at 14 college campuses nationwide.

Northwestern University

Influential
Faculty are members in the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, the American Council of Learned Societies, and numerous other honorary and professional societies.

Extraordinary breadth and depth of schools and disciplines. 12 schools and colleges.

NU home to top-twenty national programs in engineering, business, medicine, and law.

225,000 alumni include Pulitzer and Nobel Prize laureates, Academy Award winners, and leaders in education, government, science, law, technology, medicine, media, and other domains.

Right-sized
Large and prestigious enough to attract the highest-quality faculty and students. Division I athletics, strong support from the business community.

Small enough for every individual to be noticed, to create long-lasting relationships within McCormick and with students in other schools/disciplines.

Take up to a third of your undergraduate courses outside of McCormick.

Influential Faculty are members in the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, the American Council of Learned Societies, and numerous other honorary and professional societies.

World-class, private, research university. Founded in 1851.

Living and learning among some of the world’s top students in schools across NU.

Prestigious
2,500 full-time faculty members range from MacArthur Fellowship recipients to Tony Award winners.

Nineteen intercollegiate athletic teams (8 men’s and 11 women’s).

More than 500 student clubs, organizations, and activities.

Easy access to the world-class city of Chicago.

Acclaimed student theater and musical performances.

20,000 full- and part-time students.

Location. Location. Location.
240-acre campus on the shores of Lake Michigan in Evanston. Steps from the beaches of Lake Michigan. A great view of the Chicago skyline, and a few minutes’ ride away to the country’s third largest city.

Cameras in Evanston and Chicago in Illinois; branch campus in Doha, Qatar.

Charter member of the Big Ten, the conference’s only private institution.

2,500 full-time faculty members range from MacArthur Fellowship recipients to Tony Award winners.

Evanston, a great college town set along the shores of Lake Michigan, offering shops and restaurants within walking distance of campus.

Prestigious
2,500 full-time faculty members range from MacArthur Fellowship recipients to Tony Award winners.

Club and intramural sports, fitness, and recreation.

20,000 full- and part-time students.

2,500 full-time faculty members range from MacArthur Fellowship recipients to Tony Award winners.

Easy access to the world-class city of Chicago.

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If you have any questions about the McCormick School of Engineering and Applied Science, please write, call, or visit our website.

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“At Northwestern, no single thing defines me. I’m a whole-brain engineer.”

Drew Levorsen