

Department of Chemical Engineering

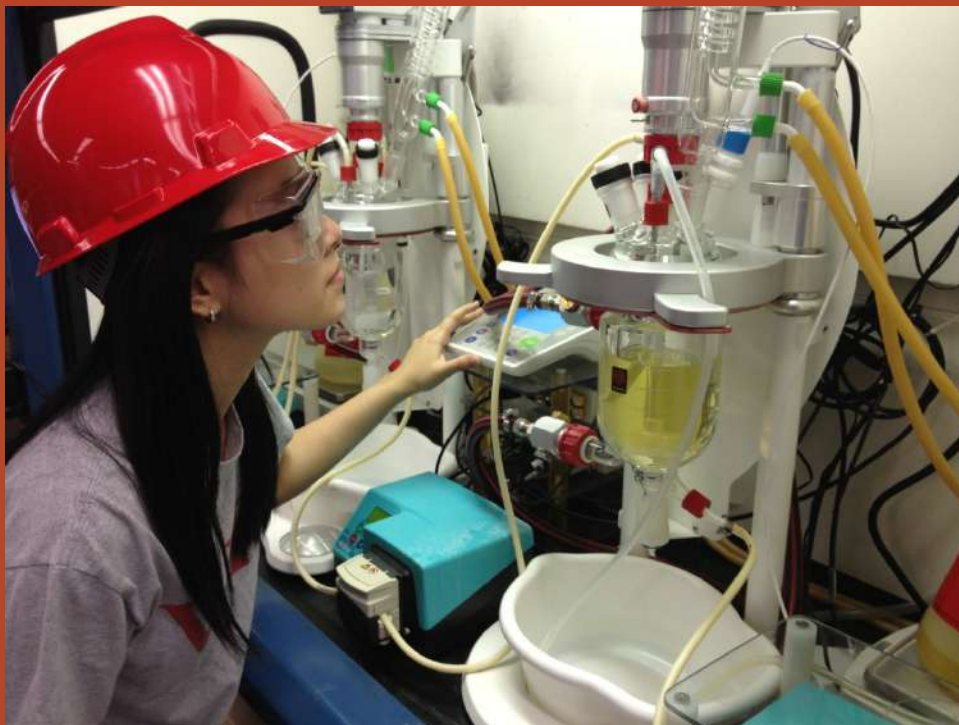
A Closer Look



WPI

The University of
Science and Technology.
And Life.™

Why Chemical Engineering at WPI?



- The People
- The Projects
- The Facilities
- The Curriculum
- Your Future

The People



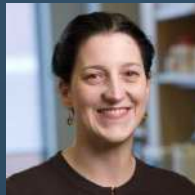


The Faculty

The faculty include renowned researchers and teachers working in biofuels, bioengineering, advanced materials, nanotechnology, reaction engineering, computational chemistry, systems engineering



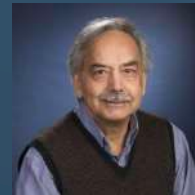
Prof. Abu-Lail



Dean Camesano



Prof. Clark



Prof. Datta



Prof. Deskins



Prof. DiBiasio



Prof. Dixon



Prof. Kazanskis



Prof. Kmiotek



Prof. Roberts



Prof. Stewart



Prof. Teixeira



Prof. Timko



Prof. Wilcox



Prof. Young



Prof. Zhou



Prof. Zurawsky

The Projects

- Humanities and Arts
 - In-depth study in an area of interest
- Society – Technology Project
 - Community Service (Local)
 - International (Global Perspective Program)



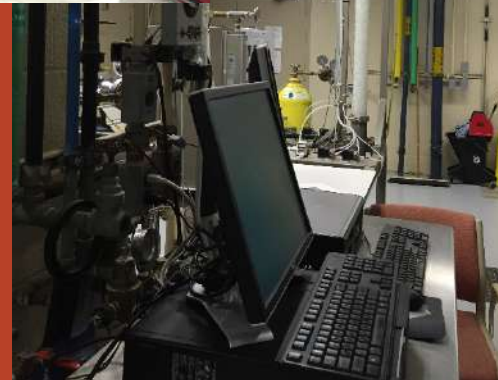
Chemical Engineering Project

- In faculty research labs
- At local industry
- Off-campus in Modesto, CA; Shanghai & Beijing, China; Nancy, France; and Campinas, Brazil (list is ongoing)



The Facilities

- 3-Story Unit Operations Lab
- 15 Research Labs



The Curriculum

Term Year →	A	B	C	D
↓ First Year	Chemistry Math Humanities	Chemistry Math Intro to ChE	Chemistry Math Humanities or Physics	Chemistry Math Humanities or Physics
Sophomore <u>HUA</u>	Chemical Engineering Fundamental s	Elementary Chemical Processes	Applied Thermodynamic s	Advanced Chemical Processes
Junior <u>Interdisciplinary Project</u>	Fluid Mechanics	Heat Transfer	IQP	Mass Transfer Kinetics and Reactor Design
Senior <u>Chem Eng Project</u>	Unit Operations Laboratory I Process Design and Economics	Unit Operations Laboratory II Capstone Design	Process Control Laboratory	

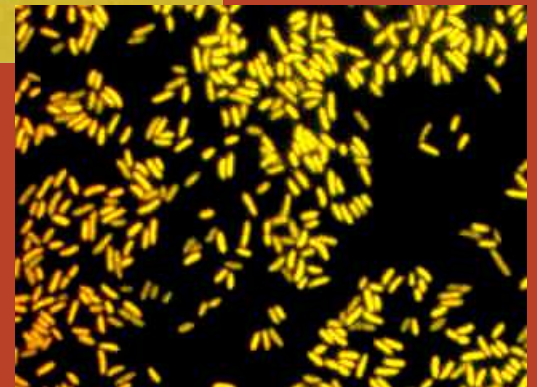
Biological Concentration

- Prepares students for careers in the life sciences:
 - Biomanufacturing
 - Bioenergy
 - Pharmaceuticals and biotechnology
 - Drug delivery and tissue engineering



genzyme

CHE 3301. Introduction to
Biological Engineering



Energy Concentration

- Chemical Engineering leads the WPI Energy Group on campus
- Leading research faculty across biofuels, fuel cells, energy storage, catalysis, reactor design



ExxonMobil

CHE 3702. Energy
Challenges in the
21st Century

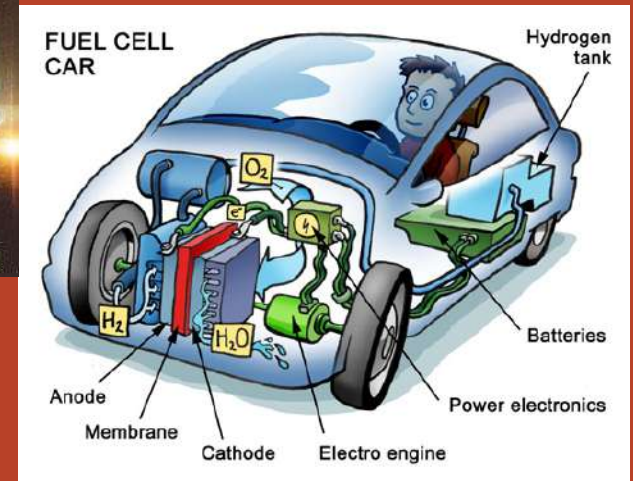


PRAXAIR

Environmental Concentration

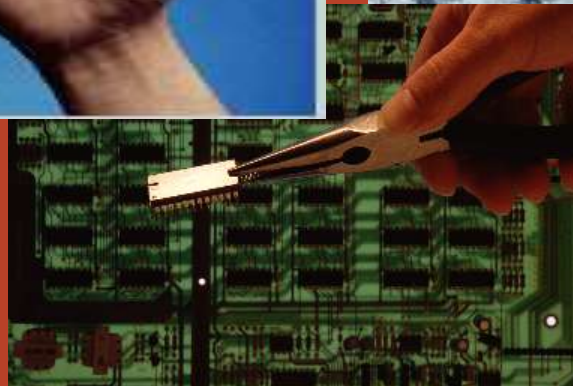
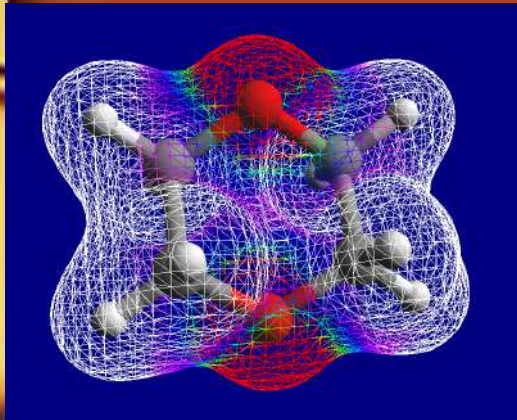


CHE/CEE 4063. Transport and Transformations in the Environment



Materials Concentration

- Collaborate with the Mechanical Engineering materials faculty and students
- Our faculty perform research in nanotechnology, soft materials for biological applications, environmentally sound materials, materials characterization



Where do the 240,000 Chemical Engineers Work? (Just About Everywhere!)

- Energy and Fuels
 - *Petroleum* (ExxonMobil, Shell)
 - *Natural Gas/Utilities*
 - *Hydrogen* (Air Products)
 - *Power Generation* (Eversource)
 - *Fuel Cells* (UTC Fuel Cells, PlugPower, Nuvera)
- Commodity Chemicals
 - *Agricultural Chemicals*
 - *Plastics* (du Pont)
 - *Rubber* (B.F. Goodrich)
 - *Textiles*
 - *Petrochemicals* (ICI)
 - *Air Chemicals* (Air Products, Praxair)
- Specialty/Consumer Chemicals
 - *Adhesives* (3M)
 - *Specialty Chemicals* (King, Eastman, Savannah River)
 - *Paints, Varnishes, Inks*
 - *Soaps, Detergents* (Proctor & Gamble)
 - *Cosmetics, Perfumes* (Clairol)
- Microelectronics (Intel, IBM, GE)
- Advanced Materials
 - *Glass* (Corning)
 - *Ceramics* (Saint Gobain)
 - *Composites*
 - *Polymers* (WL Gore, SABIC, Rogers)
 - *Metals*
 - *Catalysts* (Englehard)
- Bio/Pharma
 - *Biotechnology* (Genzyme, AmGen, AbbVie, Pfizer)
 - *Biomedical Devices* (Abiomed)
- Transportation
 - *Auto* (GM)
 - *Aerospace* (Raytheon, GE)
- Process Control (Fisher, Foxboro)
- Process Design (Aspen Plus, NFPA, Arup)
- Food and Beverages (ADM, Coca-Cola, National Starch, Pepsi, AmBev)
- Pulp and Paper (International Paper)
- Design and construction (Bechtel)
- Environmental, safety, and health (Trinity, Epsilon, AMEC)



What's Your Degree Worth?

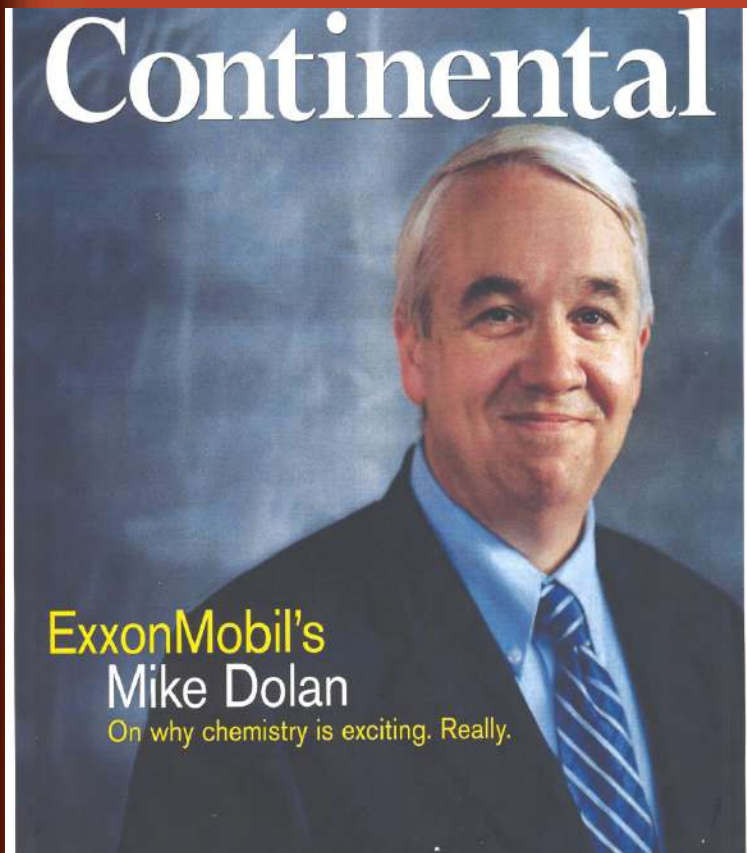
Curriculum	Average \$
Electrical & Computer Engineering	\$74,000
Chemical Engineering	\$67,500
Mechanical Engineering	\$64,000
Civil and Environmental Engineering	\$58,000
Biomedical Engineering	\$57,000

Chemical: 67% employment/military/Peace Corp
24% graduate school

Source: WPI Career Development Report, March 2019

Mike Dolan '74

Sr. Vice President (ret.), ExxonMobil, WPI Trustee



Dolan . . . remembers how his focus gelled at WPI: “I was looking for a profession that had good opportunities and the ability to travel and see the world, and that pushed me toward chemical engineering.”

Michelle Gass '90
CEO, Kohl's
Former Sr. VP, Starbucks



Gass . . . cites the WPI approach to education: “The project piece was a critical component that showed me how to be successful in the corporate world,” she says. “And the notion of collaboration is so fundamental to how we operate at Starbucks.” Her professors, she adds, “were inspiring about academics, leadership, and life.”

Nancy Pimental '90

Screenwriter: South Park, The Sweetest Thing

Executive Producer, Writer: Shameless

Actress: TV, film

Pimental... credits her WPI education, which also imbued her with perhaps the most important trait for a comic: confidence. After all, she says, “There aren’t many more difficult things than engineering. And once you’ve survived organic chemistry, facing a television audience of millions just doesn’t seem so scary anymore.”



Unique Advantages of a WPI Education

Slide courtesy of Rick Willett, '91 Pres. & CEO JBP Holdings, LLC

Program Attributes

IQP, MQP, UO lab, etc.

Compressed Classes, 3 at a time

IQP, HUA, International Assignments

Grading system. . . Allows a “redo”

Small size. . . Allows for participation in extracurricular activities

Top quality professors with their 1st priority on undergraduate education

Core Skills

Work on a Team

Focus

Cultural Awareness

Persistence

*Balance / Participation
(Competition)*

“Learn how to Learn”

A Core Set of Skills to be able to “Embrace Change”

The Student Experience



Sydney Packard – '20



The relationships and connections I've made at WPI shape who I am. Over my four years here I've grown in confidence, ability and character because of the people surrounding me. Whether it be a teammate listening to me practice a presentation or a Professor asking how running has been going, there is no shortage of people who genuinely care about each other on this campus

Jeremy Spittle – '20



Many prospective WPI students, like myself 4 years ago, look at schools like RPI, RIT, MIT, Steven's, Virginia Tech, Georgia Tech. What has reaffirmed my decision to come to WPI is the superior community. This includes the people (both faculty and other students) but also the infinite ways to get involved on campus. In high school I mostly just played baseball and did schoolwork, and intended to do the same here. When I didn't make the WPI team, I easily found other interests to pursue in sustainability, AIChE, religious organizations, and Greek life. Also, IQP is another amazing and unique thing to WPI where you will also make friendships that last

Sara Fitzpatrick – BS/MS '20



WPI is truly a one of a kind community where people are collaborative and kind as well as innovative and intelligent. This amazing community has encouraged me to become the best version of myself and accomplish things I did not even know were possible

Chris Tracy – ‘20



When picking a college leaving high school, I could not imagine the position I am in now. Imagine leaving for your dream job, but you're leaving behind your best friends, extensive support system, and most valuable memories

Maddie Cunniff – '20



WPI has given me boundless opportunities to grow academically, socially, globally, and independently. I've had the opportunity to work on some amazing teams, complete projects that have real world impact, become involved in extracurriculars, create a network, and push myself to succeed in every facet with support from faculty and staff. The Chemical Engineering department has prepared me with the technical and problem-solving skills I need to be successful in the engineering world. WPI fosters the perfect environment of learning and growth, and I am now graduating with the hard and soft skills I need for the 'real world'

Any Questions?

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www.wpi.edu/Academics/Depts/ChemEng/



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