Department of Chemical Engineering

Anne Skaja Robinson, Head
Office: Doherty Hall 1107
www.cm.edu/cheme (http://www.cm.edu/cheme/)

Chemical Engineering is a broad discipline that combines chemistry, mathematics, physics and biology with its own unique principles of chemical engineering science and process systems engineering to develop new products and manufacturing processes. Chemical engineering science refers to the material properties and models that help the chemical engineer understand and predict the transformation of chemical compounds at all stages of their conversion from raw materials to value-added products. Process systems engineering provides methodologies for the systematic calculation, optimization and analysis of a system's operations by which a product is manufactured, as well as the economic, safety and environmental assessment of these processes.

Modern chemical engineering practice brings together a deep understanding of molecular properties and process design to not only develop more energy-efficient and sustainable manufacturing processes for currently existing products but also to develop new consumer and industrial products that provide enhanced functionality while making more efficient use of resources. As a result, the Chemical Engineering profession offers challenging and well-compensated careers in industries across the economy. Nearly all aspects of modern life use the products of chemical engineering. The pharmaceutical industry recruits chemical engineers to use their knowledge of chemical reaction engineering and separation processes to produce pure and effective pharmaceutical agents and their delivery systems, and the biopharmaceutical industry attracts chemical engineers who can apply this expertise to biomanufacturing systems based on microbiology and biochemistry. In the chemical and energy sectors, chemical engineers develop catalysts and processes to improve yields in the production of commodity and specialty chemicals and petroleum-based fuels, and they develop new battery systems, fuel cells and biofuels to help build the renewable energy economy. Material manufacturers hire chemical engineers to develop large scale processes to synthesize polymers as resins for formulated products or fabricate device components. The semiconductor industry seeks the chemical processing expertise of chemical engineers to manufacture chips, integrated circuits, or photovoltaic cells. Chemical engineers in the consumer products industries use their knowledge of chemical transformations to formulate and manufacture nearly all the products that people use in their everyday lives. Consulting companies seek chemical engineers for evaluation of the economic feasibility of industrial projects and to develop software for the design, analysis and operation of manufacturing processes. Finally, the curricular emphasis on the analysis and optimization of complex systems makes Chemical Engineering an excellent preparatory major for students interested in medical or business schools.

The Chemical Engineering curriculum develops deep problem solving skills through challenging, open-ended problems in chemical engineering science, process systems engineering, process system design and product design. Computing is integrated throughout the curriculum. The department’s Gary J. Powers Educational Computer Lab supports extensive use of mathematical modeling and simulation software. Students in the Robert Rothfus Lubricant and Lubricol Analytical Laboratory learn to use computerized data acquisition and control systems as they develop experimental tests of chemical engineering theory or process design alternatives. With its focus on complex chemical and biochemical processes, Chemical Engineering is a natural pairing with the Additional Major in Biomedical Engineering or the Biomedical Engineering minor. Chemical Engineering students pursue many different minors. It is particularly well aligned with the CIT Designated Minor in Colloids, Polymers and Surfaces and the University’s Minor in Environmental and Sustainability Studies.

Program Educational Objectives and Student Outcomes

Program Educational Objectives: The objectives for the program are that within a few years after graduation, graduates will obtain employment or attend graduate school, will advance in their chosen careers, and will be productive and fulfilled professionals. The curriculum and programs are developed to prepare students to attain these educational objectives.

Students majoring in chemical engineering learn the science and engineering that govern chemical processing systems. Fundamental principles, problem solving, systems analysis and design, development of self-confidence, and communication skills are emphasized. Students are made aware of modern tools, industrial needs and societal issues. The curriculum emphasizes the acquisition of knowledge in basic science and mathematics during the first three semesters, acquisition and exercise of knowledge about engineering science in the next three semesters, and acquisition of knowledge and experience with chemical engineering design in the final two semesters. Moreover, lab courses emphasize projects where students work on innovative ideas and decide what equipment to build or use in order to carry out those ideas. This combination of fundamental knowledge and practical skills provides a firm foundation for future learning and career growth. The goal of the department is to produce students who will become leaders in their careers.

Student Outcomes: The Program has adopted the Student Outcomes listed in the 2018-2019 Criteria for Accrediting Engineering Programs. Students who complete the curriculum will have attained the following outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, economic, and environmental factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, and to comply with codes of ethics and safety
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The department offers a number of special programs for students majoring in Chemical Engineering. In addition to the double majors offered by the College of Engineering such as Biomedical Engineering and Engineering & Public Policy, students may choose from a variety of minors in technical areas offered by the College of Engineering. Undergraduate research projects are also available in the areas of bioengineering, complex fluids engineering, environmental engineering, process systems engineering, and catalysis & surface science. The department has recently established the Chemical Engineering Summer Scholars (ChESS) program to support undergraduate research within the department. The department distributes application procedures to Chemical Engineering majors during the spring semester. Students may participate in study abroad programs during their junior year. In addition to the University Study Abroad programs, the department provides its own exchange programs with: RWTH Aachen in Germany, Imperial College in London, Great Britain, Universidad Nacional del Litoral in Argentina, and Yonsei University in Seoul, Korea. Students may also participate in Practical Internships for Senior Chemical Engineering Students (PISCES), a one-year industrial internship program offered between the junior and senior years. Finally, qualified students may enroll in our Master of Chemical Engineering program. This degree is typically completed in the fifth year. However, depending on the number of advanced placement courses and course load at Carnegie Mellon, this degree could be awarded during the B.S. graduation, or after one additional semester.

Curriculum for Class of 2021, 2022 and 2023

Minimum units required for B.S. in Chemical Engineering: 389

The program in chemical engineering within the Department of Chemical Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-120 Differential and Integral Calculus</td>
<td>10</td>
</tr>
<tr>
<td>76-xxx Design of Writing Expression Course</td>
<td>9</td>
</tr>
<tr>
<td>99-101 Computing @ Carnegie Mellon</td>
<td>3</td>
</tr>
<tr>
<td>06-100 Introduction to Chemical Engineering</td>
<td>12</td>
</tr>
<tr>
<td>09-105 Introduction to Modern Chemistry</td>
<td>10</td>
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</tbody>
</table>

| Total | 44 |

http://www.abet.org
Department of Chemical Engineering

Third Year

Spring
21-122 Integration and Approximation 10
xx-xxx Introductory Engineering Elective (other than ChE) 12
33-141 Physics I for Engineering Students 12
xx-xxx General Education Course 9

Units 43

Second Year

Fall
21-259 Calculus in Three Dimensions 9
06-221 Thermodynamics 9
06-222 Sophomore Chemical Engineering Seminar 1
09-106 Modern Chemistry II 10
xx-xxx Computer Sci./Physics II * 10-12
xx-xxx General Education Course 9
39-210 Experiential Learning I 0

Units 48-50

Spring
06-261 Fluid Mechanics 9
06-262 Mathematical Methods of Chemical Engineering 12
09-221 Laboratory I: Introduction to Chemical Analysis 12
xx-xxx Physics II/Computer Sci. * 12-10
xx-xxx General Education Course 9
39-220 Experiential Learning II 0

Units 54-52

* Computer Science/Physics II: Students should complete 15-110 Principles of Computing or 15-112 Fundamentals of Programming and Computer Science as well as 33-142 Physics II for Engineering and Physics Students by the end of the Sophomore year. The recommended sequence is 33-141/33-142 for engineering students, however, 33-151/33-152 will also meet the CEE Physics requirement.

For those students who have not taken 06-100 as one of the two Introductory Engineering Electives, 06-100 should be taken in the Fall Semester of the Sophomore year. The General Education Course normally taken during that semester may be postponed until the Junior year. These students should consult with their faculty advisors as soon as possible.

At the end of the Sophomore year, a student should have completed the following required basic science and computer science courses:

09-105 Introduction to Modern Chemistry I 10
09-106 Modern Chemistry II 10
09-221 Laboratory I: Introduction to Chemical Analysis 12
15-110 Principles of Computing 10-12
or 15-112 Fundamentals of Programming and Computer Science 33-141 Physics I for Engineering Students 12
33-142 Physics II for Engineering and Physics Students 12
99-10x Computing @ Carnegie Mellon 3

Units 43

Third Year

Fall
06-321 Chemical Engineering Thermodynamics 9
06-322 Junior Chemical Engineering Seminar 2
06-323 Heat and Mass Transfer 9
09-217 Organic Chemistry I 9-10
or 09-219 Modern Organic Chemistry 12
09-347 Advanced Physical Chemistry 12
xx-xxx General Education Course 9
39-310 Experiential Learning III 0

Units 50-51

Spring
06-361 Unit Operations of Chemical Engineering 9
06-363 Transport Process Laboratory 9
06-364 Chemical Reaction Engineering 9
03-232 Biochemistry I ** 9
xx-xxx Unrestricted Elective 9

Fourth Year

Fall
06-421 Chemical Process Systems Design 12
06-423 Unit Operations Laboratory 9
xx-xxx Unrestricted Elective 9
xx-xxx Unrestricted Elective 9
xx-xxx General Education Course 9

Units 48

Spring
06-462 Optimization Modeling and Algorithms 6
06-463 Chemical Product Design 6
06-464 Chemical Engineering Process Control 9
xx-xxx Unrestricted Elective 9
xx-xxx Unrestricted Elective 9
xx-xxx General Education Course 9

Units 48

** Students pursuing a Chemical Engineering/Engineering and Public Policy double major are waived from taking the Biochemistry Elective. They will take 36-220.

Notes:
1. In addition to the graduation requirement of an overall QPA of 2.0 (not counting the First Year), the Department of Chemical Engineering requires a cumulative QPA of 2.0 in all chemical engineering courses (all those numbered 06-xxx).
2. Minimum number of units required for graduation: 389.
3. All mathematics (21-xxx) courses required for the engineering degree taken at Carnegie Mellon must have a minimum grade of C in order to be counted toward the graduation requirement for the BS engineering degree.
4. A minimum grade of C must be achieved in any required mathematics (21-xxx) course that is a pre-requisite for the next higher level required mathematics (21-xxx) course.
5. Overloads are permitted only for students maintaining a QPA of 3.5 or better during the preceding semester.
6. Electives: To obtain a Bachelor of Science degree in Chemical Engineering, students must complete 06-100 and one other Introductory Engineering Elective. There are also five Unrestricted Electives. Students must discuss choice of electives with their faculty advisors.
7. Undergraduate Research: Independent research projects are available by arrangement with a faculty advisor. Many students conduct these research projects for elective credit by enrolling in 06-200, 06-300, or 06-400 (Sophomore, Junior, or Senior Research Projects) or 39-500 CIT Honors Research Project for eligible Seniors.
8. Advanced undergraduates may also take Chemical Engineering graduate courses (600+ level).

Curriculum for Class of 2024

Minimum units required for B.S. in Chemical Engineering 389

The program in chemical engineering within the Department of Chemical Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

First Year

Fall
21-120 Differential and Integral Calculus 10
76-xxx Designated Writing/Expression Course 9
99-101 Computing @ Carnegie Mellon 3
06-100 Introduction to Chemical Engineering 12
09-105 Introduction to Modern Chemistry I 10

Units 44
## Third Year

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>21-122 Integration and Approximation</td>
<td>10</td>
</tr>
<tr>
<td>xx-xxx Introductory Engineering Elective (other than CHE)</td>
<td>12</td>
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<tr>
<td>33-141 Physics I for Engineering Students</td>
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<tr>
<td>xx-xxx General Education Course</td>
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### Second Year

<table>
<thead>
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<th>Course</th>
<th>Units</th>
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<td>Fall</td>
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<tr>
<td>21-259 Calculus in Three Dimensions</td>
<td>9</td>
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<tr>
<td>06-223 Chemical Engineering Thermodynamics</td>
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<tr>
<td>06-222 Sophomore Chemical Engineering Seminar</td>
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<tr>
<td>09-106 Modern Chemistry II</td>
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<tr>
<td>xx-xxx Computer Sci./Physics II *</td>
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<table>
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<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>Spring</td>
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<tr>
<td>06-261 Fluid Mechanics</td>
<td>9</td>
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<tr>
<td>06-262 Mathematical Methods of Chemical Engineering</td>
<td>12</td>
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<tr>
<td>09-221 Laboratory I: Introduction to Chemical Analysis</td>
<td>12</td>
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<tr>
<td>xx-xxx Physics II/Computer Sci. *</td>
<td>12-10</td>
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<td>xx-xxx General Education Course</td>
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<td>39-220 Experiential Learning II</td>
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* Computer Science/Physics II: Students should complete 15-110 Principles of Computing or 15-112 Fundamentals of Programming and Computer Science as well as 33-142 Physics II for Engineering and Physics Students by the end of the Sophomore year. The recommended sequence is 33-141 /33-142 for engineering students, however, 33-151/33-152 will also meet the CIT Physics requirement.

For those students who have not taken 06-100 as one of the two Introductory Engineering Electives, 06-100 should be taken in the Fall Semester of the Sophomore year. The General Education Course normally taken during that semester may be postponed until the Junior year. These students should consult with their faculty advisors as soon as possible.

At the end of the Sophomore year, a student should have completed the following required basic science and computer science courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tr>
<td>09-105 Introduction to Modern Chemistry I</td>
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<tr>
<td>09-106 Modern Chemistry II</td>
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<tr>
<td>09-221 Laboratory I: Introduction to Chemical Analysis</td>
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<tr>
<td>15-110 Principles of Computing or 15-112 Fundamentals of Programming and Computer Science</td>
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</tr>
<tr>
<td>33-141 Physics I for Engineering Students</td>
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<tr>
<td>33-142 Physics II for Engineering and Physics Students</td>
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</tr>
<tr>
<td>99-10x Computing @ Carnegie Mellon</td>
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### Fourth Year

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<th>Course</th>
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<tbody>
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<td>Fall</td>
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<tr>
<td>06-421 Chemical Process Systems Design</td>
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<td>06-423 Unit Operations Laboratory</td>
<td>9</td>
</tr>
<tr>
<td>xx-xxx Unrestricted Elective</td>
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<td>xx-xxx Unrestricted Elective</td>
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<td>xx-xxx General Education Course</td>
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<tbody>
<tr>
<td>Spring</td>
<td></td>
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<tr>
<td>06-463 Chemical Product Design</td>
<td>6</td>
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<td>06-464 Chemical Engineering Process Control</td>
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<td>xx-xxx Unrestricted Elective</td>
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<td>xx-xxx General Education Course</td>
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<td>42</td>
</tr>
</tbody>
</table>

** Students pursuing a Chemical Engineering/Engineering and Public Policy double major are waived from taking the Advanced Chemistry Elective. They will take 36-220.

**Advanced Chemistry Elective** may be any technical course offered by the Department of Chemistry for at least 9 units at the 200-level or above (such as Organic chemistry 2), or one of the following: 03-232 Biochemistry, 06-607 Physical Chemistry of Colloids and Surfaces, or 06-609/09-509 Physical Chemistry of Macromolecules. Students may petition the Undergraduate Committee to approve other chemistry-focused courses offered by other departments on a case-by-case basis.

### Notes:

1. In addition to the graduation requirement of an overall QPA of 2.0 (not counting the First Year), the Department of Chemical Engineering requires a cumulative QPA of 2.0 in all chemical engineering courses (all those numbered 06-xxx).
2. Minimum number of units required for graduation: 389.
3. All mathematics (21-xxx) courses required for the engineering degree taken at Carnegie Mellon must have a minimum grade of C in order to be counted toward the graduation requirement for the BS engineering degree.
4. A minimum grade of C must be achieved in any required mathematics (21-xxx) course that is a pre-requisite for the next higher level required mathematics (21-xxx) course.
5. Overloads are permitted only for students maintaining a QPA of 3.5 or better during the preceding semester.
6. Electives: To obtain a Bachelor of Science degree in Chemical Engineering, students must complete 06-100 and one other Introductory Engineering Elective. There are also five Unrestricted Electives. Students must discuss choice of electives with their faculty advisors.
7. Undergraduate Research: Independent research projects are available by arrangement with a faculty advisor. Many students conduct these research projects for elective credit by enrolling in 06-200, 06-300, or 06-400 (Sophomore, Junior, or Senior Research Projects) or 39-500 CIT Honors Research Project for eligible Seniors.
8. Advanced undergraduates may also take Chemical Engineering graduate courses (600+ level).

### Double Major in Engineering and Public Policy (EPP)

Students may pursue a double major in Chemical Engineering and EPP. This double major is built around electives in Social Analysis, Probability and Statistics courses, and projects. Specific course choices should be discussed with a faculty advisor and an EPP advisor.
Double Major in Biomedical Engineering (BME)

Students may pursue a double major in Chemical Engineering and BME. Specific course choices should be discussed with a faculty advisor and a BME advisor.

Minors with a B.S. in Chemical Engineering

Chemical Engineering students are eligible for any CIT Designated Minor. Those minors that are especially well suited to Chemical Engineers include: Audio Engineering, Automation and Controls, Biomedical Engineering, Colloids, Polymers & Surfaces, Electronic Materials, Environmental Engineering, Global Engineering, Manufacturing Engineering, Materials Science and Engineering, Mechanical Behavior of Materials, and Robotics. The minor requirements may be fulfilled with electives. Other minors, such as the Supply Chain Management minor in association with the Tepper School of Business, are also available outside of CIT. These should be discussed with a faculty advisor.

Colloids, Polymers and Surfaces Minor

Dr. Ilhem Hakem, Director
Location: Doherty Hall 3207

The sequence of courses in the Colloids, Polymers and Surfaces (CPS) designated minor provides an opportunity to explore the science and engineering of fine particles and macromolecules as they relate to complex fluids and interfacially engineered materials. These topics are very relevant to technology and product development in industries that manufacture pharmaceuticals, coatings and paints, pulp and paper, biomaterials, surfactants and cleaning products, cosmetics and personal care products, food, textiles and fibers, nanoparticles, polymer/plastics, composite materials.

Course Requirements

Minimum units required for minor: 45

This minor requires a total of five classes with a minimum of 45 units. The following four courses are mandatory:

- 06-609/09-509 Physical Chemistry of Macromolecules 9
- 06-607 Physical Chemistry of Colloids and Surfaces 9
- 06-426 Experimental Colloid Surface Science 9
- 06-466 Experimental Polymer Science 9

In addition, the student must take one CPS related elective course from the following list:

- 06-612 Formulation Engineering 12
- 06-610 Rheology and Structure of Complex Fluids 9
- 09-502 Organic Chemistry of Polymers 9
- 27-565 Nanostructured Materials 9
- 27-588 Polymer Physics and Morphology 9

Other CPS electives are possible but must be approved by the Director of the CPS minor, Dr. Hakem

International Chemical Engineering Exchange Programs

Chemical Engineering students may apply during their Sophomore year to spend their Junior year at RWTH Aachen in Germany, Yonsei University in Seoul, Korea, Universidad Nacional del Litoral in Argentina, or at Imperial College in London, Great Britain. A summer exchange program in Dortmund, Germany is also available. These exchange programs provide a great opportunity for students to obtain international experience while taking courses very similar to those offered at Carnegie Mellon. Students considering any of these programs should consult with their faculty advisors, and students considering the Aachen program in particular are advised to take at least one introductory German course before or during their Sophomore year.

Fifth Year Master of Chemical Engineering (MChE)

The CIT Integrated Masters/Bachelors (IMB) Degree program provides the opportunity for qualified undergraduate students to obtain a master's degree in Chemical Engineering with one or two extra semesters of study. The goal is to deepen our graduates’ understanding of the fundamentals of chemical engineering, and to provide them with a broader set of professional skills or to expose them to other technical disciplines. The MChE program is a 96 unit course work degree aimed at undergraduate students from Carnegie Mellon and candidates from other universities. Unfortunately, no financial support is available. For Carnegie Mellon students, the degree typically would be completed in their fifth year. Depending on advanced placement and semester overloads, however, CMU students can complete the degree at the time of the B.S. graduation or with one additional semester. All students must have graduate status once they have completed their B.S. degree; beyond eight semesters, degree program students must have full-time graduate student status in at least one (e.g., their final) semester whether or not they have already completed their B.S. degree. Upon graduating from this program, students seek industrial positions or placement in graduate programs at other universities. Students in the MChE program may apply for the PhD program at Carnegie Mellon University via the normal application process. Their applications are considered alongside all the other applications received that year. If accepted into the PhD program, they enter it after completing the MChE degree.

A minimum of five completed semesters in residence as an undergraduate student and an overall QPA of 3.0 is required for eligibility. Taking the GRE and recommendation letters are not required. The application fee is waived for currently-enrolled undergraduate Chemical Engineering students. The MChE program differs from the MS program because the MChE program does not require a project report or thesis.

Faculty

SHELLEY ANNA, Professor of Chemical Engineering – Ph.D., Harvard University; Carnegie Mellon, 2003–
LORENZ T. BIEGLER, University Professor and Covestro Professor of Chemical Engineering – Ph.D., University of Wisconsin; Carnegie Mellon, 1981–
KRIS N. DAHL, Professor of Chemical Engineering – Ph.D., University of Pennsylvania; Carnegie Mellon, 2006–
MICHAEL M. DOMACH, Professor of Chemical Engineering – Ph.D., Cornell University; Carnegie Mellon, 1983–
NEIL M. DONAHUE, Lord Professor of Chemistry and Chemical Engineering – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 2000–
ANDREW J. GELLMAN, Lord Professor of Chemical Engineering – Ph.D., University of California, Berkeley; Carnegie Mellon, 1992–
CHRYSANTHOS GOUNARIS, Associate Professor of Chemical Engineering – Ph.D., Princeton University; Carnegie Mellon, 2013–
IGNACIO E. GROSSMANN, University Dean Professor of Chemical Engineering – Ph.D., Imperial College, University of London; Carnegie Mellon, 1979–
ILHEM-FAIZA HAKEM, Assistant Teaching Professor – Ph.D., Telmec University; Carnegie Mellon, 2018–
ANNETTE M. JACOBSON, Teaching Professor of Chemical Engineering and Director of Colloids, Polymers, and Surfaces Program – Ph.D., Carnegie Mellon; Carnegie Mellon, 1988–
COTY JEN, Assistant Professor of Chemical Engineering – Ph.D., University of Minnesota; Carnegie Mellon, 2018–

MYUNG S. JHON, Emeritus, Professor of Chemical Engineering – Ph.D., University of Chicago; Carnegie Mellon, 1980–

ADITYA KHAIR, Professor of Chemical Engineering – PhD, California Institute of Technology; Carnegie Mellon, 2010–

JOHN KITCHIN, Professor of Chemical Engineering – Ph.D., University of Delaware; Carnegie Mellon, 2006–

SPYROS N. PANDIS, Research Professor of Chemical Engineering and Engineering and Public Policy – Ph.D., California Institute of Technology; Carnegie Mellon, 1993–

DENNIS C. PRIEVE, Emeritus, Gulf Professor of Chemical Engineering – Ph.D., University of Delaware; Carnegie Mellon, 1974–

ANNE SKAJA ROBINSON, Trustee Professor of Chemical Engineering. Head of Department - Ph.D., University of Illinois at Urbana-Champaign; Carnegie Mellon, 2019–

ALAN RUSSELL, Highmark Distinguished Career Professor of Chemical Engineering – Ph.D., Imperial College, London; Carnegie Mellon, 2012–

NIKOLAOS V. SAHINIDIS, Adjunct Professor of Chemical Engineering – Ph.D., Carnegie Mellon University; Carnegie Mellon, 2007–

JAMES W. SCHNEIDER, Professor of Chemical Engineering – Ph.D., University of Minnesota; Carnegie Mellon, 1999–

PAUL J. SIDES, Emeritus, Professor of Chemical Engineering – Ph.D., University of California, Berkeley; Carnegie Mellon, 1981–

SUSANA C. STEPPAN, Associate Teaching Professor - PhD, University of Massachusetts; Carnegie Mellon, 2004–

ROBERT D. TILTON, Chevron Professor of Chemical Engineering – Ph.D., Stanford University; Carnegie Mellon, 1992–

ZACHARY ULISSI, Assistant Professor of Chemical Engineering – Ph.D., Massachusetts Institute of Technology; Carnegie Mellon, 2017–

LYNN M. WALKER, Professor of Chemical Engineering – Ph.D., University of Delaware; Carnegie Mellon, 1997–

ELIZABETH WAYNE, Assistant Professor of Chemical Engineering – PhD, Cornell; Carnegie Mellon, 2019–

ARTHUR W. WESTERBERG, Emeritus, University Professor of Chemical Engineering – Ph.D., DIC, Imperial College, University of London; Carnegie Mellon, 1976–

KATHRYN WHITEHEAD, Associate Professor of Chemical Engineering – Ph.D., University of California; Carnegie Mellon, 2012–

B. ERIK YDSTIE, Emeritus, Professor of Chemical Engineering – Ph.D., Imperial College, University of London; Carnegie Mellon, 1992–