

Chemical Engineering

College of Engineering

A foundation in mathematics, chemistry, and physics is required for the study of chemical engineering. Fundamental principles related to the transformation of matter and energy are developed in subjects including thermodynamics, fluid flow, separations, heat and mass transfer, reactor design, and chemical process design. Undergraduate electives are available in biopharmaceutical engineering, energy and fuels, environmental engineering, and materials engineering and nanotechnology. A program is also available to fulfill pre-medical requirements simultaneously with requirements for the B.S. in chemical engineering.

Admission to the degree program is selective. Students should refer to the UK *Bulletin* for general information concerning admission and graduation requirements.

Degree Requirements

In addition to fulfilling UK Core and College of Engineering requirements, students must complete the chemical engineering curriculum. The following curriculum meets the requirements for the B.S. degree.

Freshman Year

First Semester	Hours
EGR 101 Engineering Exploration I Δ §	1
EGR 102 Fundamentals of Engineering Computing	2
CHE 105 General College Chemistry I or PHY 231 General University Physics ●	4
CHE 111 Laboratory to Accompany General Chemistry I	1
CIS/WRD 110 Composition and Communication I	3
MA 113 Calculus I	4
Second Semester	
EGR 103 Engineering Exploration II Δ	2
CIS/WRD 111 Composition and Communication II	3
MA 114 Calculus II	4
PHY 231 General University Physics or CHE 105 General College Chemistry I ●	4
UK Core (Social Sciences)	3

Sophomore Year

First Semester	Hours
CME 200 Process Principles	3
MA 213 Calculus III	4
CHE 107 General College Chemistry II	3
CHE 113 Laboratory to Accompany General Chemistry II	2
MSE 201 Materials Science	3
UK Core (Humanities)	3
Second Semester	
CME 320 Engineering Thermodynamics	4
CME 220 Computational Tools in Chemical Engineering	3
MA 214 Calculus IV	3
PHY 232 General University Physics	4
STA 381 Engineering Statistics A Conceptual Approach	3

Junior Year

First Semester	Hours
CME 415 Separation Processes	3
CHE 446G Physical Chemistry for Engineers	3
CME 330 Fluid Mechanics	3
WRD 204 Technical Writing *	3
CHE 230 Organic Chemistry I	3
CHE 231 Organic Chemistry Laboratory I	1
Second Semester	
CME 006 The Engineering Profession (Junior and Senior)	0
CME 420 Process Modeling in Chemical Engineering	3
CME 425 Heat and Mass Transfer	4
CME 432 Chemical Engineering Laboratory I	2
CHE 232 Organic Chemistry II	3
Engineering/Science Elective†	3
UK Core (Citizenship – USA)	3

Senior Year

First Semester	Hours
CME 006 The Engineering Profession (Junior and Senior)	0
CME 470 Professionalism, Ethics and Safety	2
CME 433 Chemical Engineering Laboratory II	3
CME 455 Chemical Engineering Process Design I	3
CME 550 Chemical Reactor Design	3
UK Core (Global Dynamics)	3
Engineering/Science Elective†	3
Second Semester	
CME 006 The Engineering Profession (Junior and Senior)	0
CME 456 Chemical Engineering Process Design II	4
CME 462 Process Control	3
Engineering/Science Elective†	3
Engineering/Science Elective†	3
Supportive Elective **	3

Δ Both classes must be taken to fulfill UK Core: Arts & Creativity requirement.

§ Graduation Composition and Communication Requirement (GCCR) course.

** Supportive Elective (3 credits) can be any course that carries college credit and is not a more elementary version of a required course. The student completing 3 co-op tours (EGR 399) may count the co-op experience toward the supportive elective.

● Based on advisor consult

§ Transfer students who declare a major will take EGR 112 Engineering Exploration for Transfer Students in place of EGR 101.

† Engineering/Science Elective Structure. Students must select four courses as follows:

1. Chemical engineering elective (CME 395, 404G, 505, 515, 542, 554, 556, 580, 599) [CME 395 (3 credits) can be used to satisfy only one elective Requirement]

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2. *Science/math elective (totaling three or more credit hours**) that is not a more elementary version of a required course. [Students may combine multiple qualifying courses that total 3 credits (e.g. pre-medical students may wish to combine PHY 241, 242 and CHE 233)]*
 - a. *Math (MA 321, 322, 416G, 432G, 433G, 471G, 481G)*
 - b. *Chemistry (CHE 226, 250, 510 and above)Biology (BIO 148 and above)*
 - c. *Physics (PHY 241 and above)*
 - d. *Other courses by approval of Director of Undergraduate Studies*
3. *Engineering elective (level 300 and above) that does not significantly duplicate content in a core chemical engineering course (e.g. ME 330) OR a CME Elective (CME 395 and above).*
4. *Chemical engineering elective (CME 395 and above) OR one engineering elective (level 300 and above) OR one science/math elective as described above.*