

Chemical Engineering Distribution Requirements

Mathematics and Basic Science

4 units required

Must include differential and integral calculus and differential equations

Must include 2 courses in physics, 3 courses in chemistry, and 1 course in biology or biochemistry.

Typical courses:

MA 1021, 1022, 1023, 1024, 2051 = 5/3

CH 1010, 1020, 1030, 1040 = 4/3

PH 1111, 1121 (although PH 1110, 1120 will count, we recommend 1111, 1121) = 2/3

BB 1xxx or BB 2xxx = 1/3

(up to 2/3 unit of Advanced Chemistry and Natural Science may be double counted under both Advanced Chemistry and Basic Science, see note below under Advanced Chemistry)

Engineering Science and Design

6 units required

Any **12** courses from the following 14 **Core Courses**:* = 12/3

(ES 3004, ES 3003, ES 3002, CHE 2011, CHE 2012,
CHE 2013, CHE 2014, CHE 3201, CHE 3501, CHE 4401,
CHE 4402, CHE 4403, CHE 4404, CHE 4405)

Major Qualifying Project, MQP = 3/3

Must add at least one 2000 level or above engineering course outside of the ChE Department and not listed above (**Non-ChE Eng. Elective**) = 1/3

Must add two (≥ 2000 level[§]) engineering courses (**Eng. Electives**) = 2/3

* **Must** either include CHE 4404 or 1/3 of MQP must be designated as capstone design.

§ **May** include CHE 1011.

Advanced Chemistry and Natural Science

5/3 units required

Advanced Chemistry and Natural Science courses are defined as any 2000 level and above BB, CH, PH or GE course and CH 1040. Up to 2/3 unit of Advanced Chemistry may be double counted as both Advanced Chemistry and Basic Science.

Must include 3 advanced CH courses at 2000 level or above.

Typical courses:

CH 1040, 2310, 2320, 2xxx, BB 2xxx = 5/3

or CH 1040, 2310, 2320, 2xxx, 2xyy (if BB 1xxx used for Basic Science) = 5/3

Other WPI Requirements

Social Science

2/3 units required

Sufficiency in the Humanities

2 units required

Normally fulfilled by two units of work consisting of five self-selected thematically-related courses and an independent study of 1/3 unit dealing with this theme.

Interactive Qualifying Project, IQP

1 unit required

The student uses his/her scientific and/or engineering background to help solve a societal problem. *Consider doing your IQP at one of WPI's off-campus project centers.*

A Possible Sequence

This is only one of many possible plans of study. Advanced credits, choice of electives, off-campus project experiences, advanced chemistry courses, and other options will change your schedule. Always plan ahead and consult your advisor.

Year/Term	A	B	C	D
First-year	CH 1010 Chemistry I	CH 1020 Chemistry II	CH 1030 Chemistry III	CH 1040 Chemistry IV
	MA 1021 Calculus I	MA 1022 Calculus II	MA 1023 Calculus III	MA 1024 Calculus IV
	[HUA/SS/PH]	[CHE 1011] Intro to ChE	[HUA/SS/PH]	[HUA/SS/PH]
Sophomore	CHE 2011 ChE Fundamentals	CHE 2012 Elem. Chem. Processes	CHE 2013 Appl. ChE Thermo.	CHE 2014 Adv. Chem. Processes
	[BB 2xxx]	CH 2310 Organic Chem. I	CH 2320 Organic Chem. II	[CH 2xxx]
	[MA 2051] Ord. Diff. Eq.	[HUA/SS/PH]	[HUA/SS/PH]	[HUA/SS/PH]
Junior	ES 3004 Fluid Mechanics	ES 3003 Heat Transfer	ES 3002 Mass Transfer	CHE 3201 Kinetics & Reactor Des.
	[HUA/SS/PH]	[HUA/SS/PH]	[HUA/SS/PH]	[HUA/SS/PH]
	[Adv. Nat. Sci. ¹]	[IQP]	[IQP]	[IQP]
Senior	CHE 4401 Unit Ops Lab I	CHE 4402 Unit Ops Lab II	[Eng. Elective ²]	[Eng. Elective ²]
	CHE 4403 Chem. Eng. Des.	CHE 4404 (Capstone Design)	[Eng. Elective ²]	[]
	[MQP]	[MQP]	[MQP]	[]

Courses/projects enclosed in square brackets [] are flexible in their placement. CHE courses are offered no more than once a year. Social science courses should be complementary and chosen to help prepare for IQP. IQP is generally undertaken during the junior year or the summer of sophomore or junior year. MQP is almost always undertaken during the senior year. Projects, especially off-campus, generally involve a PQP and a project proposal. Sufficiency can be completed anytime. However, it is highly recommended that students avoid trying to **complete** the final report for more than one of the MQP, IQP, and Sufficiency requirements in a given term. Empty brackets denote opportunities for electives.

Chemical Engineering Electives currently offered

CHE 1011 Introduction to Chemical Engineering	B term	Cat. I
CHE 3702 Energy Challenges in the 21 st Century* (2017-18)	B term	Cat. II
CHE 3301 Introduction to Biological Engineering	C term	Cat. II
CHE 3501 Applied Mathematics in Chemical Engineering (Core Course)	D term	Cat. I
CHE 4405 Chemical Process Dynamics and Control Laboratory (Core Course)	C term	Cat. I
CHE/CEE 4063 Transport & Transformations in the Environment	D term	Cat. II
CHE 372X Bioenergy* (2016-17)	B term	Cat. II
CHE 441X Chemical Process Safety Design (Core Alternative to CHE 4404)	B term	Cat. II

* CHE 3702 and 372X are normally offered in alternating years

In special cases, suitable CHE graduate courses or graduate courses from other departments may be acceptable to satisfy Chemical Engineering undergraduate distribution requirements (The undergraduate catalog provides a list of CHE graduate courses). Students may also petition the Chemical Engineering Undergraduate Committee to have suitable undergraduate courses from other departments substitute for certain Chemical Engineering courses.

¹ Not necessary if the required Basic Science BB course is at 2000 level or above.

² At least one elective must be an engineering course outside of Chemical Engineering.