

CHEMICAL ENGINEERING

BACHELOR OF SCIENCE

DEPARTMENT OF CHEMICAL ENGINEERING


HOWARD
UNIVERSITY

4-YEAR ADVISING SCHEME

Students seeking the Bachelor of Science in Chemical Engineering must complete a minimum of 120 credit hours comprised of core courses in chemical engineering (44 credits), science, computer science, engineering, and mathematics courses (54 credits), technical electives (6 credits), social science and humanities courses (6 credits), including an African American Studies elective (3 credits), and general curriculum courses (7 credits).

FALL SEMESTER 1

Number	Course Title	Credits
EGPP 101	Introduction to Engineering	2
ENGW ---	English First-Year Writing (I)	3
MATH 156	Calculus I	4
CHEM 003	General Chemistry I Lecture	4
CHEM 005	General Chemistry I Lab	1
CHEG 800	Chemical Engineering Seminar	
--	Humanities	3
Total Credits		17

SPRING SEMESTER 1

Number	Course Title	Credits
CHEG 102	Intro to ChE Design	3
ENGW ---	English First-Year Writing (2)	3
MATH 157	Calculus II	4
CHEM 004	General Chemistry II Lecture	4
--	Afro Elective	3
Total Credits		17

FALL SEMESTER 2

Number	Course Title	Credits
CHEG 201	ChE Material Balances	3
CSCI 165	Scientific Computing for Engineers	3
MATH 158	Calculus III	4
CHEM 141	Organic Chemistry Lecture I	3
PHYS 013	Physics I Lecture (Science and Engineering)	3
PHYS 023	Physics I Lab (Science and Engineering)	1
Total Credits		17

SPRING SEMESTER 2

Number	Course Title	Credits
MATH 159	Differential Equations	4
CHEG 202	Energy Balances	3
CHEM 142	Organic Chemistry Lecture II	3
CHEM 145	Organic Chemistry Lab	3
PHYS 014	Physics II Lecture (Science and Engineering)	3
Total Credits		16

FALL SEMESTER 3

Number	Course Title	Credits
CHEG 303	ChE Thermodynamics	3
CHEG 301	Fluid Mechanics	3
CHEM 171	Physical Chemistry Lecture I	3
CHEM 173	Physical Chemistry Lab	2
EECE 310	Principles of Electronics	2
HHPL ---	Physical Education	1
Total Credits		14

SPRING SEMESTER 3

Number	Course Title	Credits
CHEG 302	Heat Transfer	3
CHEG 306	ChE Analysis	3
CHEM 172	Physical Chemistry II Lecture	3
--	Social Science	3
--	Technical Elective (STEM)	3
Total Credits		15

FALL SEMESTER 4

Number	Course Title	Credits
CHEG 401	Mass Transfer/Separation Processes	3
CHEG 403	Chemical Reaction Engineering (Kinetics)	3
CHEG 413	ChE Laboratory	3
CHEG 407	Process Design I	3
Total Credits		12

SPRING SEMESTER 4

Number	Course Title	Credits
CHEG 402	Process Control	3
CHEG 414	Process Design II	3
--	Technical Elective (Engineering)	3
CHEG ---	Technical Elective (ChE Engineering)	3
Total Credits		12

Total Credits: 120

More Information :

The 4-Year Advising Scheme is a guide for students to successfully complete the program in four years of study. It is not a substitution for academic advising. Students are expected to check-in with their academic advisor every semester.

The prerequisite structure for courses and technical elective options are available in the program handbook.

Courses may not be offered in semesters in which they do not appear listed on the scheme.

DEPARTMENT OF CHEMICAL ENGINEERING

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Curriculum 2026 - 2027

PREREQUISITES

Some courses in the curriculum have prerequisites that must be satisfied before being permitted to enroll in that course or a co-requisite that must be taken at the same time as that course. Below are courses within the Chemical Engineering curriculum that have a prerequisite and/or co-requisite. Contact your academic advisor to address prerequisite or co-requisite error messages that may appear when registering for a course.

CORE COURSES

Course Number/ Title /Credits	Prerequisite / Co-requisite
CHEG 102 Intro to ChE Design	-- / CHEM 003 (4)
CHEG 201 ChE Material Balances (3)	MATH 156 (4) and CHEM 003 (4)
CHEG 202 ChE Energy Balances (3)	CHEG 201 (3) and MATH 157 (4)
CHEG 301 Fluid Mechanics (3)	CHEG 202 (4) and PHYS 013 (3)
CHEG 302 Heat Transfer (3)	MATH 159 (4) and CHEG 301 (3) (*POI)
CHEG 303 ChE Thermodynamics (3)	CHEG 202 (3) and PHYS 013 (4)
CHEG 306 ChE Analysis (3)	CHEG 301 (3), MATH 159 (4) and CSCI 165 (3) (*POI)
CHEG 401 Mass Transfer/Separation Processes (3)	CHEG 301 (3), CHEG 302 (3), CHEG 303 (3), and CHEM 171 (3) (*POI)
CHGE 402 Process Control (3)	CHEG 302 (3) and CHEG 306 (3) (*POI)
CHEG 403 Chemical Reaction Engineering (3)	CHEG 301 (3), CHEG 303 (3), CHEM 141 (3) (*POI), and MATH 159 (4)
CHEG 413 ChE Laboratory (3)	CHEM 173 (2) or CHEM 145 (3) / CHEG 401 (3) and CHEG 403 (3)
CHEG 407 Process Design I (3)	CHEG 303 (3), CHEM 171 (3) (*POI) / CHEG 401 (3) and CHEG 403 (3)
CHEG 414 Process Design II (3)	CHEG 306 (3), 401 (3), 403 (3), and 407 (3), CHEM 142 (3), and CHEM 172 (3) (*POI)
CHEG-- ChE Technical Elective (3)	Variable Prerequisites; *POI

POI - Permission of Instructor (Used for transfer students and extenuating circumstances)

MATH COURSES

Course Number/Title/Credits	Prerequisite
MATH 156 Calculus I (4)	Math Placement Score or earned credit for MATH 007 - Pre-Calculus (4)
MATH 157 Calculus II (4)	MATH 156 (4)
MATH 158 Calculus III (4)	MATH 157 (4)
MATH 159 Differential Equations (4)	MATH 157 (4)

ENGLISH COURSES

Course Number/Title/Credits	Prerequisite
ENGW 101/102/104 English First-Year Writing (3)	English Placement Score or ACTE/SATW
ENGW 103/105 English First-Year Writing (3)	"C" or better in ENGW 101/102/104 (3)

SCIENCE and ENGINEERING COURSES

Course Number/Title/Credits	Prerequisite / Co-requisite
PHYS 013 Physics for Science and Engineering I (3)	-- / MATH 156 (4)
PHYS 023 Physics for Science and Engineering I Lab (1)	-- / MATH 156 (4)
PHYS 014 Physics for Science and Engineering II (3)	PHYS 013 (4)/MATH 157 (4)
EECE 310 Principles of Electronics (2)	PHYS 014 (3)
Engineering and Technical Electives (--)	Variable Prerequisites
CHEM 004 General Chemistry II Lecture (4)	CHEM 003 (4)
CHEM 141 Organic Chemistry Lecture I (3)	CHEM 004 (4)
CHEM 142 Organic Chemistry Lecture II (3)	CHEM 141 (3)
CHEM 145 Organic Chemistry Lab I (3)	-- / CHEM 141 (3) or CHEM 142 (3)
CHEM 171 Physical Chemistry Lecture I (3)	CHEM 004 (4) and MATH 159 (4)
CHEM 172 Physical Chemistry Lecture II (3)	CHEM 171 (3)
CHEM 173 Physical Chemistry Lab I (2)	-- / CHEM 171 (3)