B.S. in Chemical Engineering

(120 credits)

First Year		
1st Semester		**Credits**
CHEM 125	General Chemistry I	3
CHEM 125A	General Chemistry Lab I	1
FED 101	Fundamentals of Engineering Design	2
ENGL 101	English Composition: Introduction to Academic Writing	3
MATH 111	Calculus I	4
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
FYS SEM	First-Year Student Seminar	0
	Term Credits	**17**
2nd Semester		
CHE 101	Introduction to Chemical Engineering	1
CHEM 126	General Chemistry II	3
CS 115	Introduction to Computer Science in C++	3
ENGL 102	English Composition: Introduction to Writing for Research	3
MATH 112	Calculus II	4
PHYS 121	Physics II	3
PHYS 121A	Physics II Lab	1
	Term Credits	**18**
Second Year		
1st Semester		
CHE 201	Material and Energy Balances	4
CHE 230	Chemical Engineering Thermodynamics I	3
MATH 211	Calculus III A	3
History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
ENGR 210	Career Planning Seminar for En	1
	Term Credits	**14**
2nd Semester		
CHE 260	Fluid Flow	3
CHEM 236	Physical Chemistry for Chemical Engineers	4
CHEM 243	Organic Chemistry I	3
CHEM 244A Organic Chemistry I Laboratory		2
MATH 222	Differential Equations	4
	Term Credits	**16**
Third Year		
1st Semester		
CHE 342	Chemical Engineering Thermodynamics II	3
CHE 370	Heat and Mass Transfer	4
CHEM 339	Analytical/Physical Chem Lab for Chemical Engineers	2
MATH 225	Survey of Probability and Statistics *	1
MTEN 201	Introductory Principles of Materials Engineering	3
	Term Credits	**13**
2nd Semester		
CHE 312	Chemical Process Safety	3
CHE 349	Kinetics and Reactor Design	3
CHE 360	Separation Processes I	3

CHE 365	Chemical Engineering Computing	3
COM 313	Technical Writing	3
	Term Credits	**15**
Fourth Year		
1st Semester		
CHE 489	Process Dynamics and Control	3
CHE 495	Chemical Engineering Laboratory I	2
IE 492	Engineering Management	3
Technical Elective 1 [1]		3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
	Term Credits	**14**
2nd Semester		
CHE 472	Process and Plant Design	4
CHE 496	Chemical Engineering Laboratory II	3
Technical Elective 2 [1]		3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
	Term Credits	**13**
	Total Credits	**120**

CoOp Option A Track

(144 credits)

First Year		
1st Semester		**Credits**
CHEM 125	General Chemistry I	3
CHEM 125A	General Chemistry Lab I	1
FED 101	Fundamentals of Engineering Design	2
ENGL 101	English Composition: Introduction to Academic Writing	3
MATH 111	Calculus I	4
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
FYS SEM	First-Year Student Seminar	0
	Term Credits	**17**
2nd Semester		
CHE 101	Introduction to Chemical Engineering	1
CHEM 126	General Chemistry II	3
CS 115	Introduction to Computer Science in C++	3
ENGL 102	English Composition: Introduction to Writing for Research	3
MATH 112	Calculus II	4
PHYS 121	Physics II	3
PHYS 121A	Physics II Lab	1
	Term Credits	**18**
Second Year		
1st Semester		
CHE 201	Material and Energy Balances	4
CHE 230	Chemical Engineering Thermodynamics I	3
MATH 211	Calculus III A	3
History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
ENGR 210	Career Planning Seminar for En	1
	Term Credits	**14**

2nd Semester		
CHE 260	Fluid Flow	3
CHEM 236	Physical Chemistry for Chemical Engineers	4
CHEM 243	Organic Chemistry I	3
CHEM 244A	Organic Chemistry I Laboratory	2
MATH 222	Differential Equations	4
	Term Credits	**16**
Third Year		
1st Semester		
ENGR 310	Co-op Work Experience I	12
	Term Credits	**12**
2nd Semester		
CHE 342	Chemical Engineering Thermodynamics II	3
CHE 370	Heat and Mass Transfer	4
CHEM 339	Analytical/Physical Chem Lab for Chemical Engineers	2
MATH 225	Survey of Probability and Statistics *	1
MTEN 201	Introductory Principles of Materials Engineering	3
	Term Credits	**13**
Fourth Year		
1st Semester		
ENGR 410	Co-op Work Experience II	12
	Term Credits	**12**
2nd Semester		
CHE 312	Chemical Process Safety	3
CHE 349	Kinetics and Reactor Design	3
CHE 360	Separation Processes I	3
CHE 365	Chemical Engineering Computing	3
COM 313	Technical Writing	3
	Term Credits	**15**
Fifth Year		
1st Semester		
CHE 489	Process Dynamics and Control	3
CHE 495	Chemical Engineering Laboratory I	2
IE 492	Engineering Management	3
Technical Elective 1 [1]		3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
	Term Credits	**14**
2nd Semester		
CHE 472	Process and Plant Design	4
CHE 496	Chemical Engineering Laboratory II	3
Technical Elective 2 [1]		3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
	Term Credits	**13**
	Total Credits	**144**

CoOp Option B Track

(144 credits)

First Year		
1st Semester		**Credits**
CHEM 125	General Chemistry I	3
CHEM 125A	General Chemistry Lab I	1
FED 101	Fundamentals of Engineering Design	2
ENGL 101	English Composition: Introduction to Academic Writing	3
MATH 111	Calculus I	4
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
FYS SEM	First-Year Student Seminar	0
	Term Credits	**17**
2nd Semester		
CHE 101	Introduction to Chemical Engineering	1
CHEM 126	General Chemistry II	3
CS 115	Introduction to Computer Science in C++	3
ENGL 102	English Composition: Introduction to Writing for Research	3
MATH 112	Calculus II	4
PHYS 121	Physics II	3
PHYS 121A	Physics II Lab	1
	Term Credits	**18**
Second Year		
1st Semester		
CHE 201	Material and Energy Balances	4
CHE 230	Chemical Engineering Thermodynamics I	3
MATH 211	Calculus III A	3
History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
ENGR 210	Career Planning Seminar for En	1
	Term Credits	**14**
2nd Semester		
CHE 260	Fluid Flow	3
CHEM 236	Physical Chemistry for Chemical Engineers	4
CHEM 243	Organic Chemistry I	3
CHEM 244A	Organic Chemistry I Laboratory	2
MATH 222	Differential Equations	4
	Term Credits	**16**
Third Year		
1st Semester		
CHE 342	Chemical Engineering Thermodynamics II	3
CHE 370	Heat and Mass Transfer	4
CHEM 339	Analytical/Physical Chem Lab for Chemical Engineers	2
MATH 225	Survey of Probability and Statistics *	1
MTEN 201	Introductory Principles of Materials Engineering	3
	Term Credits	**13**
2nd Semester		
ENGR 310	Co-op Work Experience I	12
	Term Credits	**12**
Fourth Year		
1st Semester		
CHE 312	Chemical Process Safety	3
CHE 349	Kinetics and Reactor Design	3
CHE 360	Separation Processes I	3

CHE 365	Chemical Engineering Computing	3
COM 313	Technical Writing	3
	Term Credits	**15**
2nd Semester		
ENGR 410	Co-op Work Experience II	12
	Term Credits	**12**
Fifth Year		
1st Semester		
CHE 489	Process Dynamics and Control	3
CHE 495	Chemical Engineering Laboratory I	2
IE 492	Engineering Management	3
Technical Elective 1 [1]		3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
	Term Credits	**14**
2nd Semester		
CHE 472	Process and Plant Design	4
CHE 496	Chemical Engineering Laboratory II	3
Technical Elective 2 [1]		3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
	Term Credits	**13**
	Total Credits	**144**

[1] Technical Electives: Student must complete 6 credits of technically oriented subject-related courses approved by his or her advisor. Acceptable subjects include, but are not limited to:
(1) CHE 491 (http://catalog.njit.edu/search/?P=CHE%20491) Research and Independent Study I and CHE 492 (http://catalog.njit.edu/search/?P=CHE%20492) Research and Independent Study II

(2) Courses taken within a Minor requirements

(3) Graduate level course taken within BS/MS or BS/PHD program

(4) Courses in ACCT 200:699 or BME 300:699 or CE 300:699 or CHE 300:699 or CHEM 300:699 or CPT 300:499 or ECE 200:699 or ENE 200:699 or ENTR 400:500 or EM 600:699 or EPS300:699 or EVSC300:699 or FIN 200:699 or HRM 300:699 or MATH 300:699 or MGMT 300:699 or ME 300:699 or MRKT 300:499 or MTEN 300:699 or MTSE 300:699 or NANO 488 or OM 375 or PHB 600:699 or PHEN 500:699 or PHYS 200:699 (**)

* Students must take Math 225 (Special Section for CHE, CHEM and BIOC majors only) as a corequisite of CHEM 339.

See the **General Education Requirements** "Refer to the General Education Requirements for specific information for GER courses"

This curriculum represents the maximum number of credits per semester for which a student is advised to register. A full-time credit load is 12 credits. First-year students are placed in a curriculum that positions them for success which may result in additional time needed to complete curriculum requirements. Continuing students should consult with their academic advisor to determine the appropriate credit load.

See the **General Education Requirements** "Refer to the General Education Requirements for specific information for GER courses"

This curriculum represents the maximum number of credits per semester for which a student is advised to register. A full-time credit load is 12 credits. First-year students are placed in a curriculum that positions them for success which may result in additional time needed to complete curriculum requirements. Continuing students should consult with their academic advisor to determine the appropriate credit load.