

CHEMISTRY (NJCU) AND CHEMICAL ENGINEERING (NJIT), DUAL DEGREE (3 + 2) PROGRAM

This dual-degree program is designed for students interested in Chemistry and Chemical Engineering. New Jersey City University and New Jersey Institute of Technology jointly offer a five-year program of study leading to a Bachelor of Science in Chemistry from NJCU and a Bachelor of Science in Chemical Engineering from NJIT. Earning these two degrees increases the chances of obtaining a better entry-level position and opens the door to greater career possibilities. This program combines a traditional liberal arts environment with an intensive technical curriculum.

This dual-degree program is an excellent choice for students who understand the value of a liberal arts education, are interested in careers in the chemical sciences and engineering, wish to work as engineers while having a strong background in biology, and wish to maximize their career options.

Students enter as full-time, degree-seeking freshmen and continue their studies for three years at NJCU while taking occasional classes at NJIT, during which time the General Education coursework and the majority of Chemistry degree requirements from NJCU are satisfied. Students enroll full-time at NJIT during the fourth and fifth years of the program, during which time students focus on required engineering courses, some of which satisfy NJCU's Chemistry degree requirements. A B.S. in Chemistry is awarded by NJCU at the end of the fourth year and a B.S. in Chemical Engineering is awarded by NJIT at the end of the fifth year.

Students interested in this dual-degree program are strongly encouraged to select the major as soon as possible upon enrolling at NJCU in consultation with a faculty advisor from the Physics Department. The advisor will assist students in planning the program of study in order to complete the program requirements within the five-year time span.

Code	Title	Credits
Required Courses:		
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry Recitation/Laboratory	2
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2
CHEM 205	Analytical Chemistry Lec	3
CHEM 2205	Analytical Chemistry Laboratory	2
CHEM 207	Organic Chemistry I	3
CHEM 2207	Organic Chemistry I Laboratory	1
CHEM 208	Organic Chemistry II	3
CHEM 2208	Organic Chemistry II Laboratory	1
CHEM 305	Physical Chemistry I	3
CHEM 3305	Physical Chemistry I Recitation/Laboratory	2
CHEM 306	Physical Chemistry II, Lecture	3
CHEM 3306	Physical Chemistry II Recitation/Laboratory	2
CHEM 316	Instrumental Analysis, Lecture	3
CHEM 3316	Instrumental Methods of Analysis, Laboratory	2

CHEM 416	Inorganic Chemistry	3
PHYS 140	Principles of Physics I - Lecture	3
PHYS 1140	Principles of Physics I - Laboratory and recitation	1
PHYS 141	Principles of Physics II - Lecture	3
PHYS 1141	Principles of Physics II - Laboratory and Recitation	1
MATH 192	Calculus and Analytic Geometry I	4
MATH 193	Calculus and Analytic Geometry II	4
MATH 292	Calculus & Analytical Geometry III	4
MATH 311	Differential Equations for Engineers	4
ECON 208	Principles of Economics:Micro	3

Required Courses Taken at NJIT:

FED 101	Fundamentals of Engineering Design
CIS 101	Computer Programming and Problem Solving
ChE 210	Chemical Processes Calculations I (3-0-2)
ChE 210 W	Chemical Processes Calculations I (0-1-0)
ChE 230	Chemical Engineering Thermodynamics I (3-0-3)
ChE 230 W	Chemical Engineering Thermodynamics I Workshop (0-1-0)
ChE 260	Fluid Flow (3-0-3)
ChE 240	Chemical Processes Calculations II (3-0-3)
ChE 240 W	Chemical Process Calculations II (0-1-0)
ChE 342	Chemical Engineering Thermodynamics II (3-0-3)
ChE 370	Heat and Mass Transfer (4-0-4)
ChE 380	Introduction to Biotechnology (3-0-3)
ChE 349	Kinetics and Reactor Design (3-0-3)
ChE 360	Separation Processes I (3-0-2)
ChE 365	Techniques for Process Simulation (3-0-2)
ChE 396	Chemical Engineering Laboratory I (0-5-3)
MATH 225	Survey of Probability and Statistics (1-0-1)
MECH 320	Statics and Strengths of Materials (3-0-3)
ChE 460	Separation Processes II (3-0-2)
ChE 489	Process Dynamics and Control (2-2-3)
ChE 375	Structure, Properties and Processing of Materials (3-0-3)
ChE 496	Chemical Engineering Laboratory II (0-6-3)
ChE 472	Process and Plant Design (4-0-4)
IE 492	Engineering Management (3-0-3)
ELEC	Concentration (3-0-3) - 3 courses
ELEC	HSS Capstone Seminar: GUR (3-0-3)
ELEC	LIT/HIST/PHIL/STS GUR (3-0-3)

Course	Title	Credits
First Year		
Semester 1		
ENGL 101 or ESL 101	English Composition I or English Composition I for English as a Second Language Students	4 - 6
MATH 192	Calculus and Analytic Geometry I	4

CHEM 105 & CHEM 1105	General Chemistry I Lecture and General Chemistry Recitation/ Laboratory	5
General Education Tier II		3
Credits		16-18

Semester 2

ENGL 102 or ESL 102	English Composition II or English Composition II for English as a Second Language Students	4 - 6
MATH 193	Calculus and Analytic Geometry II	4
CHEM 106 & CHEM 1106	General Chemistry II Lecture and General Chemistry II Recitation/ Laboratory	5
PHYS 140 & PHYS 1140	Principles of Physics I - Lecture and Principles of Physics I - Laboratory and recitation	4
Credits		17-19

Second Year**Semester 1**

PHYS 141 & PHYS 1141	Principles of Physics II - Lecture and Principles of Physics II - Laboratory and Recitation	4
MATH 292	Calculus & Analytical Geometry III	4
CHEM 205 & CHEM 2205	Analytical Chemistry Lec and Analytical Chemistry Laboratory	5
Credits		13

Semester 2

CHEM 207 & CHEM 2207	Organic Chemistry I and Organic Chemistry I Laboratory	4
MATH 311	Differential Equations for Engineers	4
CHEM 316 & CHEM 3316	Instrumental Analysis, Lecture and Instrumental Methods of Analysis, Laboratory	5
FED 101	Fundamentals of Engineering Design - Taken at NJIT	
CIS 101	Computer Programming and Problem Solving - Taken at NJIT	
Credits		13

Third Year**Semester 1**

CHEM 416	Inorganic Chemistry	3
CHEM 305 & CHEM 3305	Physical Chemistry I and Physical Chemistry I Recitation/ Laboratory	5
ECON 208	Principles of Economics:Micro	3
ChE 210	Chemical Processes Calculations I (3-0-2) - Taken at NJIT	
ChE 210 W	Chemical Processes Calculations I (0-1-0) - Taken at NJIT	
Credits		11

Semester 2

CHEM 306 & CHEM 3306	Physical Chemistry II, Lecture and Physical Chemistry II Recitation/ Laboratory	5
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ChE 230	Chemical Engineering Thermodynamics I (3-0-3) - Taken at NJIT	
ChE 230 W	Chemical Engineering Thermodynamics I Workshop (0-1-0) - Taken at NJIT	
ChE 260	Fluid Flow (3-0-3) - Taken at NJIT	
Credits		5

Fourth Year**Semester 1**

ALL COURSES TAKEN AT NJIT		
ChE 240	Chemical Process Calculations II (3-0-3)	
ChE 240 W	Chemical Process Calculations II (0-1-0)	
ChE 342	Chemical Engineering Thermodynamics II (3-0-3)	
ChE 370	Heat and Mass Transfer (4-0-4)	
ChE 380	Introduction to Biotechnology (3-0-3)	
ENG 352	Technical Writing (3-0-3)	
Credits		0

Semester 2

ALL COURSES TAKEN AT NJIT		
ChE 349	Kinetics and Reactor Design (3-0-3)	
ChE 360	Separation Processes I (3-0-2)	
ChE 365	Techniques for Process Simulation (3-0-2)	
ChE 396	Chemical Engineering Laboratory I (0-5-3)	
MATH 225	Survey of Probability and Statistics (1-0-1)	
MATH 320	Statics and Strength of Materials (3-0-3)	
Credits		0

Fifth Year**Semester 1**

ALL COURSES TAKEN AT NJIT		
ChE 460	Separation Processes II (3-0-2)	
ChE 489	Process Dynamics and Control (2-2-3)	
ChE 375	Structure, Properties and Processing of Materials (3-0-3)	
ChE 496	Chemical Engineering Laboratory II (0-6-3)	
IE 492	Engineering Management	
ELEC	Concentration (3-0-3)	
Credits		0

Semester 2

ALL COURSES TAKEN AT NJIT		
ChE 472	Process and Plant Design (4-0-4)	
ELEC	Concentration (3-0-3)	
ELEC	Concentration (3-0-3)	
ELEC	HSS Capstone Seminar: GUR (3-0-3)	
ELEC	LIT/HIST/PHIL/STS GUR (3-0-3)	
Credits		0
Total Credits		75-79