B.S. in Industrial Engineering

(120 credits minimum)

First Year		
1st Semester		**Credits**
CS 115	Introduction to Computer Science in C++	3
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	**16**
2nd Semester		
ECON 201	Economics	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	**14**
Second Year		
1st Semester		
IE 203	Applications of Computer Graphics in Industrial Engineering	2
MECH 320	Statics and Strength of Materials	3
CHEM 121	Fundamentals of Chemical Principles I	3
MATH 222	Differential Equations	4
Select one of the following:		3
HUM 211	The Pre-Modern World	
HUM 212	The Modern World	
HIST 213	The Twentieth-Century World	
	Term Credits	**15**
2nd Semester		
IE 224	Production Process Design	3
MECH 236	Dynamics	2
MATH 211	Calculus III A *	3
CHEM 122	Fundamentals of Chemical Principles II **	3
IE 331	Applied Statistical Methods	3
COM 312	Oral Presentations	3
	Term Credits	**17**
Third Year		
1st Semester		
IE 355	Human Factors	3
IE 335	Engineering Cost Analysis and Control	3
IE 439	Deterministic Models in Operations Research	3
ME 339	Fundamentals of Mechanical Design	3
ECE 405	Electrical Engineering Principles	3
	Term Credits	**15**
2nd Semester		
IE 334	Engineering Economy and Capital Investment	3
IE 339	Work Measurement and Standards	3
IE 440	Stochastic Models in Operations Research	3

IE 445	Idustrial Simulation	3
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/)		3
	Term Credits	**15**
Fourth Year		
1st Semester		
IE Technical Elective 1		3
IE 443	Senior Project I	2
IE 461	Product Quality Assurance	3
IE 441	Information and Knowledge Engineering	3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
	Term Credits	**14**
2nd Semester		
IE 444	Senior Project II	2
IE 459	Supply Chain and Production Planning	3
IE 466	Material Handling and Facilities Layout	3
IE Technical Elective 2		3
IE Technical Elective 3		3
	Term Credits	**14**
	Total Credits	**120**

Industrial Engineering Technical Elective-

Students in industrial engineering select 9 credits of technical electives. With the undergraduate advisor's approval, upper level technical courses from other departments may be used as technical electives. Graduate courses having an IE, EM or MNE prefix and courses taken for the BS/MS program are also acceptable, provided that the requirements for taking such courses are met. Select three courses from the following list:

Code	Title	Credits
IE 447	Legal Aspects of Engineering	3
IE 449	Industrial Robotics	3
IE 453	Computer Integrated Manufacturing	3
IE 455	Robotics and Programmable Logic Controllers	3
IE 463	Invention and Entrepreneurship	3
IE 469	Reliability in Engineering Systems	3
IE 473	Safety Engineering	3

Co-op

Two co-op courses taken in sequence replace a technical elective. In industrial engineering, In Industrial Engineering, IE 310 Co-op Work Experience I is taken without credit, and IE 411 Co-op Work Experience II is taken for degree credit, with IE 310 Co-op Work Experience I as a prerequisite.

* Students can take MATH 213 (http://catalog.njit.edu/search/?P=MATH%20213) (Calculus III B) instead of MATH 211 (http://catalog.njit.edu/search/?P=MATH%20211).

** Students can take BIOL 200 (Concepts in Biology) instead of CHEM 122 (https://catalog.njit.edu/search/?P=CHEM%20122).

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.