B.S. General Engineering - Concentration in Materials Manufacturing Systems

(120 credits)

Concentration in Materials Manufacturing Systems

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		
CHEM 126	General Chemistry II	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
MTEN 101	Introduction to Materials Engineering	1
	Term Credits	**15**
Second Year		
1st Semester		
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
MTEN 201	Introductory Principles of Materials Engineering	3
MECH 234	Engineering Mechanics	2
ENGR Elective (200 Level)		1
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	Term Credits	**13**
2nd Semester		
MATH 222	Differential Equations	4
MTEN 205	Mechanical Behavior of Materials	4
ENGR 211	Professional Skills for Engineers I	1
CS 115 or CS 106	Introduction to Computer Science I in C++ [1] or Introduction to Computing	3
ENGR Elective (200 Level)		1
	Term Credits	**13**
Third Year		
1st Semester		
MTEN 301	Thermodynamics of Materials	3
ENGR 320	Prototyping Essentials	3
MTEN 305	Materials Characterization Methods	4
COM 313	Technical Writing	3
IE 331	Applied Statistical Methods	3
	Term Credits	**16**

2nd Semester		
ENGR 360	Geometric Dimensioning and Tolerancing and Applied Metrology	3
Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)		3
ENGR 301	Engineering Applications of Data Science	3
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/)		3
IE 335	Engineering Cost Analysis and Control	3
	Term Credits	**15**
Fourth Year		
1st Semester		
IE 461	Product Quality Assurance	3
MTEN 309	Electronic, Optical, Magnetic and Thermal Properties of Materials	4
ECE 405	Electrical Engineering Principles	3
ENGR 430	Engineering for Quality and Reliability	3
IE 455	Robotics and Programmable Logic Controllers [2]	3
	Term Credits	**16**
2nd Semester		
IE 459	Supply Chain and Production Planning	3
ENGR 400	Multidisciplinary Engineering Design Project	3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
IE 492	Engineering Management	3
ENGR 350	Intellectual Property for Engineers	3
	Term Credits	**15**
	Total Credits	**120**

1 Students interested in Chemical, Materials Engineering should take CS 115

2 One of the following courses can substitute-
IE 447 Legal Aspects of Engineering
ENGR 424 Robotics Science Fundamentals