B.S. General Engineering -Concentration in Mechatronics

(120 credits)

Concentration in Mechatronics

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

CS 100	Roadmap to Computing	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

ECE 231	Circuits and Systems I	3
MATH 213	Calculus III B	4
History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)		3
MECH 234	Engineering Mechanics	2
ENGR 211	Professional Skills for Engineers I	1
	Term Credits	**16**

2nd Semester

MATH 222	Differential Equations	4
ENGR 320	Prototyping Essentials	3
MECH 236	Dynamics	2
ME 231	Kinematics of Machinery	3
MECH 237	Strength Of Materials	3
	Term Credits	**15**

Third Year

1st Semester

COM 313	Technical Writing	3
MATH 333 　or IE 331	Probability and Statistics 　or Applied Statistical Methods	3
ME 430	Introduction to Computer-Aided Design	3
Technical Elective		3
BME 210	Processing Fund for Biol Signa	3

ENGR 312	Professional Skills for Engineers II	1
	Term Credits	**16**
2nd Semester		
MATH 337	Linear Algebra	3
ENGR 301	Engineering Applications of Data Science	3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
ME 305	Introduction to System Dynamics	3
ENGR 330	Applications of Microcontrollers and IoT devices	3
	Term Credits	**15**
Fourth Year		
1st Semester		
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
ENGR 423	Drone Science Fundamentals	3
ME 441	Computer Simulation and Analysis in Mechanical Engineering	3
IE 455	Robotics and Programmable Logic Controllers	3
Technical Elective		3
	Term Credits	**15**
2nd Semester		
ENGR 424	Robotics Science Fundamentals	3
ENGR 400	Multidisciplinary Engineering Design Project	3
ENGR 350	Intellectual Property for Engineers	3
CS 440	Computer Vision	3
	Term Credits	**12**
	Total Credits	**120**