MECHANICAL ENGINEERING (BS)

NYSED: 08829 HEGIS: 0910.00 CIP. 14.1901

Program Description

Mechanical engineering builds the physical systems and devices that define modern society - everything from air conditioning to automobiles, robots to power plants, artificial limbs to escalators, and rocket engines to weather satellites. Mechanical engineering offers almost limitless opportunity for the inventions and innovations that lead to entrepreneurial ventures.

Through hands-on computer and laboratory work in our state-of-the-art facilities, the School of Engineering's Bachelor of Science in Mechanical Engineering (BMSE) program teaches the principles underpinning the discipline and how to apply them in the field. We also develop your talents in such specialized areas as solid and fluid mechanics, machine control systems, and robotic devices. Our BSME degree program is accredited by the Engineering Accreditation Commission of ABET.

Mechanical engineers find careers in industries including national defense, aerospace, automotive, and telecommunications. Mechanical engineering also has a long tradition of breaking new ground in such areas as resource conservation, improved efficiency of energy-consuming devices, and renewable energy sources. There are emerging opportunities in biomedical systems and devices, as well as nanotechnology and mechatronics. Alternatively, our students can use their education as a springboard to law, medicine, corporate management, or further graduate studies.

Admissions

New York University's Office of Undergraduate Admissions supports the application process for all undergraduate programs at NYU. For additional information about undergraduate admissions, including application requirements, see How to Apply (https://www.nyu.edu/ admissions/undergraduate-admissions/how-to-apply.html).

Program Requirements

The program requires the completion of 131 credits, and offers a combined Bachelor of Science degree with a minor in Aerospace Engineering for interested students. See BS/Minor requirements below.

Course	Title	Crea	lits
General Education	n Requirements		
EXPOS-UA 1	Writing The Essay:		4
EXPOS-UA 2	THE ADVANCED COLLEGE ESSAY		4
Humanities and S total of 16 credits	ocial Sciences Electives (four 4-credit courses,)	for a	16
Major Requirement	nts		
Computer Science			
CS-UY 1113	PROBLEM SOLVING AND PROGRAMMING I		3
Mathematics			
MA-UY 1024	Calculus I for Engineers		4
MA-UY 1124	Calculus II for Engineers		4
MA-UY 2034	Linear Algebra and Differential Equations		4
MA-UY 2114	Calculus III: Multi-Dimensional Calculus		4

Total Credits		131
Free Electives		9
Physics Elective		3
Math/Science Ele	ective	4
STEM Electives		6
Electives		
ME-UY 4113	Senior Design II	3
ME-UY 4313	Heat Transfer	3
ME-UY 4312	Thermo-Fluids Practicum	2
ME-UY 4214	Finite Element Modeling, Design and Analysis	4
ME-UY 4103	Senior Design I	3
ME-UY 3413	Automatic Control	3
ME-UY 3411	Automatic Control Laboratory	1
ME-UY 3313	Fluid Mechanics	3
ME-UY 3231	Structures Practicum	1
ME-UY 3233	Machine Design	3
ME-UY 3513	Measurement Systems	3
ME-UY 3511	Measurement Systems Laboratory	1
ME-UY 3333	THERMODYNAMICS	3
ME-UY 3213	Mechanics of Materials	3
ME-UY 3811	Materials Science Laboratory	1
ME-UY 2223	Dynamics	3
ME-UY 2813	Introduction to Materials Science	3
ME-UY 2123	Engineering Design Methods	3
ME-UY 2213	Statics	3
ME-UY 1012	Introduction to Mechanical Engineering	2
EG-UY 1004	Introduction to Engineering and Design	4
Engineering		
PH-UY 2121	General Physics Laboratory I	1
PH-UY 2023	ELECTRICITY, MAGNETISM, & FLUIDS	3
PH-UY 1013	MECHANICS	3
Physics		
CM-UY 1001	General Chemistry for Engineers Laboratory	1
CM-UY 1003	General Chemistry for Engineers	3
Chemistry		

Mechanical Engineering (BS)/Aerospace **Engineering (Minor)**

Program Requirements

This combined BS/Minor program requires the completion of 131 credits, comprised of the following:

Course	Title	Crea	lits
General Education	n Requirements		
EXPOS-UA 1	Writing The Essay:		4
EXPOS-UA 2	THE ADVANCED COLLEGE ESSAY		4
Humanities and S total of 16 credits	ocial Sciences Electives (four 4-credit courses, f)	or a	16
Major Requirements			
Computer Science			
CS-UY 1113	PROBLEM SOLVING AND PROGRAMMING I		3
Chemistry			

CM-UY 1003	General Chemistry for Engineers	3	
CM-UY 1001	General Chemistry for Engineers Laboratory	1	
Physics			
PH-UY 1013	MECHANICS	3	
PH-UY 2023	ELECTRICITY, MAGNETISM, & FLUIDS	3	
PH-UY 2121	General Physics Laboratory I	1	
Engineering			
EG-UY 1004	Introduction to Engineering and Design	4	
ME-UY 1012	Introduction to Mechanical Engineering	2	
ME-UY 2213	Statics	3	
ME-UY 2123	Engineering Design Methods	3	
ME-UY 2813	Introduction to Materials Science	3	
ME-UY 2223	Dynamics	3	
ME-UY 3811	Materials Science Laboratory	1	
ME-UY 3213	Mechanics of Materials	3	
ME-UY 3333	THERMODYNAMICS	3	
ME-UY 3511	Measurement Systems Laboratory	1	
ME-UY 3513	Measurement Systems	3	
ME-UY 3233	Machine Design	3	
ME-UY 3231	Structures Practicum	1	
ME-UY 3313	Fluid Mechanics	3	
ME-UY 3411	Automatic Control Laboratory	1	
ME-UY 3413	Automatic Control	3	
ME-UY 4103	Senior Design I	3	
ME-UY 4214	Finite Element Modeling, Design and Analysis	4	
ME-UY 4312	Thermo-Fluids Practicum	2	
ME-UY 4313	Heat Transfer	3	
ME-UY 4113	Senior Design II	3	
Mathematics			
MA-UY 1024	Calculus I for Engineers	4	
MA-UY 1124	Calculus II for Engineers	4	
MA-UY 2034	Linear Algebra and Differential Equations	4	
MA-UY 2114	Calculus III: Multi-Dimensional Calculus	4	
Aerospace Engineering			
AE-UY 4603	Compressible Flow	3	
AE-UY 4653	Aircraft Flight Mechanics	3	
AE-UY 4613	Aerodynamics	3	
AE-UY 4633	Aerospace Propulsion	3	
Electives			
Physics Elective			
Math/Science Elective			
Free Elective		3	
Total Credits		131	

Sample Plan of Study Course Title

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Course	Title	Credits
1st Semester/Term		
MA-UY 1024	Calculus I for Engineers	4
CM-UY 1003	General Chemistry for Engineers	3
CM-UY 1001	General Chemistry for Engineers Laboratory	1
EXPOS-UA 1	Writing The Essay:	4
EG-UY 1004	Introduction to Engineering and Design	4
	Credits	16

2nd Semester/Term		
MA-UY 1124	Calculus II for Engineers	4
PH-UY 1013	MECHANICS	3
ME-UY 1012	Introduction to Mechanical Engineering	2
CS-UY 1113	PROBLEM SOLVING AND PROGRAMMING I	3
EXPOS-UA 2	THE ADVANCED COLLEGE ESSAY	4
	Credits	16
3rd Semester/Term		
MA-UY 2034	Linear Algebra and Differential Equations	4
PH-UY 2023	ELECTRICITY, MAGNETISM, & FLUIDS	3
PH-UY 2121	General Physics Laboratory I	1
ME-UY 2213	Statics	3
Humanities and Social Sci	ences Elective ¹	4
	Credits	15
4th Semester/Term		
MA-UY 2114	Calculus III: Multi-Dimensional Calculus	4
MF-UY 2123	Engineering Design Methods	3
ME-UY 2813	Introduction to Materials Science	3
ME-UV 2223	Dynamics	3
Humanities and Social Sci	ences Elective ¹	3
	Cradita	17
Eth Samaatar/Tarm	Creatis	17
ME UV 2011	Meteriala Sajanga Laboratory	1
ME-UV 2012	Machanica of Materiala	1
ME-UY 3213		3
ME-UV 2511	Meanurement Systems Laboratory	3
ME-UY 3511	Measurement Systems Laboratory	1
ME-UY 3513	Measurement Systems	3
STEM ⁻ Elective -	man flattin l	3
Humanities and Social Sci	ences Elective	4
	Credits	18
6th Semester/Term		
ME-UY 3233	Machine Design	3
ME-UY 3231	Structures Practicum	1
ME-UY 3313	Fluid Mechanics	3
ME-UY 3411	Automatic Control Laboratory	1
ME-UY 3413	Automatic Control	3
Math/Science Elective ³		4
	Credits	15
7th Semester/Term		
ME-UY 4103	Senior Design I	3
ME-UY 4214	Finite Element Modeling, Design and Analysis	4
ME-UY 4312	Thermo-Fluids Practicum	2
ME-UY 4313	Heat Transfer	3
STEM ² Elective ²		3
Free Elective ⁴		3
	Credits	18
8th Semester/Term		
ME-UY 4113	Senior Design II	3
Physics Elective ⁵		3
Free Elective ⁴		3
Free Elective ⁴		3
Humanities and Social Sci	ences Elective ¹	4
	Credits	16
	Total Credits	131

Students must take at least sixteen credits of elective courses in the humanities and social sciences. The number of total humanities and social sciences credits (including EXPOS-UA 1 Writing The Essay: & EXPOS-UA 2 THE ADVANCED COLLEGE ESSAY) must add up to at least twenty four. At least one humanities and social sciences (HuSS) elective must be an Advanced Seminar Series course. And at least one humanities and social sciences elective must be an Ethics course.

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STEM² electives are satisfied by the following Tandon courses:

- Any level 2 or higher course starting with the prefix AE-UY, BMS-UY, CBE-UY, CM-UY, CE-UY, CS-UY, ECE-UY, EG-UY, FIN-UY, DM-UY, MA-UY, ME-UY, MG-UY, PH-UY, ROB-UY, STS-UY, or VIP-UY
- Any graduate course starting with BE-GY, BI-GY, BT-GY, BTE-GY, CBE-GY, CM-GY, CE-GY, CS-GY, DM-GY, IE-GY, MG-GY, MA-GY, ME-GY, ROB-GY, or TR-GY
- Any course which satisfies Humanities credit must be in excess of the NYU Tandon 24 credit Humanities and Social Sciences (HuSS) requirement to be eligible for STEM² elective credit. Double-counting HuSS credit and STEM² credit is not permitted.

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A Math/Science Elective is any Tandon math or science course which is level 2 or higher starting with the prefix BMS-UY, CM-UY, MA-UY, PH-UY.

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A free elective is any course in any department of the University for which the student has the prerequisites. Free electives may include internships for credit (CP-UY 2xxx or Study Abroad courses). A total of six internship credits may be applied to the BSME degree. Letter graded and pass/fail approved internship courses are allowable. All other Free Electives must be letter graded (i.e. A, B, C, etc).

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A Physics Elective is any Tandon math or science course which is level 2 or higher starting with the prefix PH-UY.

Mechanical Engineering (BS)/Aerospace Engineering (Minor)

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
EG-UY 1004	Introduction to Engineering and Design	4
MA-UY 1024	Calculus I for Engineers	4
CM-UY 1003	General Chemistry for Engineers	3
CM-UY 1001	General Chemistry for Engineers Laboratory	1
EXPOS-UA 1	Writing The Essay:	4
	Credits	16
2nd Semester/Term		
MA-UY 1124	Calculus II for Engineers	4
PH-UY 1013	MECHANICS	3
ME-UY 1012	Introduction to Mechanical Engineering	2
CS-UY 1113	PROBLEM SOLVING AND PROGRAMMING I	3
EXPOS-UA 2	THE ADVANCED COLLEGE ESSAY	4
	Credits	16
3rd Semester/Term		
MA-UY 2034	Linear Algebra and Differential Equations	4
PH-UY 2023	ELECTRICITY, MAGNETISM, & FLUIDS	3
PH-UY 2121	General Physics Laboratory I	1
ME-UY 2213	Statics	3

Credits 15 4th Semester/Term MA-UY 2114 Calculus III: Multi-Dimensional Calculus 4 ME-UY 2123 Engineering Design Methods 3 ME-UY 2133 Introduction to Materials Science 3 ME-UY 223 Dynamics 3 Humanities and Social Sciences Elective ¹ 4 Credits 17 Sth Semester/Term 1 ME-UY 3213 Mechanics of Materials 3 ME-UY 3313 Mechanics of Materials 3 ME-UY 3313 Measurement Systems Laboratory 1 ME-UY 3513 Measurement Systems Laboratory 1 ME-UY 3513 Measurement Systems 3 Humanities and Social Sciences Elective ¹ 4 Physics Elective ² 3 Credits 18 6th Semester/Term 18 ME-UY 3231 Structures Practicum 1 ME-UY 3231 Structures Practicum 3 ME-UY 3231 Fluid Mechanics 3 ME-UY 3231 Automatic Control Laboratory 1 ME-UY 3231 Automatic Control 3 ME-UY 3231 Structures Practicum 3 ME-UY 3413 Automatic Control 3 ME-UY 3413 Au		Total Credits	131
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2113Engineering Design Methods3ME-UY 2123Engineering Design Methods3ME-UY 223Dynamics3Humanities and Social Sciences Elective ¹ 4Credits17Sth Semester/TermME-UY 3213Mechanics of Materials3ME-UY 3313THERMODYNAMICS3ME-UY 3513Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective ¹ 4Physics Elective ² 3Credits186th Semester/TermME-UY 3231Machine Design3ME-UY 3231Structures Practicum1ME-UY 3231Structures Practicum1ME-UY 3313Fluid Mechanics3ME-UY 3313Fluid Mechanics3ME-UY 3411Automatic Control Laboratory1ME-UY 4113Automatic Control3ME-UY 4113Automatic Control3ME-UY 4113Automatic Control3ME-UY 4113Automatic Control3ME-UY 4113Automatic Control3ME-UY 4113Heat Transfer3AUTO Active Spracticum <td></td> <td>Credits</td> <td>16</td>		Credits	16
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Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2123Engineering Design Methods3ME-UY 2133Introduction to Materials Science3ME-UY 223Dynamics3Humanities and Social Sciences Elective 14Credits175th Semester/Term17ME-UY 3811Materials Science Laboratory1ME-UY 3813Mechanics of Materials3ME-UY 3811Materials Science Laboratory1ME-UY 3813Mechanics of Materials3ME-UY 3513Measurement Systems Laboratory1ME-UY 3513Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective 14Physics Elective 23Credits186th Semester/Term1ME-UY 323Machine Design3ME-UY 3313Fluid Mechanics3ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control3ME-UY 4113Finite Element Modeling, Design and Analysis4ME-UY 4313Heat Transfer3AE-UY 4603Compressible Flow3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics <td< td=""><td>AE-UY 4613</td><td>Aerodynamics</td><td>3</td></td<>	AE-UY 4613	Aerodynamics	3
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Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2123Engineering Design Methods3ME-UY 2123Engineering Design Methods3ME-UY 223Dynamics3Humanities and Social Sciences Elective 14CreditsT75th Semester/TermME-UY 3213Mechanics of Materials3ME-UY 3213Mechanics of Materials3ME-UY 3333THERMODYNAMICS3ME-UY 3511Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective 14Physics Elective 23Credits186th Semester/Term1ME-UY 3233Machine Design3ME-UY 3231Structures Practicum1ME-UY 3231Structures Practicum1ME-UY 3313Fluid Mechanics3ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control3Math/Science Elective 34ME-UY 4103Senior Design 13ME-UY 4313Heat Transfer3ME-UY 4313Heat Transfer3AE-UY 4603Compressible Flow3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics3 <td>8th Semester/Term</td> <td></td> <td></td>	8th Semester/Term		
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2113Engineering Design Methods3ME-UY 2813Introduction to Materials Science3ME-UY 2223Dynamics3Humanities and Social Sciences Elective 14Credits175th Semester/Term1ME-UY 3213Mechanics of Materials3ME-UY 3213Mechanics of Materials3ME-UY 3333THERMODYNAMICS3ME-UY 3513Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective 14Physics Elective 23Credits186th Semester/Term18ME-UY 3233Machine Design3ME-UY 3233Machine Design3ME-UY 3231Structures Practicum1ME-UY 3231Automatic Control Laboratory1ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control3Math/Science Elective 34Credits157th Semester/Term3ME-UY 4103Senior Design I3ME-UY 4133Heat Transfer3AE-UY 4603Compressible Flow3AE-UY 4653Aircraft Flight Mechanics3AE-UY 4653Aircraft Flight Mechanics3		Credits	18
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2113Engineering Design Methods3ME-UY 2213Engineering Design Methods3ME-UY 2813Introduction to Materials Science3Humanities and Social Sciences Elective 14Credits17Sth Semester/Term1ME-UY 3213Mechanics of Materials3ME-UY 3213Mechanics of Materials3ME-UY 3333THERMODYNAMICS3ME-UY 3511Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective 14Physics Elective 23Credits186th Semester/Term3ME-UY 3233Machine Design3ME-UY 3233Machine Design3ME-UY 3231Structures Practicum1ME-UY 3313Fluid Mechanics3ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control3Math/Science Elective 34Credits15Th Semester/Term15Th Semester/Term15ME-UY 4103Senior Design I3ME-UY 4103Senior Design I3ME-UY 4103Senior Design I3ME-UY 4312Thermo-Fluids Practicum2ME-UY 4313Heat Transfer3AE-UY 4603Compressible Flow3	AE-UY 4653	Aircraft Flight Mechanics	3
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2113Engineering Design Methods3ME-UY 2123Engineering Design Methods3ME-UY 2813Introduction to Materials Science3Humanities and Social Sciences Elective 14Credits175th Semester/Term1ME-UY 3811Materials Science Laboratory1ME-UY 3813Mechanics of Materials3ME-UY 3811Materials Science Laboratory1ME-UY 3333THERMODYNAMICS3ME-UY 3513Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective 14Physics Elective 23Credits186th Semester/Term1ME-UY 3233Machine Design3ME-UY 3313Fluid Mechanics3ME-UY 3313Fluid Mechanics3ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control Laboratory1ME-UY 3413Automatic Control3Math/Science Elective 34Total Senior Design I3ME-UY 4103Senior Design I3ME-UY 4103Senior Design I3ME-UY 4312Thermo-Fluids Practicum2ME-UY 4313Heat Transfer3	AE-UY 4603	Compressible Flow	3
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4ME-UY 2123Engineering Design Methods3ME-UY 2213Introduction to Materials Science3ME-UY 2223Dynamics3Humanities and Social Sciences Elective 14CreditsTotal Science Elective 1ME-UY 2213Metorities and Social Sciences Elective 1CreditsTotal Science Laboratory11Metorities of Materials3CreditsMetorities and Social Sciences Elective 1Metorities and Social Sciences Elective 3Metorities and Social Sciences Elective 3Metorities	ME-UY 4313	Heat Transfer	3
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4ME-UY 2123Engineering Design Methods3ME-UY 2213Introduction to Materials Science3ME-UY 2223Dynamics3Humanities and Social Sciences Elective 14CreditsTotage and Sciences Elective 1ME-UY 3213Metoration of Materials Science Laboratory11ME-UY 3213Mechanics of Materials3Credits14Physics Elective 2Credits186th Semester/TermME-UY 3213Metoration of Materials3Credits186th Semester/TermME-UY 3233Machine Design3Credits18ME-UY 3233Metoration of Control Laboratory11ME-UY 3233Metoration Control Laboratory18ME-UY 333Fluid Mechanics3ME-UY 3231Structures Practicum19Credits19	ME-UY 4312	Thermo-Fluids Practicum	2
Credits154th Semester/TermMA-UY 2114Calculus III: Multi-Dimensional Calculus4MA-UY 2113Engineering Design Methods3ME-UY 2123Engineering Design Methods3ME-UY 2813Introduction to Materials Science3ME-UY 2223Dynamics3Humanities and Social Sciences Elective 14Credits175th Semester/Term7ME-UY 3811Materials Science Laboratory1ME-UY 3811Materials Science Laboratory1ME-UY 3813Mechanics of Materials3ME-UY 313Mechanics of Materials3ME-UY 3513Measurement Systems Laboratory1ME-UY 3513Measurement Systems3Humanities and Social Sciences Elective 14Physics Elective 23Credits186th Semester/Term3ME-UY 3233Machine Design3ME-UY 3231Structures Practicum1ME-UY 3333Fluid Mechanics3ME-UY 3411Automatic Control Laboratory1ME-UY 3413Automatic Control3Math/Science Elective 34Credits157th Semester/Term5ME-UY 4103Senior Design 13	ME-UY 4214	Finite Element Modeling, Design and Analysis	4
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Learning Outcomes

Upon successful completion of the program, graduates will be able to demonstrate the following (per ABET):

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- 3. An ability to communicate effectively with a range of audiences.
- 4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- 5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- 6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- 7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Policies GPA Policy

Please note that you must earn an average of 2.0 GPA or better after your first four semesters at Tandon, in addition to meeting the Institute requirement of a 2.0 GPA or better for graduation. Seniors with GPAs of 3.5 or better may take certain graduate courses as electives with approval from the departmental adviser.

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/undergraduate/engineering/ academic-policies/).