

Bachelor of Science in Engineering
as Recommended by the Department of Mechanical Engineering
Course 2-A Nano/Micro Engineering Track

General Institute Requirements (GIRs)	Subjects
Science Requirement	6
Humanities, Arts, and Social Sciences Requirement	8
Restricted Electives in Science and Technology (REST) Requirement [can be satisfied by 2.001 and 18.03 in the Departmental Program]	2
Laboratory Requirement [satisfied by 2.671 in the Departmental Program]	1
Total GIR Subjects Required for SB Degree	17

Communication Requirement

2 subjects designated as Communication Intensive in Humanities, Arts, and Social Sciences (CI-H)
 2 subjects designated as Communication Intensive in the Major (CI-M) [satisfied by 2.009 and 2.671 in the Departmental Program]

PLUS Departmental Program

Units

Subject names below are followed by credit units, and by prerequisites if any (corequisites in italics).

Required Departmental Core Subjects

78

2.001 Mechanics and Materials I, 12, REST; 8.01, 18.02, 18.03
 2.003J Dynamics and Control I, 12, REST; 8.01, 8.02, 18.02, 18.03
 2.005 Thermal-Fluids Engineering I, 12, REST; 8.02, 18.02, 18.03
 2.009 The Product Engineering Process, 12, CI-M; 2.001, 2.003, 2.005, 2.670⁽¹⁾
 2.670 Mechanical Engineering Tools, 6
 2.671 Measurement and Instrumentation, 12, CI-M, LAB; 2.001, 2.003, 8.02
 18.03 Differential Equations, 12, REST; 18.02*

Three of Five Mechanical Engineering Core Subjects

36

2.002 Mechanics and Materials II, 12; 2.001
 2.004 System Dynamics and Control II, 12; 2.003, 8.02
 2.006 Thermal-Fluids Engineering II, 12; 2.005, 18.03
 2.007 Design and Manufacturing, I, 12; 2.001, 2.670
 2.008 Design and Manufacturing, II, 12; 2.002 or 2.012, 2.005, 2.007 or 2.017

Micro/Nano Elective Subjects

60

At least 2 subjects from the group I list and 2 subjects drawn from either the group I or II list (with consent of track advisor).

Group I

2.370 Molecular Mechanics, 12; 2.001; 3.091 or 5.111 or 5.112; 8.01
 2.772J Thermodynamics of Biomolecular Systems, 12; 18.02, 5.111 or 5.112 or 3.091
 6.152J Micro/Nano Processing Technology, 12; Permission of instructor

Group II

2.088J Introduction to Modeling and Simulation, 12; 18.03
 2.111J (G) Quantum Computation, 12; Permission of instructor
 2.371 Microscale Fluid Mechanics, 12; 2.005 and 8.02
 2.372J (G) Design and Fabrication of Microelectromechanical Devices, 12, 6.003, 8.02, 6.152J or permission of instructor
 2.391J (G) Submicrometer and Nanometer Technology, 12; Permission of instructor
 2.57 (G) Nano-to-Macro Transport Processes, 12, 2.005 or permission of instructor
 2.60 Fundamentals of Advanced Energy Conversion, 12, 2.006 or permission of instructor
 2.71 Optics, 12; 8.02, 18.03, 2.003 or permission of instructor
 2.717J (G) Optical Engineering, 12; 2.710 or permission of instructor
 2.760 Multi-Scale System Design and Manufacturing, 12, 2.003, 2, 008, 2.72, or permission of instructors
 2.882 (G) System Design and Analysis, 12; 2,004, 2.006
 2.ThU, Undergraduate Thesis, 12

Departmental Program units that also satisfy the GIRs	(36)
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Unrestricted Electives	48
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Total Units Beyond the GIRs Required for SB Degree	186
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No subject can be counted both as part of the 17-subject GIRs and as part of the 186 units required beyond the GIRs. Every subject in the student's departmental program will count toward one or the other, but not both.

Notes

* Alternative prerequisites are given in the subject description in Part 3 of the MIT Bulletin

⁽¹⁾ Enrollment limited to seniors.

For an explanation of credit units, or hours, please refer to the Subject Key in Part 3 of the Bulletin.

Sample 2-A Nano Track Schedule

Freshman (96 units)

FALL	SPRING
3.091 (12) [I]	7.012 (12) [I]
8.01 (12) [I]	8.02 (12) [I]
18.01 (12) [I]	18.02 (12) [I]
HASS (12) [I]	HASS (12) [I]

Sophomore (102 units)

FALL	IAP	SPRING
2.001 (12) [2AC]	2.670 (6) [2AC]	2.005 (12) [2AC]
2.003 (12) [2AC]		Elective (12) [2AE]
18.03 (12) [2AC]		ME Core (2.002, 2.004, or 2.007) (12) [2AD]
HASS (12) [I]		HASS (12) [I]

Junior (96 units)

FALL	SPRING
Micro/nano Group I: 2.370 or 2.772J (12) [2AC] (12)	Micro/nano Group I: 6.152J (12) [2AC]
2.671 (12) [2AC]	Elective (12) [2AE]
ME Core (2.002,2.004,2.006, 2008) (12) [2AD]	ME Core (2.002, 2.004, 2.006, 2.007, 2.008) (12) [2AD]
HASS (12) [I]	HASS (12) [I]

Senior (96 units)

FALL	SPRING
2.009 (12) [2AC]	Micro/nano Group II (12)
*Micro/nano Group II (12) [2AC]	Micro/nano Elective (12)
Elective (12) [2AE]	Elective (12)
HASS (12) [I]	HASS (12) [I]

AC -- Course 2-A Nanotrack Required

AE -- Elective

AD -- Additional Mechanical Engineering Core Subject