



Montclair State University Department of Physics and Astronomy BS Physics/MBA 5-year Combined Program

I. GenEd Requirement	32 sh		
A. New Student Seminar	1	PHYS 399 Special Topics in Physics	1-4
C. Communication	9	PHYS 451 Radiation and Medical Physics	3
C1. Writing		PHYS 461 Special & General Relativity	3
C2. Literature		PHYS 462 Nuclear Physics	4
C3. Communication		PHYS 470 Solid State Physics	3
D. Fine and Performing Arts	3	PHYS 480 Astrophysics	3
F. Humanities	6	PHYS 495 Research/Indep. Study in Physics	1-4
F1. Great Works and Their Influences			
F2. Philosophical and Religious Perspectives			
G. Computer Science	<i>CSIT 104</i> (0)	C. Collateral Requirements	(26-27 sh)
H. Mathematics	<i>MATH 122 or AMAT 120</i> (0)	CSIT 104 Computational Concepts	3
I. Natural Science Laboratory	<i>PHYS 191</i> (0)	CHEM 120 General Chemistry I	4
J. Physical Education	1	CHEM 121 General Chemistry II	4
K. Social Science	9	MATH 122 Calc. I or AMAT 120 Applied Calc. A	4
K1. American and European History		MATH 221 Calc. II or AMAT 220 Applied Calc. B	4
K2. Global Cultural Perspectives (<i>Select one course from attached list to also satisfy II.B. World Cultures.</i>)		MATH 222 Calculus III	4
K3. Social Science Perspectives		and choose one of the following options:	
L. Interdisciplinary Studies	3	AMAT 350 Applied Mathematics I	3
		or PHYS 377 Mathematical Physics	3
		or MATH 325 Differential Equations	4
II. World Languages and Cultures Requirement	3-6 sh		
A. World Languages	3-6		
B. World Cultures	(0)	IV. MBA Courses taken as Undergraduate	6 sh
(Some World Cultures courses may fulfill Gen Ed requirements.)			
III. Major Requirements	71-75 sh	B. MBA Swing Courses †	(6 sh)
A. Physics Core	(36 sh)		
PHYS 191 University Physics I	4	V. Free Electives	1- 8 sh
PHYS 192 University Physics II	4		
PHYS 198 Introductory Physics Seminar	1	Minimum total required for graduation	120 sh
PHYS 210 Intermediate Mechanics	3		
PHYS 220 Oscillations, Waves, & Optics	3		
PHYS 230 Intermediate Physics Laboratory	4		
PHYS 300 Junior/Senior Physics Seminar	1		
PHYS 320 Statistical and Thermal Physics	3		
PHYS 330 Advanced Physics Laboratory	4		
PHYS 340 Electricity and Magnetism	3		
PHYS 360 Modern Physics	3		
PHYS 464 Quantum Mechanics	3		
B. Physics Electives	(9-12 sh)		
PHYS 180 Astronomy for Everyone	4		
PHYS 245 Fundamentals of Electronics	4		
PHYS 280 Astronomy for Physicists	4		
PHYS 310 Advanced Mechanics	3		
PHYS 325 Computational Physics	3		
PHYS 341 Electronics and Digital Circuits	4		
PHYS 350 Modern Optics	4		
PHYS 368 Fluid Mechanics	3		
PHYS 377 Mathematical Physics	3		
PHYS 380 Observational Astronomy	4		
		Revised May 1, 2020	

Suggested Sequence for Five-Year Plan

First Year

Fall	Total: 15cr	Spring	Total: 15cr
I. PHYS 191 University Physics I (4) H. MATH122 Calc I or AMAT120 App Calc A(4)* G. CSIT 104 Computational Concepts (3) C1. Writing (3) A. New Student Seminar (1)		PHYS 192 University Physics II (4) PHYS 198 Introductory Physics Seminar (1) MATH 221 Calc II or AMAT 220 AppCalcB (4) C2. Literature (3) C3. Communication (3)	

Second Year

Fall	Total: 17cr	Spring	Total: 13cr
PHYS 210 Intermediate Mechanics (3)** MATH 222 Calculus III (4) CHEM 120 General Chemistry I (4) K3. Social Science Perspectives (3) L. Interdisciplinary Studies (3)		PHYS 340 Electricity and Magnetism (3)** PHYS 320 Statistical and Thermal Physics (3)** AMAT 350 or PHYS 377 (3) [or MATH 325 (4)] CHEM 121 General Chemistry II (4)	

Third Year

Fall	Total: 14cr	Spring	Total: 15-16cr
PHYS 220 Oscillations, Waves, & Optics (3)** PHYS 230 Intermediate Physics Lab (4) PHYS 300 Junior/Senior Physics Seminar (1) World Language I (3) D. Fine & Performing Arts (3)		PHYS 360 Modern Physics (3)** Physics Elective (3-4) F1. Great Works and Their Influences (3) F2. Philosophical & Religious Perspectives (3) World Language II/Free Elective (3)	

Fourth Year

Fall	Total: 16-17cr	Spring	Total: 11-16cr
PHYS 464 Quantum Mechanics (3) PHYS 330 Advanced Physics Lab (4) Physics Elective (3-4) K1. American & European History (3) K2.Global Cultural Perspec./World Cultures*** (3)		Physics Elective (3-4) MBA Swing Courses (6) † J. Physical Education (1) Free Electives (2-5) ‡	

Note: After Year 1, General Education, World Languages/Cultures, and free electives can be taken in any sequence.

*Students who do not have a strong (4 year) background in high school mathematics, including exponential, logarithmic, and trigonometric functions are advised to take MATH 111 Applied Precalculus before Calculus I.

** The PHYS 210, 320, 340 and PHYS 220, 360 sequences are offered in alternate years and can be taken in Year 2 or Year 3. Most 200-level and higher physics courses are offered on an alternate-year schedule.

*** GenEd Category K2 & World Cultures double-dip: ANTH 100, 115, 120, 130, 140, 150, ARAB 193, ARHT 101, DNCE 145, FREN/FRIN 283, 289, GSWS 200, HUMN 217, 289, HIST 108, 114, 132, 138, LALS 201, 205, PHIL 237, POLS 206, RELG 240, 250, 252, 254

† Upon admission to the BS/MBA program, students are provided with a cohort sequence and a student code which allows them to enroll in a **specific list** of 6 credits from the fixed core of MBA.

‡ ACCT 204 and ECON 202 are recommended free electives that can be applied to MBA prerequisite requirements (in place of online Foundation Modules in Accounting and Finance).