

**College of Science - Physics, BS with Concentration in Computational Physics**

**Catalog Year: 2019 - 2020**

		<b>Grades</b>		
<b>Mason Core Requirements: 27 credits</b>	<b>Course Information</b>	<b>Credits</b>	<b>Earned</b>	<b>Needed</b>
Written Communication:	ENGH 101 (100)	3		
Oral Communication:		3		
*Quantitative Reasoning	*Satisfied by Major Requirements			
Information Technology		3		
Arts		3		
Global Understanding		3		
Literature		3		
*Natural Science	*Satisfied by Major Requirements			
Social & Behavioral Sciences		3		
Western Civilization/World History		3		
Written Communication:	ENGH 302	3		
*Synthesis/Capstone	*Satisfied by Concentration Requirement (PHYS 407)			

**Major Requirements (69 - 75 credits in major including concentration)**

**Students must complete a total of 75 credits in the major (69 credits if completing a second major), including at least 11 credits in mathematics, with a minimum GPA of 2.00.**

PHYS 160	University Physics I (Mason Core)	3		
PHYS 161	University Physics I Laboratory	1		
PHYS 251	Introduction to Computer Techniques in Physics	3		
PHYS 260	University Physics II	3		
PHYS 261	University Physics II Laboratory	1		
PHYS 301	Analytical Methods of Physics	3		
PHYS 303	Classical Mechanics	3		
PHYS 305	Electromagnetic Theory 1	3		
PHYS 307	Thermal Physics	3		
PHYS 308	Modern Physics	3		
PHYS 402	Introduction to Quantum Mechanics and Atomic Physics	3		
PHYS 416	Special Topics in Undergraduate Physics	1		
MATH 113	Analytic Geometry and Calculus I	4		
MATH 114	Analytic Geometry and Calculus II	4		
MATH 213	Analytic Geometry and Calculus III	3		

**BS with Concentration in Computational Physics (28 - 34 credits in concentration)**

PHYS 410	Computational Physics Capstone (Mason Core)	3		
MATH 203	Linear Algebra	3		
MATH 214	Elementary Differential Equations	3		

**Additionally, select 6 credits from the following: ASTR 401; CDS 302, 303; MATH 446, 447**

Additional Concentration Course #1:		3		
Additional Concentration Course #2:		3		
PHYS 311	Instrumentation	3		
Research, Internship, or Independent Study		3		

Select 4 credits from the following:

ASTR 402	RS: Methods of Observational Astronomy	4		
PHYS 407	Senior Laboratory in Modern Physics			

**Physics and Astronomy Theory**

3-9

Students who are not completing a second major must complete the following: ASTR 210, 328, 403, 404; PHYS 306, 412

Physics and Astronomy Theory #1:				
Physics and Astronomy Theory #2:				
Physics and Astronomy Theory #3:				

**Degree Notes**

Approx. 18 -24 credits may be completed with elective courses to bring degree to 120 with 45 credits at 300/400 level.

Advisor Notes:


FALL YEAR 1	CREDITS	SPRING YEAR 1	CREDITS	NOTES
MATH 113	4	MATH 114	4	*students who do
PHYS 122/123	2	ASTR 124	1	not place into
ENGH 101	3	PHYS 160	3	Calculus I can
Mason Core	3	PHYS 161	1	visit the physics
Mason Core	3	Mason Core	3	website for an
UNIV 100	1	Mason Core	3	alternative
Total:	16 credits	Total:	15 credits	schedule.

FALL YEAR 2	CREDITS	SPRING YEAR 2	CREDITS	NOTES
MATH 213	3	MATH 214	3	
PHYS 260	3	PHYS 307	3	
PHYS 261	1	PHYS 308	3	
PHYS 251	3	ASTR 210	3	
Mason Core	3	Elective	3	
Mason Core	3			
Total:	16 credits	Total:	15 credits	

FALL YEAR 3	CREDITS	SPRING YEAR 3	CREDITS	NOTES
PHYS 301	3	PHYS 306	3	
PHYS 303	3	PHYS 312	3	
PHYS 305	3	PHYS 402	3	
PHYS 311	3	Elective	3	
ENGH 302	3	Elective	3	
Total:	15 credits	Total:	15 credits	

FALL YEAR 4	CREDITS	SPRING YEAR 4	CREDITS	NOTES
PHYS 403	3	PHYS 412	3	
PHYS 407	4	PHYS 428	3	
PHYS 408 OR 409	3	Elective	3	
PHYS 410	3	Elective	3	
PHYS 416	1	Elective	3	
Total:	14 credits	Total:	15 credits	

\*Students must earn 120 credits for graduation; 45 credits must be upper-level (courses 300+).

\*Schedule will vary depending on if student began in an odd or even year; details can be found at [physics.gmu.edu](http://physics.gmu.edu). Concentrations are also available in applied and engineering physics, astrophysics and computational physics