SIENAcollege
Physics and Astronomy

Physics BS[1](Computational Physics Track) - 4 Years

Fall Year 1		Spring Year 1	
PHYS 130: General Physics I[2]	4	*PHYS 140: General Physics II*	4
PHYS 132: General Physics Review	0	PHYS 142: General Physics Review	0
MATH 110: Calculus I[3]	4	*MATH 120: Calculus II*	4
FYSN 100: First-Year Seminar	3	FYSN 101: First-Year Seminar	3
CSIS 110: Introduction to Computer Science	3	*CSIS 120: Introduction to Programming*	4

Fall Year 2		Spring Year 2	
PHYS 220: Modern Physics[4]	4	*PHYS 250: Computational Physics*	3
SCDV 230: Electronic Instrumentation	4	PHYS 260: Thermal Physics	3
MATH 210: Calculus III	4	MATH 325: Differential Equations	3
CSIS 210: Data Structures	3	*CSIS 220: Assembly Language and Computer Architecture*	4

At least two courses are required from: Mechanics I, Electromagnetic Theory I, Quantum Physics. Therefore, there are four possible options:

- Mechanics+Electromagnetism
- Mechanics+Quantum
- Electromagnetism+Quantum
- Mechanics+Electromagnetism+Quantum

[1] This track guarantees a minor in Mathematics and a Minor in Computational Science. A minimum of 120 credit-hours is required to graduate (average 15 credit-hours per semester). Courses in italics have a lab component (generally indicating a larger time commitment).
[2]General Physics satisfies the Natural Science Core (CDN) requirement.
[3]Calculus satisfies the Quantitative Core (CDQ) requirement.
[4]Modern Physics satisfies the Natural World Franciscan Core (CFN) requirement.

Option 1: *Mechanics + Electromagnetism*

Fall Year 3		Spring Year 3	
PHYS 310: Mechanics I	4	*PHYS 410: Electromagnetic Theory*	4
MATH 330: Intro to Applied Mathematics I	3	*PHYS 370: Experimental Techniques*[5]	2
Core I[6]	3	MATH 240: Computer Algebra[7]	3
Core II	3	Core IV	3
Core III	3	Core V	3

Fall Year 4		Spring Year 4	
PHYS 470: Advanced Lab I	1	*PHYS 472: Advanced Lab II*	1
Physics Elective I[8]	3	Physics Elective II	3
Core VI	3	CSIS 310: Numerical Methods[9]	3
Core VII	3	Core VIII	3
Elective	3	Core IX	3

Option 2: *Mechanics + Quantum*

Fall Year 3		Spring Year 3	
PHYS 310: Mechanics I	4	Physics Elective I	3
MATH 330: Intro to Applied Mathematics I	3	*PHYS 370: Experimental Techniques*[5]	2
Core I[6]	3	MATH 240: Computer Algebra[7]	3
Core II	3	Core IV	3
Core III	3	Core V	3

Fall Year 4		Spring Year 4	
PHYS 440: Quantum Physics	3	*PHYS 472: Advanced Lab II*	1
PHYS 470: Advanced Lab I	1	Physics Elective II[8]	3
Core VI	3	CSIS 310: Numerical Methods[9]	3
Core VII	3	Core VIII	3
Elective	3	Core IX	3

Option 3: *Electromagnetism + Quantum*

Fall Year 3		Spring Year 3	
Physics Elective I	3	*PHYS 370: Experimental Techniques*[5]	2
MATH 330: Intro to Applied Mathematics I	3	*PHYS 410: Electromagnetic Theory*	4
Core I[6]	3	MATH 240: Computer Algebra[7]	3
Core II	3	Core IV	3
Core III	3	Core V	3

Fall Year 4		Spring Year 4	
PHYS 440: Quantum Physics	3	*PHYS 472: Advanced Lab II*	1
PHYS 470: Advanced Lab I	1	Physics Elective II[8]	3
Core VI	3	CSIS 310: Numerical Methods[9]	3
Core VII	3	Core VIII	3
Elective	3	Core IX	3

Option 4: *Everything*

Fall Year 3		Spring Year 3	
PHYS 310: Mechanics I	4	*PHYS 370: Experimental Techniques*[5]	2
MATH 330: Intro to Applied Mathematics I	3	*PHYS 410: Electromagnetic Theory*	4
Physics Elective I[8]	3	MATH 240: Computer Algebra[7]	3
Core I[6]	3	Core III	3
Core II	3	Core IV	3

Fall Year 4		Spring Year 4	
PHYS 470: Advanced Lab I	1	*PHYS 472: Advanced Lab II*	1
PHYS 440: Quantum Physics	3	CSIS 310: Numerical Methods[9]	3
Core V	3	Core VII	3
Core VI	3	Core VIII	3
Elective	3	Core IX	3

[5]This requirement can be satisfied by taking *ASTR 380: Observational Astronomy* (a 3-credit course offered in the fall).

[6]There are 9 additional Core courses you must take: Creative Arts (CDA), English (CDA, History (CDH), Philosophy (CDP), Religious Studies (CDR), Social Science (CDS), and Franciscan Diversity(CFD), Franciscan Heritage (CFH), Franciscan Social Justice (CFJ).

[7]This sixth math class gives you a Mathematics Minor (which must be declared). It is also necessary for the Computational Science minor.

[8]The Physics Elective courses must be numbered PHYS 300 and above (3 credits each).

[9]This class gives you a Computational Science Minor (which must be declared).