

# B.S. DEGREE in PHYSICS+

## with Data Science Emphasis

### Iowa State University - 2018

Semester 1	Freshman Year	Semester 2	
Critical Thinking and Comm. - Engl 150	3	<b>Intro to Class. Physics II – Phys 242</b>	5
Introductory Seminar - Phys 199	R	<b>Calculus III - Math 265</b>	4
<b>Intro to Classical Physics I – Phys 241</b>	5	Social Science Choice	3
<b>Calculus II – Math 166</b>	4	Natural Science Choice	5
Humanities Choice	3		<u>17</u>
Library Instruction – Lib 160	<u>1</u>		
	16		

Semester 1	Sophomore Year	Semester 2	
WOVE Composition - Engl 250	3	<b>Classical Mechanics - Phys 361</b>	3
<b>Intro to Modern Physics I – Phys 321</b>	3	<b>Introduction to Partial Differential</b>	
<b>Intro Lab in Mod Phys I - Phys 321L</b>	1	<b>Equations - Math 385</b>	3
<b>Elementary Differential Equations and</b>		<b>Introduction to Data Structures -</b>	
<b>Laplace Transforms – Math 267</b>	4	<b>Com S 228</b>	3
<b>Intro to Object-oriented Programming -</b>		Social Science Choice	3
<b>Com S 227</b>	<u>4</u>	Humanities Choice	3
	15		<u>15</u>

Semester 1	Junior Year	Semester 2	
<b>Introduction to Data Science - DS 201</b>	3	<b>Thermal Physics – Phys 304</b>	3
<b>Electricity and Magnet. I - Phys 364</b>	3	<b>Software Development Practices -</b>	
English Proficiency Requirement -		<b>Com S 309</b>	3
Engl 302, 305, 309 or 314	3	Discrete Computational Structures -	
<b>Matrix/Lin. Algebra – Math 207/317</b>	3(4)	Com S 230 <sup>2</sup>	3
Foreign Language (or Elective)	<u>4(3)</u>	Foreign Language (or Elective)	4(3)
	15-17		<u>13(12)</u>

Semester 1	Senior Year	Semester 2	
<b>Data Acquisition and Exploratory Data</b>		Intermediate Laboratory – Phys 311 <sup>1</sup>	2
<b>Analysis - DS202</b>	3	<b>Applied Data Modeling and Predictive</b>	
Humanities Choice	3	<b>Analysis - DS301</b>	3
<b>Quantum Mechanics – Phys 480</b>	3	Humanities choice	3
<b>Probability and Statistics for Computer</b>		Social Science Choice	3
<b>Science - Stat 330</b>	3	Computer Science Elective <sup>2</sup>	3
Design and Analysis of Algorithms -			<u>14</u>
Com S 311 <sup>2</sup>	<u>3</u>		
	15		

<sup>1</sup> Students must earn a minimum of two laboratory credits from Phys 310, 311, 311T, 450L, 470L, Astro 344L or 450L.

<sup>2</sup> Students are suggested a Computer Science elective among ComS 321, ComS 331, ComS 336, ComS 342, Com S 362, Com S 363, Com S 409, Com S 410, Com S 417, Com S 424 for which Com S 230 and Com S 311 might be prerequisites. Students in all ISU majors must complete a three-credit course in U.S. diversity and a three-credit course in international perspectives. Check (<http://www.iastate.edu/~registrar/courses/div-list.html>) for a list of approved courses. Discuss with your adviser how the two courses that you select can be applied to your graduation plan.

LAS majors require a minimum of 120 credits, including a minimum of 45 credits at the 300/400 level. You must also complete the LAS foreign language requirement.