ACCELERATED 3+2 DUAL DEGREE PROGRAM IN PHYSICS AND DATA SCIENCE

Students who complete an undergraduate B.S. or B.A. in Physics may complete the M.S. in Data Science (online program) within only one additional year.

Seton Hall Physics students already having extensive analytical and mathematical background can enhance their computational knowledge with this accelerated 3+2 Dual Degree Program in Physics and Data Science. A data scientist is a practitioner who has extensive knowledge in the overlapping realms of business needs, domain knowledge, analytical skills, and software and systems engineering to manage the end-to-end data processes in the data life cycle. Such a practitioner is skilled in data management and processing, analyzing business and scientific processes, and communicating findings for effective decision making. A physicist with an graduate degree in data science is on high demand for employers.

The Department of Physics, in cooperation with the Department Mathematics and Computer Science, offers a dual degree program that allows qualified physics majors to complete a master program in Data Science at Seton Hall University.

Program Admission and Continuation

- Submit an application for the M.S. in Data Science program during the Spring semester of Junior Year
- Meet the M.S. in Data Science admission requirements, except having completed the undergraduate degree program, with undergraduate GPA of at least 2.75
- Have Senior status (earned at least 90 credits) before taking graduate courses
- Have completed MATH 2111 Statistics for Science Majors and CSAS 1113 Computing for Science Majors by Spring of Junior Year. B.A. majors may also complete ISCI 1117 Computing for Informatics instead of CSAS 1113.
- Have at least a 3.0 GPA in the undergraduate Physics curriculum before taking graduate courses from the Data Science curriculum
- Before taking graduate courses during the fifth year, fulfill all the requirements for admission to the M.S. in Data Science, including having earned the undergraduate degree

Curriculum

Course	Title	Hours
First Year		
First Semester		
PHYS 1705	Principles of Physics I	3
PHYS 1815	Physics Lab and Data Analy I	2
ENGL 1201	Core English I	3
MATH 1501	Calculus I - Math - Phys Sci	4
	Hours	12
Second Semester		
PHYS 1706	Principles of Physics II	3
PHYS 1816	Physics Lab and Data Analy II	1
ENGL 1202	Core English II	3
MATH 1511	Calculus II - Math - Phys Sci	4
	Hours	11
Second Year		
First Semester		
PHYS 2185	Intro to Modern Physics	4
PHYS 2883	Electronics I	3
MATH 2511	Calculus III - Math - Phys Sci	4
Select one:		4-5
CHEM 1107	Principles of Chemistry I *	
CHEM 1123 & CHEM 1125	General Chemistry I and General Chemistry Lab I	
	Hours	15-16
Second Semester		
PHYS 2112	Phys Appl of Math Techniques	4
PHYS 2186	Waves and Oscillations	3
Select one:		4-5
CHEM 1108	Principles of Chemistry II **	
CHEM 1124 & CHEM 1126	General Chemistry II and General Chemistry II Lab **	4
	Hours	15-16
Third Year		
First Semester		
PHYS 3119	Math Methods of Physics I	4
PHYS 3121	Mechanics I	3
PHYS 3185	Electricity and Magnetism I	3
PHYS 3815	Advanced Laboratory II	2
	Hours	12
Second Semester		
PHYS 3122	Mechanics II	3
PHYS 3217	Modern Optics	3
PHYS 3812	Advanced Laboratory I	2
PHYS 4211	Quantum Mechanics I	3
	Hours	11
	Total Hours	76-78

* B.A. students must take CHEM 1107.

** B.A. students must take CHEM 1108.

Data Science Accelerated Curriculum

By Spring of Junior Year:

- The students must have completed MATH 2111 Statistics for Science Majors (general elective) and CSAS 1113 Computing for Science Majors (elective for the B.S. in Physics). B.A. majors may also complete ISCI 1117 Computing for Informatics instead of CSAS 1113.

Summer between the Junior and Senior Years

- Take the graduate course DASC 7211 Network Analysis or DASC 7521 Operations Research, which shall count as a general elective for the undergraduate requirements.

Senior Year

- Take DASC 6010 Data Mining and DASC 7111 Text Mining DASC 6010 Data Mining and DASC 7111 Text Mining replace the undergraduate courses DASC 3010 Data Mining / CSAS 3010 Data Mining and DASC 3111 Text Mining. Optionally, students may additionally take DASC 7000 Data Visualization which replaces the undergraduate course DASC 3000 Data Visualization.

Graduate Year

- Fall Semester: Take DASC 6811 Statistics for Data Science and DASC 7000 Data Visualization (if not yet taken)
- Spring Semester: Take DASC 6911 Big Data Analytics Big Data Analytics and two elective graduate courses from the M.S. in Data Science curriculum

Summer Session

- Take DASC 9311 Data Science Project and one elective graduate course from the M.S. in Data Science curriculum.