PURDUE UNIVERSITY

Data Science - Statistics

College of Science

2022-2023

Program Progression Guides

Disclaimer: The 2022-2023 Purdue West Lafayette catalog is considered the source for academic and programmatic requirements for students entering programs during the Fall 2022, Spring 2023, and Summer 2023 semesters. The Program Progression Guide assists students in the development of an individualized 8-semester plan. Students are encouraged to use this guide, MyPurduePlan* (online degree auditing tool) and the Student Educational Planner (SEP) as they work with their academic advisor towards the completion of their degree requirements.
Notification: Each student is ultimately responsible for knowing, monitoring and completing all degree requirements.

An undergraduate degree in the College of Science requires completion of the following degree requirements.

<table>
<tr><td colspan="3">University Degree Requirements</td></tr>
<tr><td>Minimum 2.0 Cumulative GPA</td><td>Minimum 120 Credits that fulfill degree requirements</td><td>32 Residency Credits (30000 and above) at a Purdue University campus</td></tr>
<tr><td colspan="3">University Core Curriculum**</td></tr>
<tr><td colspan="2">Human Cultures: Behavioral/Social Science
Human Cultures: Humanities
Information Literacy
Oral Communication
University Core Curriculum
Course Listing</td><td>Quantitative Reasoning
Science
Science, Technology & Society Selective
Written Communication</td></tr>
<tr><td colspan="3">Civic Literacy Proficiency - https://www.purdue.edu/provost/about/provostInitiatives/civics/</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3">Required Major Program Courses</td></tr>
<tr><td colspan="3">Departmental specific requirements: A minimum of a C is required in all Data Science Major coursework regardless of department.</td></tr>
<tr><td colspan="3">College of Science Core Curriculum</td></tr>
<tr><td>Freshman Composition – 3-4 credits
Technical Writing and Presentation – 3-6 credits
Teaming & Collaboration (NC)
General Education - 9 credits</td><td>Foreign Language & Culture – 0-9 credits
Great Issues - 3 credits
Laboratory Science – 6-8 credits
Multidisciplinary - 3 credits</td><td>Mathematics - 6-10 credits
Statistics - 3 credits
Computing – 3-4 credits</td></tr>
<tr><td colspan="3">Degree Electives</td></tr>
<tr><td colspan="3">Any Purdue or transfer course approved to meet degree requirements in accordance with individual departmental policies. Consult the No Count course list for courses, which may not be used to meet any College of Science degree requirement.</td></tr>
</table>

* This audit is not your academic transcript and it is not official notification of completion of degree or certificate requirements.

** University Core Curriculum Outcomes may be met through completion of the College of Science Core curriculum. Students should consult with their academic advisors and MyPurdue Plan for course selections.

2022-23 Data Science Degree Progression Guide

The Computer Science and Statistics Departments has suggested the following degree progression guide for the Data Science Degree. Students will work with their academic advisors to determine their best path to degree completion. Course pre-requisites are specific to this degree plan.

Credit	Fall 1st Year	Prerequisite	Credit	Spring 2nd Year	Prerequisite
4	CS 18000[CC] ***	Co-req CALC I	3	CS 18200 ***	CS 18000 & CALC I
1	CS 19100 *	Co-req CS 18000	1	CS 38003 ***	CS 18000
1	CS 19300 *	Co-req CS 19100	4-5	MA 16200 or MA 16600 **	CALC I
4-5	MA 16100[CC] or 16500[CC] **	ALEKS 85+	3-4	Science Core Option	
3-4	Science Core Option		3	Science Core Option	
3	Free Elective		1-2	Free Elective	
16-18			**15-18**		

Credit	Fall 2nd Year	Prerequisite	Credit	Spring 2nd Year	Prerequisite
3	CS/or STAT 24200 ***	CS 18200, CS 38003, & Co-req STAT 35500	3	CS 25100 ***	CS 18200 & CS/STAT 24200
3	STAT 35500 ***	CALC II	3	MA 35100 ***	CALC III
4-5	MA 26100 or MA 27101***	CALC II	3	STAT 41600 ***	CALC III
3-4	Science Core Option		3	Ethics Selective ***	Varies
1-3	Free Elective		3-4	Science Core Option	
			1-2	Free Elective	
14-18			**16-18**		

Credit	Fall 3rd Year	Prerequisite	Credit	Spring 3rd Year	Prerequisite
3	CS 37300 ***	CS 25100 & Co-req STAT 35500	3	CS Selective ***	Varies
3	STAT 41700 ***	STAT 35500 & STAT 41600	3	STAT Selective ***	Varies
3	Science Core Option (sug. COM 21700)		3-4	Science Core Option	
3-4	Science Core Option		3-4	Science Core Option	
3	Free Elective		3	Free Elective	
15-16			**15-17**		

Credit	Fall 4th Year	Prerequisite	Credit	Spring 4th Year	Prerequisite
3	CS Selective ***	Varies	0-3	Capstone Course/or Experience ***	CS 37300
3	CS 44000 LSDA ***	CS 37300 & STAT 41700	3-4	Science Core Option	
3-4	Science Core Option		3-4	Science Core Option	
3	Free Elective		3	Free Elective	
3	Free Elective		3	Free Elective	
1	Free Elective		1	Free Elective	
16-17			**13-18**		

Science Core Curriculum Options (one course needed for each requirement unless otherwise noted)	
Options recommended for first- and second-year students	**Options recommended for third- and fourth-year students**
Freshman Composition[UC]	Technical Writing and Presentation[UC] (COM 217 recommended)
Computing (CS 18000)	General Education[UC] (3 courses needed)
Foreign Language and Culture[UC] (3 courses needed)	Lab Science[UC] (2 courses needed)
Multidisciplinary Experience[UC]	Great Issues

[UC] Select courses may also satisfy a University Core Curriculum requirement; see the University Core Requirement course list for approved courses. Students must have 32 credits at the 30000 level or above taken at Purdue.

* Enrollment in freshman seminar courses CS 19100 and CS 19300 is required with CS 17700 or CS 18000. They are not degree requirements. Superscript of CC (eg CS 18000 [CC]) indicates a Critical Course

***All courses required for the major, regardless of department, must be completed with a grade of "C" or better.

**All prerequisites to CS, MA, and STAT courses required for the major, regardless of department, must be completed with a grade of "C" or better.

Equivalent 10000 and 20000-level Computer Science (CS) transfer credit courses (including credit from regional campuses) may be used to meet degree requirements if those courses were taken prior to admission to the Purdue West Lafayette Data Science, B.S. Statistics program.

CS transfer credit at the 30000-40000-level may not be used to meet degree requirements. As exception to this policy is the application of pre-approved Study Abroad coursework.

2022-2023 Data Science Major Courses

Credits	Course Number	Course Description
4	CS 18000	Problem Solving and object-Oriented Programming
3	CS 18200	Foundations of Computer Science
1	CS 38003	Python Programming
3	CS/or STAT 24200	Introduction to Data Science
3	STAT 35500	Statistics for Data Science
3	CS 25100	Data Structures and Algorithms
4-5	MA 26100 or MA 27101	Multivariate Calculus
3	MA 35100	Elementary Linear Algebra
3	STAT 41600	Probability
3	CS 37300	Data Mining and Machine Learning
3	STAT 41700	Statistical Theory
3	CS 44000 LSDA	Large Scale Data Analytics
0-3	CS/or STAT 49000 DSC	Data Science Capstone

2022-2023 Data Science Computer Science Selectives Course Options (Choose 2)

Credits	Course Number	Course Description
3	CS 30700 or CS 40800	Software Engineering I or Software Testing
3	CS 31400	Numerical Methods
3	CS 34800 or CS 44800	Information Systems or Introduction to Relational Databases
3	CS 38100 or CS 48300	Introduction to the Analysis of Algorithms or Introduction to the Theory of Computation
3	CS 35500	Introduction to Cryptography
3	CS 43900	Introduction to Data Visualization
3	CS 47100	Introduction to Artificial Intelligence
3	CS 47300	Web Information Search and Management
3	CS 47500	Human Computer Interaction

2022-2023 Data Science Statistic Selective Course Options (Choose 1)

Credits	Course Number	Course Description
3	STAT 42000	Introduction to Time Series
3	MA/STAT 49000	Elementary Stochastic Processes
3	STAT 50600	Statistical Programming and Data Management
3	STAT 51200	Applied Regression Analysis
3	STAT 51300	Statistical Quality Control
3	STAT 51400	Design of Experiments
3	STAT 52200	Sampling and Survey Techniques
3	STAT 52500	Intermediate Statistical Methodology

2022-2023 Data Science Ethics Selective Course Options (Choose 1)

Credits	Course Number	Course Description
3	ILS 23000	Data Science & Society: Ethical, Legal, Social Issues
3	PHIL 20700	Ethics For Technology, Engineering, And Design

3	PHIL 20800	Ethics Of Data Science