PURDUE UNIVERSITY

Data Science
College of Science

2019-2020

Program Progression Guides

Disclaimer: The 2019-2020 Purdue West Lafayette catalog is considered the source for academic and programmatic requirements for students entering programs during the Fall 2019, Spring 2020, and Summer 2020 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><th colspan="3">University Degree Requirements</th></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><th colspan="3">University Core Curriculum**</th></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><th colspan="3">Required Major Program Courses</th></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><th colspan="3">College of Science Core Curriculum</th></tr>
<tr><td>• Freshman Composition – 3 credits
• Technical Writing and Presentation - 3 credits
• Teaming & Collaboration (NC)
• General Education - 9 credits</td><td>• Foreign Language & Culture – 9 credits
• Great Issues - 3 credits
• Laboratory Science - 8 credits
Multidisciplinary - 3 credits</td><td>• Mathematics - 6-10 credits
• Statistics - 3 credits
• Computing - 3 credits</td></tr>
<tr><th colspan="3">Degree Electives</th></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.

2019-20 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 25000 & CS 25100
3	STAT 35500 ***	CALC II	3	MA 35100 ***	CALC II & (co-req CALC III)
4-5	MA 26100 or MA 27101	CALC II	3	STAT 41600 ***	CALC III
3-4	Science Core Option		3	Ethics Elective	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 ***	Varies	3	CS Elective I ***	Varies
3	STAT 41700 ***	Varies	3	STAT Elective ***	Varies
3	Science Core Option		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 Elective II ***	Varies	0-3	Capstone Course/or Experience ***	Varies
3	CS 49000 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 DS core courses and all track requirements, regardless of department, must be completed with a grade of "C" or higher (effective Fall 2011). All prerequisites to CS core courses and track requirements, regardless of department, must be completed with a grade of C or higher (effective Fall 2015).

2019-2020 Data Science Major Science 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	Programming in C
3	STAT 35500	Statistics for Data Science
3	CS 25100	Data Structures
4-5	MA 26100 or MA 27101	Multivariate Calculus
3	MA 35100	Elementary Linear Algebra
5	STAT 41600	Probability
4	CS 37300	Data Mining and Machine Learning
3	STAT 41700	Statistical Theory
3	CS 49000 LSDA	Large Scale Data Analytics
0-3	CS/or STAT 49000 DSC	Data Science Capstone

2019-2020 Data Science Computer Science Elective I Course Options

Credits	Course Number	Course Description
3	CS 30700	Software Engineering I
3	CS 31400	Numerical Methods
3	CS 34800	Information Systems
3	CS 38100	Introduction to the Analysis of Algorithms
3	CS 47300	Web Information Search and Management

2019-2020 Data Science Computer Science Elective II Course Options

Credits	Course Number	Course Description
3	CS 35500	Introduction to Cryptography
3	CS 40800	Software Testing
3	CS 44800	Introduction to Relational Databases
3	CS 47100	Introduction to Artificial Intelligence
3	CS 48300	Introduction to the Theory of Computation

2019-2020 Data Science Statistic Elective Course Options

Credits	Course Number	Course Description
3	STAT 42000	Introduction to Time Series
3	STAT 40600	Statistical Programming and Data Management
3	MA/STAT 49000	Elementary Stochastic Processes
3	STAT 51200	Applied Regression Analysis
3	STAT 51400	Statistical Quality Control
3	STAT 52200	Sampling and Survey Techniques
3	STAT 52500	Intermediate Statistical Methodology