

# B.S. in Data Science

## Academic Program Guide for **New First-Year Students** Department of Mathematics

*Students who entered Rowan University prior to Fall 2018 should follow the guide for their program and start year in consultation with their advisor.*

### Rowan University Graduation Requirements for all Majors / Degrees

- Students must complete at least 120 semester hours (sh) of coursework that apply to their Rowan University degree.
- Students must have a cumulative GPA of at least 2.0 in Rowan University coursework. (Transfer courses/credit do not count toward the RU GPA.)
- A minimum of 30 sh of coursework must be completed at/through Rowan University.
- Only grades of “D-” or above may apply to graduation/degree requirements. (Some programs may set higher minimums.)
- Students must meet the Rowan Core and Rowan Experience Requirements.
  - An individual course can potentially satisfy one Rowan Core literacy and/or multiple Rowan Experience attributes.
  - Rowan Core & Rowan Experience designations are listed in course details in Section Tally ([www.rowan.edu/registrar](http://www.rowan.edu/registrar)) and may also be searched on that site under “Attributes.” A list of Rowan Core courses is here: <https://confluence.rowan.edu/display/AS/Rowan+Core+Course+List>.
- Students must apply for graduation and should do so for the term in which they will complete all program requirements.

### Rowan Core Requirements<sup>1</sup>

*Students must satisfy all six Rowan Core Literacies. A minimum total of 3 sh of coursework is required to satisfy each Literacy.*

*With the exception of the 9 sh counted here for Communicative Literacy, credits attached to the courses in this section will apply elsewhere.*

- (COML) Communicative Literacy: *Must be met by the following three courses or their official equivalents:*
  - COMP 01111 College Composition I (3 sh)      ○ COMP 01112 College Composition II (3 sh)      ○ CMS 04205 Public Speaking (3 sh)
- (ARTL) Artistic Literacy      *Recommendation from major:*
- (GLBL) Global Literacy      *Recommendation from major:*
- (HUML) Humanistic Literacy      *Recommendation from major:*
- (QNTL) Quantitative Literacy      *Recommendation from major:* MATH 01130 (4 sh counted under Major)
- (SCIL) Scientific Literacy      *Recommendation from major:*

▪ 9 sh counted in this section

### Rowan Experience Requirements<sup>2</sup>

*Students must satisfy all three Rowan Experience attributes. Credits attached to the courses in this section will apply elsewhere.*

- (LIT) Broad-Based Literature Attribute      *Recommendation from major:*
- (WI) Writing Intensive Attribute      *Recommendation from major:*
- (RS) Rowan Seminar Attribute<sup>2</sup>      *Recommendation from major:*

▪ 0 sh counted in this section

### Non-Program Courses (minimum 18 sh)

*Courses in this section cannot be in the major department.*

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
CS 04103	Computer Science and Programming	Minimum grade C-			4
<b>Subtotal: 18 sh</b>					

18 sh counted in this section

<sup>1</sup> The Rowan Core requirements are waived for transfer students with an earned A.A. or A.S. degree from a NJ community/county college.

<sup>2</sup> The Rowan Seminar requirement is waived for all students transferring 24 or more approved credits into Rowan University at the time of initial entry.

# B.S. in Data Science

## Major Requirements (58 sh)

### SUMMARY OF MAJOR REQUIREMENTS

- 28 sh of Foundational Courses
  - 27 sh of Upper-Level and Research Courses
  - 9 sh of Data Science Electives
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- 64 sh total

### FOUNDATIONAL COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
DS 01100	Introduction to Data Science	Minimum grade C-			4
CS 01104	Introduction to Programming and Problem Solving	Minimum grade C-			3
CS 04225	Principles of Data Structures	Minimum grade C-			3
MATH 01130	Calculus I	Satisfies Quantitative Literacy/ Minimum grade C-			4
MATH 01131	Calculus II	Minimum grade C-			4
MATH 01210	Linear Algebra	Minimum grade C-			3
MATH 01230	Calculus III	Minimum grade C-			4
MATH 03150	Discrete Math	Minimum grade C-			3
<b>Subtotal:</b>					<b>28</b>

### UPPER-LEVEL AND RESEARCH COURSES

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
CS 02420	Big Data Tools and Techniques	Minimum grade C-			3
CS 04430	Database Systems: Theory and Programming	Minimum grade C-			3
CS 07370	Introduction to Information Visualization	Minimum grade C-			3
CS 07455	Machine Learning I	Minimum grade C-			3
CS 07480 or STAT 02340	Introduction to Data Mining or Elements of Statistical Learning	Minimum grade C-			3
STAT 02320	Concepts in Statistical Data Analysis	Minimum grade C-			3
STAT 02360	Probability and Random Variables	Minimum grade C-			3
DS 01390	Data Science Research I	Minimum grade C-			3
DS 01490	Data Science Research II	Minimum grade C-			3
<b>Subtotal:</b>					<b>27</b>

### DATA SCIENCE ELECTIVES (CHOOSE ANY 3 FOR 9 S.H.)

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
<input type="radio"/> CS 01205	Computer Lab Techniques	Minimum grade C-			3
<input type="radio"/> CS 04440	Data Warehousing	Minimum grade C-			3
<input type="radio"/> CS 07342	Algorithms for the Data Scientist	Minimum grade C-			3
<input type="radio"/> CS 07485	Web and Text Mining	Minimum grade C-			3
<input type="radio"/> DS 02395	Special Topics in Data Science	Minimum grade C-			3
<input type="radio"/> STAT 02311	Statistical Computing	Minimum grade C-			3
<input type="radio"/> STAT 02350	Regression Analysis	Minimum grade C-			3
<input type="radio"/> STAT 02371	Design of Experiments: Analysis of Variance	Minimum grade C-			3
<input type="radio"/> STAT 02450	Advanced Data Analysis (Multivariate and Bayesian)	Minimum grade C-			3
<b>Subtotal</b>					<b>9</b>

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## Free Electives for this Major/Degree (29 sh)

*Students should choose Free Electives that satisfy any Rowan Core or Rowan Experience requirements that are not fulfilled by Major or Non-Program courses.*

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
Subtotal:					29 sh

Total Program Credits Required for this Major / Degree: 120 SH

*SUMMARY OF GRADUATION REQUIREMENTS*

- 64 sh of Major Requirements
  - 9 sh of Rowan Core and Rowan Experience
  - 18 sh Non-Program Courses
  - 29 sh of Free Electives
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- 120 sh total