

CADP Combined Advanced Degree Program/Graduate Dual Degree Program: Bachelor of Science in Mathematics, Master of Science in Data Analytics

Bachelor of Science in Mathematics. The complete ROWAN CORE Program Guide follows:

(Note that up to 4 graduate courses can be counted as restricted electives in the BS if the student remains in the CADP.)

FREE ELECTIVES (any course that counts toward a Rowan Bachelor's degree).....21 SH

ROWAN CORE.....26 SH

Communicative Literacy (Written/Spoken)	9 SH
Composition I	3
Composition II	3
Public Speaking	3
Scientific Literacy	4 SH
Introductory Mechanics	4
Quantitative Literacy	4 SH
Calculus I	4

Humanistic Literacy	3 SH
Choice	3
Global Literacy	3 SH
Choice	3
Artistic Literacy	3 SH
Choice	3

Non-Core Courses Required for the Program: Computer Science and Programming (4 SH), Intro to Symbolic Logic (3 SH), {Intro to electricity & Magnetism *or* Intro to Thermo, Fluids, Waves & Optics} (4 SH), LIT course (3 SH)**14 SH**

Rowan Seminar (RSEM) required for all native students and students who transfer in with fewer than 24 SH at the time of transfer (this Guide assumes that the SH are absorbed by another category)

MATH MAJOR CORE COURSES.....35 SH

Discrete Math	3
Calculus II	4
Calculus III	4
Linear Algebra	3
Ordinary Differential Equations	3
Modern Algebra I	3

Concepts in Statistical Data Analysis	3
Introduction to Real Analysis	3
Probability & Random Variables	3
Introduction to Complex Analysis	3
Mathematics Seminar (Sr Standing)	3
Satisfies Writing Intensive (WI)	

MAJOR RESTRICTED ELECTIVES.....24 SH

Technological Tools for Discovering Mathematics	2
College Geometry (required for a dual major in subject matter education)	4
Intro to Real Analysis II	3

Modern Algebra II	3
Intro to Topology	3
Numerical Analysis	3
Mathematical Statistics	3
Design of Experiments: Analysis of Variance	3
Applications of Mathematics	3
Mathematics Field Experience (permission of instructor/department)	3
Introduction to Partial Differential Equations	3
Theory of Numbers	3
History of Mathematics (required for a dual major in subject matter education)	3
Deterministic Models in Operations Research	3
Stochastic Models in Operations Research	3
Elements of Statistical Learning	3

A Maximum of two courses from the following list can count as MAJOR RESTRICTED ELECTIVES

Design and Analysis of Algorithms (prerequisites: Data Structures CS04.222 & Foundations of Com Sci CS07210))	3	Modern Physics	3
Theory of Computing (prerequisites: Data Structures CS04.222 & Foundations of Comp Sci CS07210)	3	Mathematical Physics	3
Analytical Mechanics	4	Statistical Physics	4
Quantum Mechanics	4	Electricity and Magnetism	4
Physical Chemistry I	3	Physical Chemistry II	3

Restricted Elective Replacement The current BS in Mathematics Includes 24 Credits of restricted electives. As part of this dual degree program, up to 12 of these credits should now be replaced with four **Graduate courses from the DA program** for students that have a strong math, statistics, or computer science background. In semesters 7 and 8, students may choose any four (4) of the following courses to count as restricted electives for the BS in Math as well as for the MS in Data Analytics:

Course # / Course Name	Credits
STAT 02515 Applied Multivariate Data Analysis	3
STAT 02514 Decision Analysis	3
STAT 02525 Design and Analysis of Experiments	3
STAT 02530 Survival Analysis	3
CS 02505 Data Mining I	3
ECE 09555 Advanced Topics In Pattern Recognition	3
MGT 07500 Managerial Decision Making Tools	3
MGT 97600 Predictive Analytics	3

HOWEVER, if a student does not remain in the CADP, the one of the following will apply:

a. Student opts out. If the student “opts out” before 12 graduate credits have been completed, any remaining credits needed for 120 credits required for the undergraduate degree will be taken at the undergraduate level and selected through consultation between the advisor, the Math Department,

and the student. NOTE: in particular, the existing rules for the BS in Math will be enforced, and **at most two (2)** data analytics graduate courses would count as Restricted Electives towards the BS in Math, unless the graduate courses have undergraduate components already listed in the BS in Math Core or Restricted Elective lists.

b. Student fails to meet the minimum GPA. Once in the program a student must maintain a 3.5 GPA in all graduate courses. Students who enter the CADP program but do not maintain satisfactory progress will be allowed to apply at most 6 credits of graduate coursework to the BS in Math degree, unless the graduate data analytics courses have undergraduate components already listed in the BS in math Core or Restricted Elective lists.

Master of Science in Data Analytics Coursework (including proposed thesis option)

The full program can be found at <https://global.rowan.edu/programs/ms-in-data-analytics.html>.

Appendix: Suggested order to take courses for: B.S. in Mathematics

Year	FALL – 16 sh, 17sh, 15 sh, 15sh	SPRING – 17 sh, 15 sh, 15 sh, 12 sh
FRESHMEN	Calculus I Computer Science & Programming Intro to Symbolic Logic College Comp I	Calculus II Discrete Mathematics College Comp II Introductory Mechanics Choice
SOPHMORE	Calculus III Intro to E & M <u>or</u> Intro TFW&O Linear Algebra Public Speaking Humanistic Literacy	Ordinary Diff Eq Probability & Random Variables Math Restricted Elective* “Old Gen Ed” LIT Global Literacy
JUNIOR	<i>(Odd or even year?*)</i> Modern Algebra I Intro to Real Analysis I Math Restricted Elective* Artistic Literacy Choice	<i>(Odd or even year?*)</i> Complex Analysis Concepts of Stat Data Analysis Math Restricted Elective* Choice Choice
SENIOR	<i>(Odd or even year?*)</i> Math Restricted Elective* Graduate Data Analytics (below)** Graduate Data Analytics (below)** Choice Choice	<i>(Odd or even year?*)</i> Mathematics Seminar Graduate Data Analytics (below)** Graduate Data Analytics (below)** Choice Choice

*Because some **Math Restricted Electives** are offered only once every two years, it may be necessary to move some of the junior and senior level courses in order to be able to take certain electives or a specific concentration. *(Odd or even year?)* Please speak with your advisor prior to taking Calculus III and Linear Algebra so that you can map out your schedule in order to be able to take any courses you sodesire.

**BS Math Restricted Elective Replacement from Graduate Data Analytics, unless the student “opts out” or fails to meet the minimum GPA. See a) and b) on pages 2-3.