**PREREQS:** *(You should not list these on your major declaration form and they do not count for overlaps)*

MATH 150: Discrete Mathematics OR  MATH 150A: Discrete Math Module for MATH171

CSC 171: Intro to Computer Science *(formerly The Science of Programming)*

CSC 172: Data Structures and Algorithms *(formerly The Science of Data Structures)*

Plus one of the following sequences:

MATH 161: Calculus IA and  MATH 162: Calculus IIA

MATH 141: Calculus I and  MATH 142: Calculus II and MATH 143: Calculus III

MATH 171: Calculus I (Honors) and  MATH 172: Calculus II (Honors)

**For a BA or BS in Data Science, use the following CORE, APPLICATION AREA**

**and UPPER LEVEL WRITING courses on your major declaration.**

**CORE:** *(List these courses on your major declaration form. Beware of overlaps if minoring in CSC)*

**One of the following**:

MATH 165: Linear Algebra with Differential Equations *(exempt from overlap)*

MATH 173: Calculus III (Honors)

**Plus one** of the following: *(exempt from overlap)*

STAT 190: Introduction to Statistical methodology *(replaces former courses DSCC/CSC/STAT 262: Computational Introduction to Statistics (fall only) or STAT 213: Elements of Probability and Mathematical Statistics)*

STAT 180: Introduction to Applied Statistical Methodology *(replaces former course STAT 212: Applied Statistics I; formerly Applied Statistics for the Biological and Physical Sciences I)*

**Plus one** of the following:

DSCC 265: Introduction to Statistical Machine Learning (spring only)*(formerly Intermediate Statistical and Computational Methods)*

**Both** STAT 216: Intermediate Statistical Methodology *(formerly Applied Statistics II****)***

**and**  STAT 217: Advanced Statistical Methodology *(formerly Applied Statistical Methods II)* **or** STAT 226W: Linear Models *(formerly Introduction to Linear Models)*

**Plus one** of the following: *(cannot be double counted if used as a concentration or BS supplementary course)*

DSCC 201: Tools for Data Science (fall/spring)

DSCC 275: Time Series Analysis & Forecasting in Data Science (fall only)

CSC 282: Design and Analysis Algorithms *(formerly Design and Analysis of Efficient Algorithms* (fall/spring)

**Plus all** of the following:

CSC/DSCC 242: Introduction to Artificial Intelligence (fall/spring) *(usually taken first in the core)*

CSC/DSCC 240: Data Mining (fall/spring) *(CSC242 or STAT190 is a prereq, must be taken before DSCC383W)*

CSC/DSCC 261: Database Systems (fall/spring) *(can be taken concurrently with 383W but recommended before)*

DSCC 383W: [Data Science Capstone](http://www.sas.rochester.edu/dsc/about/sponsor.html) (fall/spring) *(typically taken senior year)*

**APPLICATION AREA** *(See website for details at* [*http://www.sas.rochester.edu/dsc/undergraduate/major.html*](http://www.sas.rochester.edu/dsc/undergraduate/major.html)*):*

[Biology](http://www.sas.rochester.edu/dsc/undergraduate/major.html)

Biomedical signals and imaging *(prereq: PHYS 121 & PHYS 122)*

[Brain and cognitive sciences](http://www.sas.rochester.edu/dsc/undergraduate/major.html) *(prereq: BCSC 110)*

[Computer science, statistics, and mathematics](http://www.sas.rochester.edu/dsc/undergraduate/major.html#cs)

[Earth and environmental science](http://www.sas.rochester.edu/dsc/undergraduate/major.html#ees)

[Linguistics](http://www.sas.rochester.edu/dsc/undergraduate/major.html#ees)

[Physics](http://www.sas.rochester.edu/dsc/undergraduate/major.html#phy) *(prereqs: PHYS099, PHYS121, PHYS122, MATH164, PHYS123)*

[Economics and business](http://www.sas.rochester.edu/dsc/undergraduate/major.html) *(prereq: ECON108)*

[Political science](http://www.sas.rochester.edu/dsc/undergraduate/major.html)

Prerequisites needed for any application area courses? *(do not list on major declaration form)* \_\_\_\_\_\_\_\_\_\_

List the 3 courses fulfilling the application area selected: *(Beware of cluster or major/minor overlaps)*

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**UPPER-LEVEL WRITING:** Every data science major must complete two upper-level writing experiences.  One of the experiences is satisfied by DSCC 383W: Data Science Capstone.  The other experience can be any of:

WRTG 273: Communicating Your Professional Identity (2 credits), which is typically taken during the sophomore or junior year.

"W" courses in other departments *(i.e.ECON 231W, PHIL 257W)*

DSCC 391W: creation of a research paper or published technical report as part of an independent study, with advisor approval.

**BS SUPPLEMENTAL: Only BS students are required to take three supplementary courses.**

BS students must **take both**:

MATH 201: Introduction to Probability (fall/spring)

MATH 203: Introduction to Mathematical Statistics (fall/spring)

**Plus** BS students must take **one of the following**: *(beware of overlaps):*

CSC 244: Knowledge Representation and Reasoning in AI (fall)

CSC 245: Deep Learning (fall)

CSC 246: Machine Learning (fall/spring)

CSC 247: Natural Language Processing (spring)

CSC 248: Statistical Speech and Language Processing (fall)

CSC 249: Machine Vision (spring)

CSC 252: Computer Organization (fall/spring)

CSC 282: Design and Analysis of Efficient Algorithms (fall/spring) *(cannot be double counted if used in core or concentration)*

DSCC 201: Tools for Data Science (fall/spring) *(cannot be double counted if used in core or concentration)*

DSCC 275: Time Series Analysis & Forecasting in Data Science (fall) *(cannot be double counted if used in core or concentration)*

**CLUSTER:** Data science is a natural science major. It therefore requires majors to complete: *(do not list specific courses on major declaration form; just which cluster number)*

HUMANITIES cluster (or major/minor) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SOCIAL SCIENCE cluster (or major/minor) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*(Up to one course may serve as both an application area course and part of a cluster)*