Double Major Sample Plan

Note: Computer science and data science share many courses, so double-majoring is not allowed. However, students in data science can minor in computer science.

1. Data Science (Concentration in Finance) and Business & Finance
2. Data Science (Concentration in Marketing) and Business & Marketing
3. Data Science(Concentration in Economics) and Economics
4. Data Science (Concentration in Finance) and Economics
5. Data Science and Mathematics
6. Data Science (Concentration in Mathematics) and Honors Math
7. Data Science (Concentration in Mathematics) and Math

Data Science (Concentration in Finance) and Business & Finance

= double count
Double count 5 courses, 23 courses total for double major

Business & Finance

- Statistics for Business and Economics *
- Foundations of Finance
- Principles of Financial Accounting
- Microeconomics
- Economics of Global Business
- Corporate Finance
- 2 Business Electives
- 2 Finance Electives
- 2 Non-finance Electives
- China Business Studies Course

Data Science (Concentration in Finance)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability/ Statistics for Business and Economics *
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
  - Microeconomics
  - Principles of Financial Accounting
  - Foundations of Finance
  - Corporate Finance

* Students can take “Probability and Statistics *or* Honors Theory of Probability” and “Business Analytics” to fulfill the “Statistics for Business and Economics” requirement in the Business major.

Data Science (Concentration in Marketing) and Business & Marketing

= double count

Double count 5 courses, 23 courses total for double major

Business & Marketing

- Statistics for Business and Economics *
- Foundations of Finance
- Principles of Financial Accounting
- Microeconomics
- Economics of Global Business
- Intro to Marketing
- 2 Business Electives
- 2 Marketing Electives
- 2 Non-marketing Electives
- China Business Studies Course

Data Science (Concentration in Marketing)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability/ Statistics for Business and Economics
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
  - Microeconomics
  - Principles of Financial Accounting
  - Foundations of Finance
  - Intro to Marketing

* Students can take “Probability and Statistics *or* Honors Theory of Probability” and “Business Analytics” to fulfill the “Statistics for Business and Economics” requirement in the Business major.

Data Science (Concentration in Economics) and Economics

= double count = additional course

Double count 6 courses, 20 courses total for double major

Economics

- Probability and Statistics / Statistics for Business and Economics
- Microeconomics
- Macroeconomics / Economics of Global Business
- Intermediate Microeconomics
- Intermediate Macroeconomics
- Econometrics
- 2 Advanced Econ Courses:
    - Mathematics for Economists (substituted by Linear Algebra and Multivariable Calculus)
    - 2nd Advanced Econ Course
- 3 Econ Electives
- Economics Capstone

Data Science (Concentration in Economics)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
    - Microeconomics
    - Macroeconomics

- 1 Additional approved quantitative economics course

Data Science (Concentration in Finance) and Economics

= double count

Double count 4 courses, 23 courses total for double major

Economics Major

- Probability and Statistics / Statistics for Business and Economics
- Microeconomics
- Macroeconomics / Economics of Global Business
- Intermediate Microeconomics
- Intermediate Macroeconomics
- Econometrics
- 2 Advanced Econ Courses:
    - Mathematics for Economists (substituted by Linear Algebra and Multivariable Calculus)
    - 2nd Advanced Econ Course
- 3 Econ Electives
- Economics Capstone

Data Science Major (Concentration in Finance)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
    - Microeconomics
    - Principles of Financial

Accounting

- Foundations of Finance
- Corporate Finance

Data Science (Concentration in Finance) and Mathematics

= double count

Double count 3 courses, 24 courses total for double major

Mathematics Major

- Linear Algebra
- Foundations of Mathematical Methods / Honors Calculus
- Multivariable Calculus
- Probability and Statistics / Honors Theory of Probability
- Ordinary Differential Equations / Honors Ordinary Differential Equations
- 2 Constrained Math Electives
- 6 Additional Math Electives

Data Science Major (Concentration in Finance)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
    - Microeconomics
    - Principles of Financial Accounting
    - Foundations of Finance
    - Corporate Finance

Data Science (Concentration in Mathematics) and Honors Math

= double count = additional course

Double count 4 courses, 21 courses total for double major

Honors Math Major

- Honors Calculus (Core Curriculum)
- Honors Analysis 1
- Honors Analysis 2
- Honors Linear Algebra 1
- Honors Linear Algebra 2
- Functions of a Complex Variable
- Honors Theory of Probability
- Honors Algebra 1
- Honors Ordinary Differential Equations
- 5 Math Electives

Data Science Major (Concentration in Mathematics)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability
- Data Structures
- Multivariable Calculus (Honors Analysis 2)
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses (Choose 2 from the course list):
    - Honors Linear Algebra 2 (example course)
    - Approved math course (example course)

Data Science (Concentration in Mathematics) and Math

= double count

Double count 5 courses, 21 courses total for double major

Math Major

- Linear Algebra
- Foundations of Mathematical Methods / Honors Calculus
- Multivariable Calculus
- Probability and Statistics / Honors Theory of Probability
- Ordinary Differential Equations / Honors Ordinary Differential Equations
- 2 Constrained Math Electives
    - Honors Analysis 2 / Honors Linear Algebra 2
    - 2nd Constrained Math Elective
- 6 Additional Math Electives

Data Science Major (Concentration in Mathematics)

- Introduction to Computer Science
- Probability and Statistics / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / The Mathematics of Statistics and Data Science Part 1
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses (Choose 2 from the course list):
    - Honors Calculus (example course)
    - Honors Analysis 2 / Honors Linear Algebra 2 (example course)

8. Data Science (Concentration in Genomics) and Biology

= double count

Double count 6 or 4 courses, 29 or 30 courses in total for double major

Biology

- Foundations of Biology I
- Foundational of Biology II
- Foundations of Biology Lab
- Foundations of Chemistry I
- Foundations of Chemistry II
- Foundations of Chemistry I Lab or Foundations of Chemistry II Lab
- General Physics I or Foundations of Physics I Honors
- General Physics II or Foundations of Physics II Honors
- Foundations of Physics Lab I
- Foundations of Physics Lab II
- Math Tools for Life Science * (can be substituted by both Linear Algebra and Probability and Statistics)
- Organic Chemistry I
- Organic Chemistry I Lab
- Organismal System
- Genomics and Bioinformatics (as Major Elective 1)

Data Science (Concentration in Genomics)

- Introduction to Computer and Data Science
- Statistics for Business and Economics/ Probability and Statistics* / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra */ Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / Mathematical Statistics
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
  - Foundations of Biology I
  - Foundations of Biology II
  - Foundations of Biology Lab
  - Genomics and Bioinformatics

- Major Elective 2
- Major Elective 3
- Major Elective 4
- Major Elective 5
- Major Capstone

Note:

1. Students who take Linear Algebra and Probability and Statistics are not allowed to take the lower level Math Tools for Life Science course. In this case, student would double count six courses:
    - Foundations of Biology I
    - Foundations of Biology II
    - Foundations of Biology Lab
    - Linear Algebra
    - Probability and Statistics
    - Genomics and Bioinformatics

2. If you have not decided yet to pursue a double major and take Math Tools for Life Science first, you are required to take Linear Algebra and Probability and Statistics. In this case, student would double count four courses:
    - Foundations of Biology I
    - Foundations of Biology II
    - Foundations of Biology Lab
    - Genomics and Bioinformatics

Data Science (Concentration in Genomics) and Neural Science

= double count

Double count 5 or 3 courses, 28 or 29 courses in total for double major

Neural Science

- Foundations of Biology I
- Foundational of Biology II
- Foundations of Biology Lab
- Foundations of Chemistry I
- Foundations of Chemistry II
- Foundations of Chemistry I Lab or Foundations of Chemistry II Lab
- General Physics I or Foundations of Physics I Honors
- General Physics II or Foundations of Physics II Honors
- Foundations of Physics Lab I
- Foundations of Physics Lab II
- Math Tools for Life Science * (can be substituted by both Linear Algebra and Probability and Statistics)
- Introduction to Neural Science
- Behavioral and Integrative Neuroscience
- Cellular and Molecular Neuroscience
- One Approved Upper-level Biology or Psychology Course
- Major Elective 1

Data Science (Concentration in Genomics)

- Introduction to Computer and Data Science
- Statistics for Business and Economics/ Probability and Statistics* / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra */ Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / Mathematical Statistics
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
    - Foundations of Biology I
    - Foundations of Biology II
    - Foundations of Biology Lab
    - Genomics and Bioinformatics

- Major Elective 2
- Major Capstone

Note:

1. Students who take Linear Algebra and Probability and Statistics are not allowed to take the lower level Math Tools for Life Science course. In this case, student would double count five courses:
    - Foundations of Biology I
    - Foundations of Biology II
    - Foundations of Biology Lab
    - Linear Algebra
    - Probability and Statistics

2. If you have not decided yet to pursue a double major and take Math Tools for Life Science first, you are required to take Linear Algebra and Probability and Statistics. In this case, student would double count three courses:
    - Foundations of Biology I
    - Foundations of Biology II
    - Foundations of Biology Lab

Data Science (Concentration in Political Science) and Social Science (Political Science Track)

= double count

Double count 3 courses, 20 courses in total for double major

Social Science (Political Science Track)

- Foundational Course 1
  Introduction to Comparative Politics
- Foundational Course 2
  Introduction to International Politics
- Methods Course 1
  Statistics for Business and Economics/ Probability and Statistics
- Methods Course 2
- Social Science Core 1
- *Social Science Core 2
- *Focus Course 1 (200-level) in Political Science track
- Focus Course 2 (300-level) in Political Science track
- Focus Course 3 (300-level) in Political Science track
- Social Science Capstone 1
- Social Science Capstone 2

**Students matriculated in Fall 22 and before may take one less Social Science Core or Focus course*

Data Science (Concentration in Political Science)

- Introduction to Computer and Data Science
- Statistics for Business and Economics/ Probability and Statistics / Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / Mathematical Statistics
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:
  - Introduction to Comparative Politics
  - Introduction to International Politics

Data Science (Concentration in Psychology) and Social Science (Psychology Track)

= double count = optional choices

Double count 4 courses, 20 courses in total for double major

Social Science (Psychology Track)

- Foundational Course 1
  Introduction to Psychology
- Foundational Course 2
- Methods Course 1
  Statistics for Business and Economics / Probability and Statistics
- Methods Course 2
  Empirical Research Practice
- Social Science Core 1
  Legal Psychology
- *Social Science Core 2
- Focus Course 1 (200-level) in Psychology track
  Developmental Psychology
- Focus Course 2 (300-level) in Psychology track
  Psychology of Human Sexuality
- *Focus Course 3 (300-level) in Psychology track
- Social Science Capstone 1
- Social Science Capstone 2

**Students matriculated in Fall 22 and before may take one less Social Science Core or Focus course*

Data Science (Concentration in Psychology)

- Introduction to Computer and Data Science
- Statistics for Business and Economics/ Probability and Statistics /Honors Theory of Probability
- Data Structures
- Multivariable Calculus
- Linear Algebra / Linear Algebra and Differential Equations / Honors Linear Algebra 1
- Machine Learning
- Econometrics / Mathematical Statistics
- Information Visualization / Algorithms / Intro to Optimization and Mathematical Programming
- Databases
- Data Science Capstone
- Domain-area Courses:

  Required Two Courses:
  - Introduction to Psychology
  - Empirical Research Practice

  Choose One Course:
  - Developmental Psychology

- Psychology of Human Sexuality
- Legal Psychology