

COMPUTER SCIENCE B.S. - DATA SCIENCE

Bachelor of Science - Computer Science; Concentration in Data Science

General Education Requirements

Information regarding these requirements can be found in the General Education Section (<http://catalog.umt.edu/academics/general-education-requirements/>) of the catalog.

Summary

| Code | Title | Hours |
|-------------------------------|-------|--------------|
| Computer Science Core Courses | | 33 |
| Science Core | | 9-10 |
| Science Electives | | 6-10 |
| Communication Requirement | | 3 |
| Data Science Concentration | | 35-41 |
| Total Hours | | 86-97 |

Degree Specific Credits: 86-97

Required Cumulative GPA: 2.0

Computer Science Core Courses

Notes:

- CSCI 315E will fulfill the upper-division writing requirement.
- Only students choosing the Software Engineering concentration may take M 162 (Applied Calculus) instead of M 171 (Calculus I).

| Code | Title | Hours |
|---|---|-----------|
| Complete all of the following courses: | | |
| CSCI 106 | Careers in Computer Science | 1 |
| CSCI 150 | Introduction to Computer Science | 3 |
| CSCI 151 | Interdisciplinary Computer Science I | 3 |
| CSCI 152 | Interdisciplinary Computer Science II | 3 |
| CSCI 232 | Intermediate Data Structures and Algorithms | 4 |
| CSCI 258 | Web Application Development | 3 |
| CSCI 315E | Computers, Ethics, and Society | 3 |
| CSCI 332 | Advanced Data Structures and Algorithms | 3 |
| CSCI 340 | Database Design | 3 |
| M 171 | Calculus I | 4 |
| or M 162 | Applied Calculus | |
| M 225 | Introduction to Discrete Mathematics | 3 |
| Total Hours | | 33 |

Minimum Required Grade: C-

Science Core

Rule: Complete 1 of the following subcategories of science sequences. 9-10 total credits required.

Biology Sequence Option

| Code | Title | Hours |
|---|--|----------|
| Complete all of the following courses: | | |
| BIOB 160N | Principles of Living Systems | 3 |
| BIOB 161N | Principles of Living Systems Lab | 1 |
| BIOB 170N | Principles of Biological Diversity | 3 |
| BIOB 171N | Principles of Biological Diversity Lab | 2 |
| Total Hours | | 9 |

Minimum Required Grade: C-

Chemistry Sequence Option

| Code | Title | Hours |
|---|--|-----------|
| Complete all of the following courses: | | |
| CHMY 141N & CHMY 142N | College Chemistry I and College Chemistry I Lab | 5 |
| CHMY 143N & CHMY 144N | College Chemistry II and College Chemistry II Lab | 5 |
| Total Hours | | 10 |

Minimum Required Grade: C-

Physics Sequence Option

| Code | Title | Hours |
|---|--|-----------|
| Complete all of the following courses: | | |
| PHSX 215N | Fundamentals of Physics with Calculus I | 4 |
| PHSX 216N | Physics Laboratory I with Calculus | 1 |
| PHSX 217N | Fundamentals of Physics with Calculus II | 4 |
| PHSX 218N | Physics Laboratory II with Calculus | 1 |
| Total Hours | | 10 |

Minimum Required Grade: C-

Science Electives

Rule: Complete 2 of the following courses. Laboratory courses must be taken in conjunction with their associated lecture course.

Note: The Biology, Chemistry, or Physics sequence chosen to fulfill the science core may not count toward the science electives requirement.

| Code | Title | Hours |
|---|--|-------------|
| Complete two of the following courses: | | |
| ASTR 131N & ASTR 134N | Planetary Astronomy and Planetary Astronomy Lab | 6-10 |
| ASTR 132N & ASTR 135N | Stars, Galaxies, and the Universe and Stars, Galaxies, and the Universe Lab | |
| BIOB 160N & BIOB 161N | Principles of Living Systems and Principles of Living Systems Lab | |
| BIOB 170N & BIOB 171N | Principles of Biological Diversity and Principles of Biological Diversity Lab | |
| BIOM 250N & BIOM 251 | Microbiology for Health Sciences and Microbiology Health Sciences Lab | |

| | | |
|--------------------------|---|-------------|
| CHMY 141N & CHMY 142N | College Chemistry I and College Chemistry I Lab | |
| CHMY 143N & CHMY 144N | College Chemistry II and College Chemistry II Lab | |
| FORS 201 | Forest Biometrics | |
| GEO 101N & GEO 102N | Introduction to Physical Geology and Introduction to Physical Geology Lab | |
| PHSX 215N & PHSX 216N | Fundamentals of Physics with Calculus I and Physics Laboratory I with Calculus | |
| PHSX 217N & PHSX 218N | Fundamentals of Physics with Calculus II and Physics Laboratory II with Calculus | |
| PHSX 343 | Modern Physics | |
| PHSX 444 | Advanced Physics Lab | |
| Total Hours | | 6-10 |

Communication Requirement

| Code | Title | Hours |
|---|---------------------------------|----------|
| Complete one of the following courses: | | 3 |
| COMX 111A | Introduction to Public Speaking | |
| COMX 242 | Argumentation | |
| Total Hours | | 3 |

Minimum Required Grade: C-

Data Science Concentration

Notes:

- A maximum of 3 credits of Computer Science electives may be in research credits (CSCI 390 or CSCI 490).
- A maximum of 3 credits of Computer Science electives may be in internship credits (CSCI 398 or CSCI 498).

| Code | Title | Hours |
|--|---|------------|
| Complete all of the following courses: | | |
| M 172 | Calculus II | 4 |
| M 221 | Introduction to Linear Algebra | 4 |
| STAT 341 | Introduction to Probability and Statistics | 3 |
| CSCI 444 | Data Visualization | 3 |
| CSCI 447 | Machine Learning | 3 |
| CSCI 477 | Simulation | 3 |
| Advanced Math Elective - Complete one of the following courses: | | 3 |
| M 273 | Multivariable Calculus | |
| M 274 | Introduction to Differential Equations | |
| M 440 | Numerical Analysis | |
| M 445 | Statistical, Dynamical, and Computational Modeling | |
| M 461 | Data Science Analytics | |
| Data Science Applications Elective - Complete one of the following courses: | | 3-6 |
| BMIS 482 | Big Data Project | |
| CSCI 426 & CSCI 427 | Software Design & Development I and Software Design and Development II | |
| CSCI 490 | Research | |

| | | |
|---|-----------------------|--------------|
| CSCI 498 | Internship | |
| M 467 | Data Science Projects | |
| Upper-Division Computer Science Electives | | 9-12 |
| Complete 9-12 credits of CSCI courses numbered 300 and above or a second upper-division Advanced Math Elective. | | |
| Total Hours | | 35-41 |

Minimum Required Grade: C-