COMPUTER SCIENCE B.S. - ALGORITHM DESIGN

Bachelor of Science - Computer Science; Concentration in Algorithm Design

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
Algorithm Design Concentration		38
Total Hours		**89-94**

Degree Specific Credits: 87-94

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:		**6-10**
ASTR 131N & ASTR 134N	Planetary Astronomy and Planetary Astronomy Lab	
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-

Algorithm Design 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 361	Computer Architecture	3
CSCI 432	Advanced Algorithm Topics	3
Algorithm Development Elective - Complete 6 credits of the following courses:		**6**
CSCI 451	Computational Biology	
CSCI 480	Applied Parallel Computing Techniques	
CSCI 491	Special Topics (Software Optimization or Cybersecurity)	
Upper-Division Computer Science Electives		**15**
Complete 15 credits of upper division CSCI courses and as many as 3 credits of approved upper division math elective.		
Approved upper division math elective - May be taken in place of one upper division CS elective:		
M 361	Discrete Optimization	
M 362	Linear Optimization	
M 414	Deterministic Models	
M 440	Numerical Analysis	
M 485	Graph Theory	
STAT 421	Probability Theory	
Total Hours		**38**

Minimum Required Grade: C-