

2021-2022

Computer Science, B.S.
John Brown University
Oct. 27, 2020

University Core Curriculum	Hours
Old Testament Survey	3
New Testament Survey	3
Essentials of Evangelical Theology	3
Essentials of Christian Formation	2
Gateway Seminar in Christian Scholarship	2
English I: Composition	3
English II: Literary Analysis and Research	3
Integrated Humanities I	3
Integrated Humanities II	3
Intercultural Engagement*	3
Natural Science*	6
Whole Person Wellness*	2
Arts, Humanities, Social and Behavioral Sciences*	9
Total Credit Hours	45

*See the Academic Catalog for the list of classes that meet the criteria.

Computer Science Core	Hours
CS 1113 Introduction to Computing	3
CS 2233 Object-Oriented Programming	3
CS 3533 Software Engineering	3
CS 3243 Data Structures	3
CS 3423 Mobile/Web Applications	3
MTH 1153 Linear Algebra	3
MTH 2213 Discrete Mathematics	3
Mathematics Elective (Select one from the following.)	3
MTH 1123 Survey of Calculus	
MTH 1134 Calculus I	
Statistics Elective (Select one from the following.)	3
BUS 2193 Business Statistics	
MTH 1003 Introduction to Statistics	
MTH 2103 Applied Statistics for Scientists	
MTH 3183 Probability and Statistics	
PSY 2383 Statistics for the Behavioral Sciences	
Total Credit Hours	27

Major Field Courses	Hours
CS 3213 Computer Architecture	3
CS 3613 Operating Systems	3
CS 3363 Database Design	3
CS 4513 Computer Science/Cybersecurity Capstone I	3
CS 4523 Computer Science/Cybersecurity Capstone II	3
EE 2213 Digital Electronics	3
EN 1112 Introduction to Engineering and Computer Science	2
EN 3222 Collaborative Design Lab	2
Total Credit Hours	22

Emphasis: 12-20 Hours

Select one of the following emphases. Note that some of the emphasis courses may also satisfy Core Curriculum requirements.

Bioinformatics Emphasis	Hours
BIO 1124 Cell Biology	4
BIO 2174 Genetics	4
BIO 3314 Molecular Genetics	4
CHM 1124 General Chemistry I	4
One of the following:	4
BIO 3174 Molecular Cell Biology	
BIO 3334 Microbiology	
Total Credit Hours	20

Business Analytics Emphasis	Hours
<i>Choose BUS 2193 for the Statistics Elective.</i>	
DAT 3113 Basic Data Analytics	3
DAT 4253 Business Decision Modeling & Predictive Analysis	3
DAT 4313 Data Visualization	3
MGT 3213 Management Science	3
Total Credit Hours	12

Computer Engineering Emphasis	Hours
<i>Choose MTH 1134 for the Mathematics elective.</i>	
EE 2223 Electrical Circuits	3
EE 3123 Embedded Systems	3
EE 3323 Digital Systems	3
EN 1323 Concepts in Electrical Engineering	3
Total Credit Hours	12

Creative Writing Emphasis	Hours
EGL 2273 Introduction to Creative Writing	3
EGL 2393 Advanced Composition	3
EGL 4473 Creative Writing Workshop: Selected Genres	3
Three hours from any 2000-4000 level literature course	3
Total Credit Hours	12

Cybersecurity Emphasis	Hours
12 hours from the following:	
CYB 7103 Cybersecurity Foundations	
CYB 7133 Digital Forensics	
CYB 7213 Network Security	
CYB 7311 Block Chain Fundamentals	
CYB 8313 Secure Software Programming	
CYB 8411 Malware Analysis	
CYB 8421 Secure Software Design	
Total Credit Hours	12

Gaming/Web Development Emphasis	Hours
12 hours from the following:	
ART 1123 Computer Graphics	
ART 2273 3D Modeling	
ART 3503 Motion Graphics	
ART 4113 Visual FX 1	
ART 4123 Visual FX 2	
Total Credit Hours	12

General Emphasis	Hours
12 hours from the following:	
CS 3233 Selected Topics	
CS 3443 Machine Learning	
CYB 7103 Cybersecurity Foundations	
CYB 7133 Digital Forensics	
CYB 7213 Network Security	
CYB 7311 Block Chain Fundamentals	
CYB 8313 Secure Software Programming	
CYB 8411 Malware Analysis	
CYB 8421 Secure Software Design	
DAT 3113 Basic Data Analytics	
DAT 4253 Business Decision Modeling & Pred Analysis	
DAT 4313 Data Visualization	
EE 3123 Embedded Systems	
MGT 3213 Management Science	
MKT 4223 Marketing Analytics	
Total Credit Hours	12

Marketing Analysis Emphasis	Hours
<i>Choose BUS 2193 for the Statistics elective.</i>	
DAT 3113 Basic Data Analytics	3
DAT 4253 Business Decision Modeling & Predictive Analysis	3
DAT 4313 Data Visualization	3
MKT 4223 Marketing Analytics	3
Total Credit Hours	12

Mathematics Emphasis	Hours
<i>Choose MTH 1134 for the Mathematics elective.</i>	
<i>Choose MTH 3183 for the Statistics elective.</i>	
MTH 1144 Calculus II	4
MTH 2123 Vector Calculus	3
MTH 3103 Foundations of Mathematics	3
One of the following:	3
MTH 3113 Selected Topics	
MTH 3173 Mathematical Modeling and Simulation	
MTH 4113 Selected Topics	
MTH 4123 Abstract Algebra	
MTH 4143 Real Analysis	
MTH 4223 Mathematics Research	
Total Credit Hours	13

Music Emphasis	Hours
<i>MUS 1103 is a prerequisite for MUS 1113. A placement exam is administered by the faculty in which students can test out of MUS 1103. MUS 1103 does not count towards the music emphasis. Students may waive the MUS 1113 requirement (i.e., place directly into MUS 2113) via consultation with the music faculty.</i>	
MUS 1113 Theory I	3
MUS 1203 Liberal Arts Foundations for the Musician	3
MUS 2113 Theory II	3
One of the following:	3
MUS 3213 History of Music I	
MUS 3223 History of Music II	
Total Credit Hours	12

Philosophy Emphasis	Hours
RPH 3343 Ancient & Medieval Philosophy	3
RPH 3353 Modern Philosophy	3
Two of the following:	6
RPH 2103 Introduction to Philosophy	
RPH 2323 Logic	
RPH 2423 Ethics	
RPH 4433 Philosophy of Religion	
RPH 4483 Selected Topics	
Total Credit Hours	12

Psychology Emphasis	Hours
<i>Choose PSY 2383 for the Statistics elective.</i>	
PSY 1013 Introductory Psychology	3
PSY 2393 Research Methods	3
PSY 4333 Cognitive Psychology	3
One of the following:	3
PSY 3423 Social Psychology	
PSY 4343 Theories of Learning	
PSY 4213 Abnormal Psychology	
Total Credit Hours	12

Robotics Emphasis	Hours
<i>Choose MTH 1134 for the Mathematics elective.</i>	
CS 3443 Machine Learning	3
EE 3123 Embedded Systems	3
EN 1323 Concepts in Electrical Engineering	3
EN 3713 Robotics	3
Total Credit Hours	12

Electives as necessary to complete a minimum total hours. Minimum Total Credit Hours for Graduation:	120
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