

COMPUTER SCIENCE - BACHELOR OF SCIENCE

The Bachelor of Science in Computer Science is the traditional undergraduate degree in Computer Science. It is rigorously focused on educating the student in the fundamental disciplines of Computer Science. It prepares the student for any technological field in industry, and also provides the preparation for graduate studies in Computer Science. It is the main undergraduate degree in the Computer Science department, and should be the choice of a single-major Computer Science student. This degree is accredited by the ABET Computing Accreditation Commission (CAC) under the General and Computer Science Program Criteria.

General Requirements Exception

A grade of at least C- must be earned in each of the courses taken to satisfy the departmental and non-departmental requirements. No course may be counted as satisfying both a departmental and a non-departmental requirement. No course taken to satisfy either a departmental or a non-departmental requirement may be taken S/U.

Requirements

Students who plan to seek employment immediately after the bachelor level should strongly consider taking one of the concentration area curricula in addition to the general and departmental requirements. An elective course cannot be used for more than two concentrations. A course that is required for one concentration cannot be used as an elective course of another one.

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300/3000 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

| Prefix | Title | Credits |
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| General Education Requirement | | |
| <i>Area I: Communications</i> ¹ | | |
| <i>English Composition - Level 1</i> ² | | 4 |
| <i>English Composition - Level 2</i> | | |
| ENGL 2210G | Professional and Technical Communication | 3 |
| or ENGL 2210H | Professional and Technical Communication | |
| <i>Oral Communication</i> | | |
| Choose one from the following: | | 3 |
| COMM 1115G | Introduction to Communication | |
| COMM 1130G | Public Speaking | |
| HNRS 2175G | Introduction to Communication Honors | |
| <i>Area II: Mathematics</i> | | |
| MATH 1511G | Calculus and Analytic Geometry I ³ | 4 |
| or MATH 1511H | Calculus and Analytic Geometry I Honors | |
| <i>Area III/IV: Laboratory Sciences and Social/Behavioral Sciences</i> | | 11 |
| <i>Area III: Laboratory Sciences</i> | | |
| Choose two different courses from the following: | | |
| ASTR 1115G | Introduction to Astronomy Lecture & Laboratory | |

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| BIOL 2610G & BIOL 2610L | Principles of Biology: Biodiversity, Ecology, and Evolution and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory | |
| BIOL 2110G | Principles of Biology: Cellular and Molecular Biology | |
| BIOL 2110L | Principles of Biology: Cellular and Molecular Biology Laboratory | |
| CHEM 1215G | General Chemistry I Lecture and Laboratory for STEM Majors | |
| CHEM 1225G | General Chemistry II Lecture and Laboratory for STEM Majors | |
| GEOG 1110G | Physical Geography | |
| GEOL 1110G | Physical Geology | |
| HNRS 2116G | Earth, Time and Life | |
| PHYS 1230G & PHYS 1230L | Algebra-Based Physics I and Algebra-Based Physics I Lab | |
| PHYS 1240G & PHYS 1240L | Algebra-Based Physics II and Algebra-Based Physics II Lab | |
| PHYS 1310G & PHYS 1310L | Calculus -Based Physics I and Calculus -Based Physics I Lab | |
| PHYS 1320G & PHYS 1320L | Calculus -Based Physics II and Calculus -Based Physics II Lab | |
| Area IV: Social/Behavioral Sciences (3 credits) ² | | |
| <i>Area V: Humanities</i> ² | | 3 |
| <i>Area VI: Creative and Fine Arts</i> ² | | 3 |
| <i>General Education Elective</i> | | |
| MATH 1521G | Calculus and Analytic Geometry II ³ | 4 |
| or MATH 1521H | Calculus and Analytic Geometry II Honors | |
| Viewing a Wider World ⁴ | | 6 |
| Departmental/College Requirements | | |
| CSCI 1720 | Computer Science I | 4 |
| CSCI 2210 | Object-Oriented Programming | 4 |
| CSCI 2220 | Introduction to Data Structures and Algorithms | 4 |
| CSCI 2230 | Assembly Language and Machine Organization | 4 |
| CSCI 2310 | Discrete Mathematics for Computer Science | 4 |
| CSCI 3730 | Compilers and Automata Theory | 4 |
| CSCI 3710 | Software Development | 4 |
| CSCI 3720 | Data Structures and Algorithms | 4 |
| CSCI 4110 | Computing Ethics and Social Implications of Computing | 1 |
| CSCI 4980 | Senior Project | 4 |
| or CSCI 4999 | Senior Thesis | |
| CSCI 4105 | Programming Language Structure I | 3 |
| CSCI 4120 | Operating Systems I | 3 |
| CSCI 4140 | Database Management Systems I | 3 |
| Select 6 credits from the following: ⁵ | | 6 |
| CSCI 4225 | Introduction to Cryptography | |
| CSCI 4270 | Principles of Virtual Reality | |
| CSCI 4265 | Modern Web Technologies | |
| CSCI 4425 | Introduction to Deep Learning | |
| CSCI 4430 | Graph Data Mining | |
| CSCI 4230 | Architectural Concepts I | |
| CSCI 4405 | Artificial Intelligence I | |
| CSCI 4410 | Computer Graphics I | |
| CSCI 4255 | Digital Game Design | |
| CSCI 4205 | Computer Security | |
| CSCI 4996 | Special Topics | |
| CSCI 4130 | Linux System Administration | |

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| CSCI 4245 | Computer Networks I | |
| CSCI 4260 | Visual Programming | |
| CSCI 4250 | Human-Centered Computing | |
| CSCI 4305 | Bioinformatics | |
| CSCI 4420 | Applied Machine Learning I | |
| CSCI 4415 | Introduction to Data Mining | |
| CSCI 5310 | Bioinformatics Programming | |
| CSCI 4215 | Parallel Programming | |
| CSCI 4220 | Cloud and Edge Computing | |
| CSCI 4235 | Cellular Networks and Mobile Computing | |
| CSCI 4240 | Software Reverse Engineering | |
| CSCI 4435 | Text Mining and Natural Language Processing | |
| CSCI 4440 | Generative Artificial Intelligence | |

Non-Departmental Requirements (in addition to Gen.Ed/VWW)

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| MATH 2415 | Introduction to Linear Algebra | 3 |
| or MATH 4230 | Applied Linear Algebra | |

Select one from the following: 3

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| MATH 3110 | Introduction to Modern Algebra | |
| MATH 3120 | Introduction to Analysis | |
| MATH 3140 | Introduction to Numerical Methods | |
| MATH 3160 | Introduction to Ordinary Differential Equations | |
| MATH 4320 | Logic and Set Theory | |
| MATH 4330 | Elementary Number Theory | |

Select one from the following: 3

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| A ST 311 | Statistical Applications | |
| STAT 3110 | Statistics for Engineers and Scientists | |
| STAT 4210 | Probability: Theory and Applications | |

Lab Science CoursesSelect one from the following: ⁵ 4

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| BIOL 2610G & BIOL 2610L | Principles of Biology: Biodiversity, Ecology, and Evolution and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory | |
| BIOL 2110G | Principles of Biology: Cellular and Molecular Biology | |
| BIOL 2110L | Principles of Biology: Cellular and Molecular Biology Laboratory | |
| CHEM 1215G | General Chemistry I Lecture and Laboratory for STEM Majors | |
| CHEM 1225G | General Chemistry II Lecture and Laboratory for STEM Majors | |
| PHYS 1230G & PHYS 1230L | Algebra-Based Physics I and Algebra-Based Physics I Lab | |
| PHYS 1240G & PHYS 1240L | Algebra-Based Physics II and Algebra-Based Physics II Lab | |
| PHYS 2110 & 2110L | Mechanics and Experimental Mechanics | |
| PHYS 2140 & 2140L | Electricity and Magnetism and Electricity & Magnetism Laboratory | |
| PHYS 1310G & PHYS 1310L | Calculus -Based Physics I and Calculus -Based Physics I Lab | |
| PHYS 1320G & PHYS 1320L | Calculus -Based Physics II and Calculus -Based Physics II Lab | |

Second Language Requirements: (not required)**Electives, to bring the total credits to 120** ⁷ 14

Students who plan to seek employment immediately after the bachelor level should strongly consider taking one of the concentration area curricula in addition to the general and departmental requirements. ⁸

Total Credits 120

- ¹ Students with Area I transfer credits may sometimes complete this requirement with 9 credits
- ² See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses
- ³ MATH 1511G Calculus and Analytic Geometry I and MATH 1521G Calculus and Analytic Geometry II are required for the degree but students may need to take any prerequisites needed to enter MATH 1511G or MATH 1521G first.
- ⁴ See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses.
- ⁵ A course can satisfy only one requirement.
- ⁶ Must be taken for 3 credits to count as a course.
- ⁷ Elective credit may vary based on prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However students may end up needing to complete more or less on a case-by-case basis and students should discuss elective requirements with their advisor.
- ⁸ For concentration coursework see,
 - Algorithm Theory (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-algorithm-theory-bachelor-science/>)
 - Artificial Intelligence (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-artificial-intelligence-bachelor-science/>)
 - Big Data and Data Science (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-big-data-science-bachelor-science/>)
 - Cybersecurity (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-cybersecurity-bachelor-science/>)
 - Computer Networking (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-computer-networking-bachelor-science/>)
 - Human Computer Interaction (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-human-computer-interaction-bachelor-science/>)
 - Software Development (<https://catalogs.nmsu.edu/nmsu/arts-sciences/computer-science/computer-science-software-development-bachelor-science/>)

Second Language Requirement

For the Bachelor of Science with a major in Computer Science (including all Concentration Areas), there is no second language requirement for the degree.