

Science

Overview

Associate of Science

SPECIALIZATIONS

Science

Computer Science

Mathematics

Mathematics and Science Teacher Preparation

PURPOSE: The associate degree in Science is intended for those who plan to transfer to a four-year college or university to complete a bachelor of science degree in the natural and physical sciences, mathematics, or computer science. There are four specializations in this degree program that enable students to complete courses that align with their intended majors at a four-year college or university.

The **Science specialization** is designed for persons who plan to transfer to a four-year college or university in a major that requires a background in the natural or physical sciences and mathematics. With the many advances taking place in all areas of science, the opportunities for persons with expertise in this area are rapidly increasing. This program provides the necessary training for transfer into a broad range of scientific fields, from botany to zoology and from chemistry or geology to physics. In addition, the Science specialization is designed to meet the requirements for admission to a professional school or upper-division major for career preparation in many of the medical professions including nursing, pharmacy, medicine, and veterinary medicine.

The **Computer Science specialization** is designed for persons who plan to transfer to a four-year college or university in a major that requires a background in the sciences, mathematics, and computer science. Student familiarity with or expertise in computer science is frequently a requirement for study in the disciplines of biology, chemistry, physics, science education, engineering, manufacturing, and related fields. This program will provide the opportunity to obtain this needed preparation. In this rapidly changing field, students should regularly meet with their advisor to keep up with course and curriculum updates.

The **Mathematics specialization** is designed for persons who plan to transfer to a four-year college or university in a major that requires a background in the sciences, mathematics, and computer science. The Mathematics specialization includes the courses usually required in the first two years of a baccalaureate degree program in mathematics.

The **Mathematics and Science Teacher Preparation specialization** is designed for persons who plan to transfer to a four-year college or university in a major that requires a background in the sciences and/or mathematics, and who plan to teach at the elementary, middle, or secondary school level. The Mathematics and Science Teacher Preparation specialization enables the student to participate in field experiences in area schools.

ADMISSION REQUIREMENTS: General college curricular admission

PROGRAM NOTES: The following high school units are strongly recommended for the Science specialization: four units of English, three units of college preparatory mathematics, one unit of laboratory science, and two units of foreign language.

The following high school units are strongly recommended for the Computer Science and Mathematics specializations: four units of English; four units of college preparatory mathematics, including algebra (two units), geometry, and trigonometry (or advanced math); two units of laboratory science; and one unit of social studies. Students in the Computer Science and Mathematics specializations are urged to begin their programs of study during the fall semester because many courses are sequential and only offered once a year.

Students are encouraged to seek information from the upper-division college, university, or professional school to which transfer is intended as to specific requirements for a particular major or specific admission requirements. Students are advised that grades of C or higher are required for a course to transfer to a 4-year institution.

NOTE TO PROSPECTIVE TEACHERS: Students who wish to be licensed to teach in Virginia should earn a baccalaureate degree in a liberal arts, science, or mathematics field. Students should consult with their advisor regarding elective choices that match their desired teaching endorsement area(s). While enrolled at the community college, students should prepare for and successfully complete Praxis Core (Reading, Writing, and Mathematics), the initial teacher licensure examination.

COMPUTER COMPETENCY REQUIREMENT: Students in this program will meet the college's computer competency requirement by passing the computer competency exam, administered in the testing centers on each campus, or by completing CSC 155. Students not passing the computer competency exam for CSC 155 may retake the exam only once.

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Roadmap

Science Specialization ¹

Order	Course	Title	Credits
1	SDV 101	Orientation to STEM Disciplines	1
2	MTH 167 or MTH 161 & MTH 162 or MTH 263	Precalculus with Trigonometry or Precalculus I & Precalculus II or Calculus I	5 or 3 & 3 or 4
3	ENG 111	College Composition I	3
4	CHM 111 or GOL 105 or PHY 201 or PHY 241	Laboratory Science I	4
5	HIS 101 or HIS 121	History Elective	3
6	CSC 155	Computer Concepts and Applications	3
7	MTH 263 or MTH 245 or MTH 264	Mathematics Elective	3-4
8	CHM 112 or GOL 106 or PHY 202 or PHY 242 (Choose second semester of Laboratory Science I)	Laboratory Science II	4
9	ENG 112	College Composition II	3
10	HLT 105 or HLT 106 or DIT 121 or PED 109	Personal Wellness Elective	1
11	HIS 102 or HIS 122	History Elective	3

12	BIO 107 or BIO 141 or BIO 150 or CHM 241	Mathematics/Laboratory Science Elective	3-4
13	BIO 101 or GOL 105 or PHY 201 or PHY 241 (Choose course not taken for Laboratory Science I)	Laboratory Science III	4
14	ECO 201 or PSY 200 or PSY 230	Social/Behavioral Science Elective	3
15	ART 100 or ENG 251 or PHI 220	Humanities/Fine Arts Elective	3
16	BIO 142 or CHM 242	Mathematics/Laboratory Science Elective	3-4
17	BIO 102 or GOL 106 or PHY 202 or PHY 242 (Choose second semester of Laboratory Science III)	Laboratory Science IV	4
18	CST 229 or MUS 121 or PHI 111	Humanities/Fine Arts Elective	3
19	BIO 206 or BIO 256 or CST 110	Approved Elective	3
20	CHM 245 & CHM 246	Approved Elective	2 & 2 (CHM)

Transfer Associate Degrees & Certificates

	or SOC 200 or MTH 245 (If not already completed)	or 3	
TOTAL	Science Associate of Science - Science Specialization	61-66	

02.26.20

¹ Students are advised that grades of "C" or higher are required for a course to transfer to a 4-year institution.

CURRICULUM:

Computer Science Specialization

Order	Course	Title	Credits
1	CSC 201	Computer Science I	4
2	SDV 101	Orientation to STEM Disciplines	1
3	ENG 111	College Composition I	3
4	HIS 101 or HIS 121	History Elective	3
5	PHI 111 or ENG 251 or MUS 121 or CST 151	Humanities/Fine Arts Elective	3
6	CSC 202	Computer Science II	4
7	MTH 263	Calculus I	4
8	ENG 112	College Composition II	3
9	HIS 102 or HIS 122	History Elective	3
10	CSC 208	Introduction to Discrete Structures	3
11	BIO 101 or CHM 111 or GOL 105 or PHY 241	Laboratory Science I	4
12	MTH 264	Calculus II	4
13	PHI 220 or ENG 241 or	Humanities/Fine Arts Elective	3

	ART 100 or CST 229		
14	MTH 245 or MTH 266 or PHI 111 or PHI 220 (Choose course not taken for Humanities, Math/ Science/ Computer Science elective)	Approved Elective	3
15	CSC 205	Computer Organization	4
16	BIO 102 or CHM 112 or GOL 106 or PHY 242 (must take part II of Laboratory Science I)	Laboratory Science II	4
17	MTH 245 or MTH 266 or MTH 267 or BIO 101 or CHM 111 or GOL 105 or PHY 241 (must choose a course not previously satisfied)	Mathematics or Laboratory Science or Computer Science Elective	3-4
18	ECO 201 or ECO 202 or PSY 200 or SOC 200	Social/Behavioral Science Elective	3
19	HLT 105 or	Personal Wellness Elective	1 or

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	HLT 106 or DIT 121 or PED 109	3 (DIT only)
TOTAL	Science Associate of Science - Computer Science Specialization	60-63

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CURRICULUM:

Mathematics Specialization

Order	Course	Title	Credits
1	SDV 101	Orientation to STEM Dicipines	1
2	MTH 263	Calculus I	4
3	ENG 111	College Composition I	3
4	BIO 101 or CHM 111 or GOL 105 or PHY 241	Laboratory Science I	4
5	HIS 101 or HIS 121	History Elective	3
6	CSC 155	Computer Concepts and Applications	3
7	MTH 264	Calculus II	4
8	BIO 102 or CHM 112 or GOL 106 or PHY 242 (Choose second semester of Laboratory Science I)	Laboratory Science II	4
9	ENG 112	College Composition II	3
10	HLT 105 or HLT 106 or DIT 121 or PED 109	Personal Wellness Elective	1
11	HIS 102 or	History Elective	3

	HIS 122		
12	MTH 265	Calculus III	4
13	CHM 111 or CHM 241 and CHM 245 or GOL 105 or PHY 241 or MTH 266 or MTH 267 or CSC 201 (Choose course not taken for Laboratory Science I)	Mathematics, Laboratory Science, or Computer Science Elective	3-4
14	ECO 201 or PSY 230 or SOC 200	Social/Behavioral Science Elective	3
15	PHI 220 or ENG 241 or ART 100 or CST 229	Humanities/Fine Arts Elective	3
16	MTH 288	Discrete Mathematics	3
17	MTH 266 or MTH 267 or PSY 200 or ECO 202	Approved Elective	3
18	PHI 111 or ENG 251 or MUS 121 or CST 151	Humanities/Fine Arts Elective	3
19	MTH 245	Statistics I	3
20	MTH 266 or MTH 267 or PSY 200 or ECO 202	Approved Elective	3

Transfer Associate Degrees & Certificates

TOTAL Science Associate of Science - Mathematics Specialization **63**

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CURRICULUM:

Mathematics and Science Teacher Preparation

Order	Course	Title	Credit
1	SDV 101	Orientation to STEM Disciplines	1
2	MTH 167 or MTH 161 & MTH 162 or MTH 263 ¹	Precalculus with Trigonometry or Calculus I	5 or 3&3 or 4
3	ENG 111	College Composition I	3
4	CHM 111 or GOL 105 or PHY 201 or PHY 241 ³	Approved Laboratory Science I	4
5	HIS 101 or HIS 121	History of Western Civilization I or United States History I	3
6	CSC 155	Computer Concepts and Applications	3
7	MTH 245 or MTH 263 or MTH 264 ¹	Statistics I or Calculus I or Calculus II	3 or 4 or 4
8	CHM 112 or GOL 106 or PHY 202 or PHY 242 ³	Approved Laboratory Science II (choose second semester of Laboratory Science I)	4
9	ENG 112	College Composition II	3
10	HLT 105 or HLT 106	CPR or First Aid and Safety	1 or 2
11	EDU 200	Introduction to Teaching as a Profession	3
12	BIO 107 or	Approved Mathematics, Laboratory Science,	4 or

BIO 141
or
BIO 150
or
CHM 241²

or Computer Science Elective
4
or
4
or
3

13	BIO 101 or GOL 105 or PHY 201 or PHY 241 ²	Approved Laboratory Science III (choose course not taken for Laboratory Science I)	4
14	ECO 201 or GEO 210 or PSY 200 or PSY 230 ³	Social/Behavioral Science Elective	3
15	ART 100 or ENG 251 or PHI 220	Humanities/Fine Arts Elective	3
16	BIO 142 or CHM 242 ²	Mathematics/Laboratory Science Elective	4 or 3
17	BIO 102 or GOL 106 or PHY 202 or PHY 242 ²	Approved Laboratory Science IV (choose second semester of Laboratory Science III)	4
18	CST 229 or MUS 121 or PHI 111 ³	Humanities/Fine Arts Elective	3
19	HIS 102 or HIS 122	History of Western Civilization II or United State History II	3
20	CHM 245 & CHM 246 or SOC 200 or MTH 245 (if not already completed)	Approved Elective (does not include personal wellness course)	2 & 2 or 3 or 3

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TOTAL	Science Associate of Science - Mathematics and Science Teacher Preparation Specialization	61-64
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¹ *MTH 263-264 are recommended for students planning to major in Physics or Chemistry. Students not prepared for MTH 263 may be required to take MTH 167 prior to taking MTH 263.*

² *Students completing the Teacher Preparation Specialization in Mathematics and Science with the intention of being a mathematics teach should see their advisor prior to enrolling for a list of approved mathematics courses for their transfer institution.*

³ *Students should consult with their advisor and transfer institution to determine the best choice for their program.*