

## Science Associate of Science

### Specializations:

- Computer Science
- Mathematics
- Teacher Preparation

**Purpose:** The associate of science degree with a major in Science is designed for persons who plan to transfer to a four-year college or university in a major which 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 ranging from botany to zoology and from chemistry or geology, to physics. In addition, the Science major 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 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 who plan to teach at the elementary, middle, or secondary school level. The 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 major: 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.

**Note to prospective teachers:** Students who wish to be licensed to teach in Virginia should earn a baccalaureate degree in a liberal arts or science 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 I, the initial teacher licensure examination. Students preparing to take the Praxis I examination may wish to enroll in J. Sargeant Reynolds Community College courses MTH 50 and ENG 50.

**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, Computer Concepts and Applications. Students not passing the computer competency exam for CSC 155 may retake the exam only once.

**CURRICULUM****Science—Associate of Science**

<b>COURSE</b>	<b>TITLE</b>	<b>LECTURE HOURS</b>	<b>LAB HOURS</b>	<b>COURSE CREDITS</b>
SDV 100	College Success Skills	1	0	1
ENG 111	College Composition I	3	0	3
___ ___ <sup>1</sup>	Approved Laboratory Science I	3	3	4
MTH 166 <sup>2</sup> or MTH 173	Precalculus with Trigonometry or Calculus with Analytic Geometry I	5	0	5
CSC ___	Computer Science Elective	3-4	0	3-4
<b>TOTAL</b>		15-16	3	16-17
ENG 112	College Composition II	3	0	3
___ ___ <sup>1</sup>	Approved Laboratory Science II	3	3	4
MTH 240 <sup>2</sup> or MTH 270 or MTH 173 or MTH 174	Statistics or Applied Calculus or Calculus with Analytic Geometry I or Calculus with Analytic Geometry II	3-5	0	3-5
___ ___ <sup>1</sup>	Social Science Elective	3	0	3
___ ___ <sup>3</sup>	Health or Physical Education Elective	0-2	0-4	2
<b>TOTAL</b>		12-16	3-7	15-17
___ ___ <sup>1</sup>	Math or Lab Science Elective	3-5	0-3	3-5
___ ___ <sup>1</sup>	Approved Laboratory Science I	3	3	4
HIS 101 or HIS 121	History of Western Civilization I or United States History I	3	0	3
___ ___ <sup>1</sup>	Humanities	3	0	3
___ ___ <sup>1</sup>	Approved Elective	3	0	3
<b>TOTAL</b>		15-17	3-6	16-18
___ ___ <sup>1</sup>	Math or Lab Science Elective	3-5	0-3	3-5
___ ___ <sup>1</sup>	Approved Laboratory Science II	3	3	4
HIS 102 or HIS 122	History of Western Civilization II or United States History II	3	0	3
___ ___ <sup>1</sup>	Humanities Elective	3	0	3
___ ___ <sup>1</sup>	Approved Elective	3	0	3
<b>TOTAL</b>		15-17	3-6	16-18

<b>Total Minimum Credits for AS Degree in Science</b>	<b>63</b>
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<sup>1</sup> A list of approved electives is available in the school office.

<sup>2</sup> MTH 173-174 is recommended for students planning to major in Physics or Chemistry. Students not prepared for MTH 173 may be required to take MTH 166 prior to taking MTH 173.

<sup>3</sup> Two credit hours of HLT or PED from one or more courses is required.

**CURRICULUM****Science AS Computer Science Specialization**

<b>COURSE</b>	<b>TITLE</b>	<b>LECTURE HOURS</b>	<b>LAB HOURS</b>	<b>COURSE CREDITS</b>
SDV 100	College Success Skills	1	0	1
ENG 111	College Composition I	3	0	3
___ ___ <sup>1</sup>	Laboratory Science I	3	3	4
MTH 173	Calculus with Analytic Geometry I	5	0	5
MTH 287	Mathematical Structures	3	0	3
<b>TOTAL</b>		15	3	16
ENG 112	College Composition II	3	0	3
___ ___	Health or Physical Education Elective	0-2	0-4	2
___ ___ <sup>1</sup>	Laboratory Science II	3	3	4
MTH 174	Calculus with Analytic Geometry II	5	0	5
CSC 201	Computer Science I	4	0	4
<b>TOTAL</b>		15-17	3-7	18
___ ___ <sup>2</sup>	Mathematics or Laboratory Science Elective	3-5	0-3	3-5
CSC 202	Computer Science II	4	0	4
HIS 101 or HIS 121	History of Western Civilization I or United States History I	3	0	3
___ ___ <sup>3</sup>	Humanities Elective	3-4	0	3-4
<b>TOTAL</b>		13-16	0-3	13-16
CSC 205	Computer Organization	4	0	4
___ ___ <sup>2</sup>	Approved Elective	3	0	3
HIS 102 or HIS 122	History of Western Civilization II or United States History II	3	0	3
___ ___ <sup>3</sup>	Humanities Elective	3-4	0	3-4
___ ___ <sup>2</sup>	Social Science Elective	3	0	3
<b>TOTAL</b>		16-17	0	16-17
<b>Total Minimum Credits for AS Degree in Science, Computer Science Specialization</b>				<b>63</b>

<sup>1</sup> Selection of lab science depends upon the transfer institution selected. Students should consult their advisor for appropriate courses.

<sup>2</sup> Students must see their advisor for appropriate courses.

<sup>3</sup> A list of approved electives is available in the school office.

**CURRICULUM****Science AS Mathematics Specialization**

<b>COURSE</b>	<b>TITLE</b>	<b>LECTURE HOURS</b>	<b>LAB HOURS</b>	<b>COURSE CREDITS</b>
<a href="#">SDV 100</a>	College Success Skills	1	0	1
<a href="#">ENG 111</a>	College Composition I	3	0	3
___ ___ <sup>1</sup>	Approved Laboratory Science I	3	3	4
<a href="#">MTH 173</a> <sup>2</sup>	Calculus with Analytic Geometry I	5	0	5
<a href="#">CSC</a> ___ <sup>3</sup>	Computer Science Elective	3-4	0	3-4
<b>TOTAL</b>		15-16	3	16-17
<a href="#">ENG 112</a>	College Composition II	3	0	3
___ ___ <sup>1</sup>	Approved Laboratory Science II	3	3	4
<a href="#">MTH 174</a>	Calculus with Analytic Geometry II	5	0	5
___ ___ <sup>4</sup>	Approved Elective	3-4	0-3	3-4
<b>TOTAL</b>		14-15	3-6	15-16
<a href="#">MTH 277</a>	Vector Calculus	4	0	4
<a href="#">MTH 240</a> <sup>5</sup>	Statistics	3	0	3
<a href="#">HIS 101</a> or <a href="#">HIS 121</a>	History of Western Civilization I or United States History I	3	0	3
___ ___ <sup>1</sup>	Social Science Elective	3	0	3
___ ___ <sup>1</sup>	Humanities Elective	3	0	3
<b>TOTAL</b>		16	0	16
___ ___ <sup>6</sup>	Math or Lab Science Elective	3-5	0-3	4-5
<a href="#">MTH 287</a>	Mathematical Structures	3	0	3
___ ___ <sup>7</sup>	<a href="#">Health</a> or <a href="#">Physical Education</a> Elective	0-2	0-4	2
<a href="#">HIS 102</a> or <a href="#">HIS 122</a>	History of Western Civilization II or United States History II	3	0	3
___ ___ <sup>1</sup>	Humanities Elective	3	0	3
<b>TOTAL</b>		12-16	0-7	15-16
<b>Total Minimum Credits for AS Degree in Science, Mathematics Specialization</b>				<b>62</b>
<sup>1</sup> A list of approved electives is available in the Mathematics and Science school office. <sup>2</sup> Students not prepared for MTH 173 may be required to take <a href="#">MTH 166</a> prior to taking MTH				

173. MTH 166 does not meet the graduation requirements for the Mathematics Specialization.

<sup>3</sup> Students may take [CSC 201](#) or another [CSC](#) programming course.

<sup>4</sup> Students are strongly recommended to take either [CSC 202](#) or [CSC 205](#). For additional elective options, students should consult the list of approved electives in the Mathematics and Science school office.

<sup>5</sup> [MTH 240](#) transfers as an elective for students majoring in mathematics at Virginia Tech and the University of Virginia. At VCU, [MTH 240](#) transfers for a mathematics major if the student takes an additional upper-level statistics course at VCU; in this case, the student will receive credit for both [MTH 240](#) and the upper-level statistics course.

<sup>6</sup> It is expected that most students intending to major in mathematics will take [MTH 279](#), Ordinary Differential Equations, for this elective. For additional elective options, students should consult the list of approved electives in the Mathematics and Science school office.

<sup>7</sup> Two credits of HLT or PED from one or more courses are required.

<b>CURRICULUM</b>				
<b>Science AS Teacher Preparation Specialization</b>				
<b>COURSE</b>	<b>TITLE</b>	<b>LECTURE HOURS</b>	<b>LAB HOURS</b>	<b>COURSE CREDITS</b>
<a href="#">ENG 111</a>	College Composition I	3	0	3
<a href="#">SDV 100</a> <sup>1</sup>	College Success Skills	1	0	1
____ <sup>2</sup>	Approved Laboratory Science I	3	3	4
<a href="#">MTH 166</a> or <a href="#">MTH 173</a>	Precalculus with Trigonometry or Calculus with Analytic Geometry I	5	0	5
<a href="#">CSC</a> ____	Computer Science Elective	3-4	0	3-4
<b>TOTAL</b>		15-16	3	16-17
<a href="#">ENG 112</a>	College Composition II	3	0	3
____ <sup>2</sup>	Approved Laboratory Science II	3	3	4
<a href="#">MTH 240</a> <sup>3</sup> or <a href="#">MTH 270</a> or <a href="#">MTH 173</a> or <a href="#">MTH 174</a>	Statistics or Applied Calculus or Calculus with Analytic Geometry I or Calculus with Analytic Geometry II	3-5	0	3-5
<a href="#">GEO 210</a>	People and the Land: Intro to Cultural Geography	3	0	3
____ <sup>4</sup>	<a href="#">Health</a> or <a href="#">Physical Education</a> Elective	0-1	0-2	1
<b>TOTAL</b>		12-16	3-7	15-17
____ <sup>2</sup>	Math or Lab Science Elective	3-5	0-3	3-5
____ <sup>2</sup>	Approved Laboratory Science I	3	3	4
<a href="#">HIS 101</a> or <a href="#">HIS 121</a>	History of Western Civilization I or United States History I	3	0	3
<a href="#">SPD 110</a>	Introduction to Speech Communication	3	0	3
<a href="#">EDU 200</a>	Introduction to Teaching as a Profession	2	2	3
<b>TOTAL</b>		14-16	5-8	16-18

___ ___ <sup>2</sup>	Math or Lab Science Elective	3-5	0-3	3-5
___ ___ <sup>2</sup>	Approved Laboratory Science II	3	3	4
<a href="#">HIS 102</a> or <a href="#">HIS 122</a>	History of Western Civilization II or United States History II	3	0	3
___ ___ <sup>2</sup>	Humanities Elective	3	0	3
<a href="#">ECO 201</a> or <a href="#">ECO 202</a>	Principles of Economics I-Macroeconomics or Principles of Economics II-Microeconomics	3	0	3
<b>TOTAL</b>		15-17	3-6	16-18
<b>Total Minimum Credits for AS Degree in Science, Teacher Preparation Specialization</b>				<b>63</b>
<p><sup>1</sup> Students are encouraged to substitute <a href="#">SDV 107</a> Career Education (Teaching), which includes a field experience in an area school.</p> <p><sup>2</sup> A list of approved electives is available in the school office.</p> <p><sup>3</sup> MTH 173-174 is recommended for students planning to major in Physics or Chemistry. Students not prepared for MTH 173 may be required to take MTH 166 prior to taking MTH 173.</p> <p><sup>4</sup> Two credit hours of HLT or PED from one or more courses is required.</p>				