

Programs of Study

MATH, SCIENCE, AND ENGINEERING

ENGINEERING EMPHASIS

Associate of Science

Cloud County Community College has agreements with the Regents Universities of Kansas, College of Engineering, in which students can take courses at CCCC for two years, then transfer into the university system the third year classified as juniors. Students who plan to major in agricultural, civil, electrical, industrial, and mechanical engineering may begin this bachelor's degree program at Cloud County Community College.

Contact: Dr. Craig Lamb
(785) 243-1435, ext 717
clamb@cloud.edu

Minimum General Education Required Courses 32 cr

Communication Requirement 9

- CM101 English Composition I (3 cr)
- CM102 English Composition II (3 cr)
- CM115 Public Speaking (3 cr) or
- CM240 Interpersonal Communications (3 cr)

Humanities Requirement (2 areas required) 6

- Art Humanities
- Music Literature
- Theatre Philosophy
- Foreign Language History

Mathematics Requirement 3

Mathematics General Education Course

Natural Science Requirement (2 areas required) 8-10

- Physical Science (4-5 cr)
- **Biological Science (4-5 cr)

Social/Behavioral Science Requirement (2 areas required) 6

- Economics Anthropology
- Psychology Political Science
- Sociology Geography

Elective Courses* 33 cr

- MA120 Analytic Geometry & Calculus I 5
- MA121 Analytic Geometry & Calculus II 5
- MA122 Analytic Geometry & Calculus III 5
- MA123 Differential Equations 4
- SC131 Chemistry I 5
- SC132 Chemistry II 5
- SC134 Organic Chemistry I 5
- SC135 Organic Chemistry II 5
- SC140 College Physics I 5
- SC141 College Physics II 5
- SC142 University Physics I 5
- SC143 University Physics II 5

Credits Required 65

*All electives should be selected with assistance from an advisor. These options are general areas that will transfer to focused majors. Substitutions must be approved by the department chair.

**General/Principles of Biology is waived as a CCCC general education requirement unless the transfer institution's degree program requires it. An engineering advisor will help you determine the programs that require a biological science as a prerequisite course. If the biological science requirement is waived, a minimum of three hours of elective credit must be taken. An engineering advisor will help you select an appropriate elective course.

Program Information: The Associates of Science Degree with an emphasis in Engineering is designed to enable student to transfer into a variety of engineering programs at K-State, KU, or WSU, and other programs across the Midwest. The following list represents a suggested guide toward a program of study and is intended to meet typical requirements of a transfer institution.

Recommended Course Sequence:

First Semester: MA120, SC131
Second Semester: MA121, SC132
Third Semester: MA122, SC140 or SC142
Fourth Semester: MA123, SC141 or SC143

Requirements: Depending on ACT scores and/or placement exams, students may be required to take developmental courses which may add to the length of study.

After Cloud: The physical science and chemistry courses are designed for students who intend to transfer to four-year colleges and universities to complete educational requirements necessary for careers as engineers, chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Physical science and chemistry courses are also part of pre-professional programs, such as engineering, agriculture, medicine, nursing and numerous health occupations.

Gainful Employment: This program results in an Associate of Science degree which prepares students for further study at a four-year institution. Students who obtain a bachelor's degree in this field could apply these skills to careers such as engineers, chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Entry-level employment in these fields are in the \$45,000 to \$60,000 range. STEM degrees are also particularly well-suited to continuing education for the career of high school teacher (requires state certification) or health related professions (requires professional degree beyond the bachelor's degree).

Obtaining an Associate of Science degree in one of these areas should allow a student to transfer into a four-year baccalaureate program. None of these are specifically a "School to Work" or "Career Ready" program. Associate degrees would make students more competitive for most entry level positions. Gainful employment data would be comparable to various entry level positions at/or above minimum wage values.

Transfer Institution Guide: A student who is interested in pursuing a baccalaureate degree should consult a CCCC advisor and the transfer guide and catalog of the four-year institution.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

ENGINEERING EMPHASIS

Associate of Science

Suggested Semester Guideline

Semester 1

MA 120	Analytic Geometry and Calculus I	5 credit hours
CM 101	English Composition I	3 credit hours
	Humanities General Education	3 credit hours
SC 131	Chemistry I	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 2

MA 121	Analytic Geometry and Calculus II	5 credit hours
CM 102	English Composition II	3 credit hours
EC 101	Economics I	3 credit hours
SC 132	Chemistry II	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 3

MA 122	Analytic Geometry and Calculus III	5 credit hours
SC 142	University Physics I	5 credit hours
CM 115	Public Speaking	3 credit hours
	Social Science General Education	<u>3 credit hours</u>
	Total:	16 credit hours

Semester 4

MA 123	Differential Equations	4 credit hours
SC 143	University Physics II	5 credit hours
SC 110	Principles of Biology I*	5 credit hours
	Humanities General Education	<u>3 credit hours</u>
	Total:	17 credit hours
		65 credit hours

*General/Principles of Biology is waived as a CCCC general education requirement unless the transfer institution's degree program requires it. An engineering advisor will help you determine the programs that require a biological science as a prerequisite course. If the biological science requirement is waived, a minimum of three hours of elective credit must be taken. An engineering advisor will help you select an appropriate elective course.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

ENGINEERING TECHNOLOGY EMPHASIS

Associate of Science

Cloud County Community College has agreements with the Regents Universities of Kansas, College of Engineering, in which students can take courses at CCCC for two years, then transfer into the university system the third year classified as juniors. Students who plan to major in agricultural, civil, electrical, industrial, and mechanical engineering may begin this bachelor's degree program at Cloud County Community College.

Minimum General Education Required Courses 32 cr

Communication Requirement 9

- CM101 English Composition I (3 cr)
- CM102 English Composition II (3 cr)
- CM115 Public Speaking (3 cr) or
- CM240 Interpersonal Communications (3 cr)

Humanities Requirement (2 areas required) 6

- Art Humanities
- Music Literature
- Theatre Philosophy
- Foreign Language History

Mathematics Requirement 3

- Mathematics General Education Course

Natural Science Requirement (2 areas required) 8-10

- Physical Science (4-5 cr)
- **Biological Science (4-5 cr)

Social/Behavioral Science Requirement (2 areas required) 6

- Economics Anthropology
- Psychology Political Science
- Sociology Geography

Elective Courses* 31 cr

- BE160 Business Accounting 3
- MA114 Elementary Statistics 3
- MA120 Analytic Geometry & Calculus I 5
- MA121 Analytic Geometry & Calculus II 5
- MA122 Analytic Geometry & Calculus III 5
- MA123 Differential Equations 4
- SC131 Chemistry I 5
- SC132 Chemistry II 5
- SC134 Organic Chemistry I 5
- SC135 Organic Chemistry II 5
- SC140 College Physics I 5
- SC141 College Physics II 5
- SC142 University Physics I 5
- SC143 University Physics II 5

Credits Required 63

*All electives should be selected with assistance from an advisor. These options are general areas that will transfer to focused majors. Substitutions must be approved by the department chair.

**General/Principles of Biology is waived as a CCCC general education requirement unless the transfer institution's degree program requires it. An engineering advisor will help you determine the programs that require a biological science as a prerequisite course.

Contact: Dr. Craig Lamb
(785) 243-1435, ext 717
clamb@cloud.edu

Program Information: The Associates of Science Degree with an emphasis in Engineering is designed to enable student to transfer into a variety of engineering programs at K-State, KSU Polytechnic, Pittsburg State, and other programs across the Midwest. The following list represents a suggested guide toward a program of study and is intended to meet typical requirements of a transfer institution.

Recommended Course Sequence:

First Semester: MA111, SC131
Second Semester: MA112, SC132
Third Semester: MA120, SC140 or SC142
Fourth Semester: MA121, SC141 or SC143

Requirements: Depending on ACT scores and/or placement exams, students may be required to take developmental courses which may add to the length of study.

After Cloud: The physical science and chemistry courses are designed for students who intend to transfer to four-year colleges and universities to complete educational requirements necessary for careers as engineers, chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Physical science and chemistry courses are also part of pre-professional programs, such as engineering, agriculture, medicine, nursing and numerous health occupations.

Gainful Employment: This program results in an Associate of Science degree which prepares students for further study at a four-year institution. Students who obtain a bachelor's degree in this field could apply these skills to careers such as engineers, chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Entry-level employment in these fields are in the \$45,000 to \$60,000 range. STEM degrees are also particularly well-suited to continuing education for the career of high school teacher (requires state certification) or health related professions (requires professional degree beyond the bachelor's degree).

Obtaining an Associate of Science degree in one of these areas should allow a student to transfer into a four-year baccalaureate program. None of these are specifically a "School to Work" or "Career Ready" program. Associate degrees would make students more competitive for most entry level positions. Gainful employment data would be comparable to various entry level positions at/or above minimum wage values.

Transfer Institution Guide: A student who is interested in pursuing a baccalaureate degree should consult a CCCC advisor and the transfer guide and catalog of the four-year institution.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

ENGINEERING TECHNOLOGY EMPHASIS

Associate of Science

Suggested Semester Guideline

Semester 1

CM 101	English Composition I	3 credit hours
MA 111	College Algebra (or higher)**	3 credit hours
SC 131	Chemistry I	5 credit hours
EC 101	Economics I	3 credit hours
	Humanities General Education	<u>3 credit hours</u>
	Total:	17 credit hours

Semester 2

CM 102	English Composition II	3 credit hours
MA 112	Trigonometry (or higher)	3 credit hours
SC 132	Chemistry II	5 credit hours
MA 114	Elementary Statistics	<u>3 credit hours</u>
	Total:	14 credit hours

Semester 3

	Social Science General Education	3 credit hours
CM115	Public Speaking	3 credit hours
MA 120	Analytic Geometry and Calculus I	5 credit hours
SC 142	University Physics I	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 4

BE 160	Business Accounting	3 credit hours
SC 143	University Physics II	5 credit hours
MA 121	Analytic Geometry and Calculus II	5 credit hours
	Humanities General Education	3 credit hours
SC101	General Biology *	<u>4 credit hours</u>
	Total:	16-20 credit hours 63-67 credit hours

*General/Principles of Biology is waived as a CCCC general education requirement unless the transfer institution's degree program requires it. An engineering advisor will help you determine the programs that require a biological science as a prerequisite course.

**Math Courses at a higher level are acceptable if student is ready for such courses. Placement Testing is available.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

MATHEMATICS EMPHASIS

Associate of Science

Cloud County Community College has agreements with the Regents Universities of Kansas in which students can take courses at CCCC for two years, then transfer into the university system the third year classified as juniors. Students who plan to major in mathematics, actuarial science, physics, computer studies, and numerous related occupational fields may begin this bachelor's degree program at Cloud County Community College. Engineers with bachelor's degrees enter an exciting, financially rewarding, and emotionally satisfying profession. Today there is a high demand for STEM majors with strong mathematical and computer skills.

Contact: Mark Whisler
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mwhisler@cloud.edu

Program Information: The Associates of Science Degree with an emphasis in Mathematics is designed to enable student to transfer into a variety of STEM programs at K-State, KSU, WSU, and other programs across the Midwest. The following list represents a suggested guide toward a program of study and is intended to meet typical requirements of a transfer institution.

Minimum General Education Required Courses 32 cr

Communication Requirement 9

- CM101 English Composition I (3 cr)
- CM102 English Composition II (3 cr)
- CM115 Public Speaking (3 cr) or
- CM240 Interpersonal Communications (3 cr)

Humanities Requirement (2 areas required) 6

- Art Humanities
- Music Literature
- Theatre Philosophy
- Foreign Language History

Mathematics Requirement 3

- Mathematics General Education Course

Natural Science Requirement (2 areas required) 8-10

- Physical Science (4-5 cr)
- Biological Science (4-5 cr)

Social/Behavioral Science Requirement (2 areas required) 6

- Economics Anthropology
- Psychology Political Science
- Sociology Geography

Elective Courses* 32 cr

- MA114 Elementary Statistics 3
- MA120 Analytic Geometry & Calculus I 5
- MA121 Analytic Geometry & Calculus II 5
- MA122 Analytic Geometry & Calculus III 5
- MA123 Differential Equations 4
- SC132 Chemistry II 5
- SC140 College Physics I 5
- SC141 College Physics II 5
- SC142 University Physics I 5
- SC143 University Physics II 5

Credits Required 64

*All electives should be selected with assistance from an advisor. These options are general areas that will transfer to focused majors. Substitutions must be approved by the department chair.

Recommended Course Sequence:

- First Semester: MA120
- Second Semester: MA121
- Third Semester: MA122
- Fourth Semester: MA123, MA114

Requirements: Depending on ACT scores and/or placement exams, students may be required to take developmental courses which may add to the length of study.

After Cloud: The mathematics and elective area courses are designed for students who intend to transfer to four-year colleges and universities to complete educational requirements necessary for careers as software engineers, actuary, computer systems analyst, computer programmer, mathematician, and numerous related occupations. Mathematics curriculum are often times associated with courses that are part of pre-professional programs, such as as engineering, agriculture, medicine, nursing, and numerous health occupations.

Gainful Employment: This program results in an Associate of Science degree, which prepares students for further study at a four-year institution. Students who obtain a bachelor's degree in this field could apply these skills to careers such as mathematicians, actuaries, computer engineers, physicists, financial analysis, programmers, and numerous related occupations. Entry-level employment in these fields are in the \$55,000 to \$75,000 range. STEM degrees are also particularly well-suited to continuing education for the career of high school teacher (requires state certification) or business and economic related professions (requires professional degree beyond the bachelor's degree).

Obtaining an Associate of Science in one of these areas should allow a student to transfer into a four-year baccalaureate program. None of these are specifically "School to Work" or "Career Ready" programs. Associate degrees would make students more competitive for most entry level positions. Gainful employment data would be comparable to various entry level positions at/or above minimum wage values.

Transfer Institution Guide: A student who is interested in pursuing a baccalaureate degree should consult a CCCC advisor and the transfer guide and catalog of the four-year institution.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

MATHEMATICS EMPHASIS

Associate of Science

Suggested Semester Guideline

Semester 1

MA 120	Analytic Geometry and Calculus I	5 credit hours
CM 101	English Composition I	3 credit hours
SC 101	General Biology	4 credit hours
	Humanities General Education	<u>3 credit hours</u>
	Total:	15 credit hours

Semester 2

MA 121	Analytic Geometry and Calculus II	5 credit hours
CM 102	English Composition II	3 credit hours
	Social Science General Education	3 credit hours
	Elective ¹	3 credit hours
	Elective ¹	<u>3 credit hours</u>
	Total:	17 credit hours

Semester 3

MA 122	Analytic Geometry and Calculus III	5 credit hours
CM 115	Public Speaking	3 credit hours
SC 140	College Physics or SC142 University Physics	5 credit hours
	Social Science General Education	<u>3 credit hours</u>
	Total:	16 credit hours

Semester 4

MA 123	Differential Equations	4 credit hours
	Humanities General Education	3 credit hours
MA 114	Elementary Statistics	3 credit hours
	Elective ¹	3 credit hours
	Elective ¹	<u>3 credit hours</u>
	Total:	16 credit hours
		64 credit hours

¹Electives are any college coursework at or above the 100 level. Students are strongly encouraged to consider transfer institution requirements when choosing elective courses.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

CHEMISTRY EMPHASIS

Associate of Science

Cloud County Community College has agreements with a number of Regents Universities across Kansas. These agreements allow for students to take courses at CCCC for two years, then transfer into the university system the third year classified as juniors. Students who plan to major in chemistry, geology, geophysics, meteorology, astronomy, and numerous related occupational fields may begin this bachelor's degree program at Cloud County Community College. STEM majors with bachelor's degrees enter an exciting, financially rewarding and emotionally satisfying profession. Today there is a high demand for STEM majors.

Contact: Dr. Craig Lamb
(785) 243-1435, ext 717
clamb@cloud.edu

Program Information: These programs of study are designed for the student planning to transfer to a variety of STEM programs at K-State, KU, WSU, or other programs across the Midwest. The following list represents a suggested guide toward a program of study and is intended to meet typical requirements of a transfer institution.

Minimum General Education Required Courses 32 cr

<i>Communication Requirement</i>	9
CM101 English Composition I (3 cr)	
CM102 English Composition II (3 cr)	
CM115 Public Speaking (3 cr) or CM240 Interpersonal Communications (3 cr)	
<i>Humanities Requirement (2 areas required)</i>	6
Art Humanities	
Music Literature	
Theatre Philosophy	
Foreign Language History	
<i>Mathematics Requirement</i>	3
Mathematics General Education Course	
<i>Natural Science Requirement (2 areas required)</i>	8-10
Physical Science (4-5 cr)	
Biological Science (4-5 cr)	
<i>Social/Behavioral Science Requirement (2 areas required)</i>	6
Economics Anthropology	
Psychology Political Science	
Sociology Geography	

Elective Courses* 32 cr

MA114 Elementary Statistics	3
MA120 Analytic Geometry & Calculus I	5
MA121 Analytic Geometry & Calculus II	5
MA122 Analytic Geometry & Calculus III	5
SC131 Chemistry I	5
SC132 Chemistry II	5
SC134 Organic Chemistry I	5
SC135 Organic Chemistry II	5
SC140 College Physics I	5
SC141 College Physics II	5
SC142 University Physics I	5
SC143 University Physics II	5

Credits Required 64

*All electives should be selected with assistance from an advisor. These options are general areas that will transfer to focused majors. Substitutions must be approved by the department chair.

Recommended Course Sequence:

First Semester: SC131, MA120
Second Semester: SC132, MA121
Third Semester: SC134, SC142
Fourth Semester: SC110, SC135

Requirements: Depending on ACT scores and/or placement exams, students may be required to take developmental courses which may add to the length of study.

After Cloud: The physical science and chemistry courses are designed for students who intend to transfer to four-year colleges and universities to complete educational requirements necessary for careers as chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Physical science, biology, and chemistry courses are also part of pre-professional programs, such as engineering, agriculture, medicine, nursing and numerous health occupations.

Gainful Employment: This program results in an Associate of Science degree which prepares students for further study at a four-year institution. Students who obtain a bachelor's degree in this field could apply these skills to careers such as engineers, chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Entry-level employment in these fields are in the \$45,000 to \$60,000 range. STEM degrees are also particularly well-suited to continuing education for the career of high school teacher (requires state certification) or health related professions (requires professional degree beyond the Bachelor's degree).

Obtaining an Associate of Science in one of these areas should allow a student to transfer into a four-year baccalaureate program. None of these are specifically "School to Work" or "Career Ready" programs. Associate degrees would make students more competitive for most entry level positions. Gainful employment data would be comparable to various entry level positions at/or above minimum wage values.

Transfer Institution Guide: A student who is interested in pursuing a baccalaureate degree should consult a CCCC advisor and the transfer guide and catalog of the four-year institution.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

CHEMISTRY EMPHASIS

Associate of Science

Suggested Semester Guideline

Semester 1

MA 120	Analytic Geometry and Calculus I	5 credit hours
CM 101	English Composition I	3 credit hours
	Humanities General Education	3 credit hours
SC 131	Chemistry I	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 2

MA 121	Analytic Geometry and Calculus II	5 credit hours
CM 102	English Composition II	3 credit hours
	Social Science General Education	3 credit hours
SC 132	Chemistry II	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 3

	Math or Science Elective	3 credit hours
SC 134	Organic Chemistry I	5 credit hours
	Social Science General Education	3 credit hours
SC 142	University Physics I	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 4

SC 135	Organic Chemistry II	5 credit hours
	Humanities General Education	3 credit hours
SC 110	Principles of Biology I	5 credit hours
CM 115	Public Speaking	<u>3 credit hours</u>
	Total:	16 credit hours
		64 credit hours

Programs of Study

MATH, SCIENCE, AND ENGINEERING

PHYSICAL SCIENCE EMPHASIS

Associate of Science

Cloud County Community College has agreements with a number of Regents Universities across Kansas. These agreements allow for students to take courses at CCCC for two years, then transfer into the university system the third year classified as juniors. Students who plan to major in chemistry, geology, geophysics, meteorology, astronomy, and numerous related occupational fields may begin this bachelor's degree program at Cloud County Community College. STEM majors with bachelor's degrees enter an exciting, financially rewarding and emotionally satisfying profession. Today there is a high demand for STEM majors.

Contact: Dr. Craig Lamb
(785) 243-1435, ext 717
clamb@cloud.edu

Program Information: The Associate of Science with Physical Science emphasis is designed to enable students to transfer to a variety of STEM programs at K-State, KU, WSU, or other programs across the Midwest. The following list represents a suggested guide toward a program of study and is intended to meet typical requirements of a transfer institution.

Minimum General Education Required Courses 32 cr

<i>Communication Requirement</i>	9
CM101 English Composition I (3 cr)	
CM102 English Composition II (3 cr)	
CM115 Public Speaking (3 cr) or CM240 Interpersonal Communications (3 cr)	
<i>Humanities Requirement (2 areas required)</i>	6
Art Humanities	
Music Literature	
Theatre Philosophy	
Foreign Language History	
<i>Mathematics Requirement</i>	3
Mathematics General Education Course	
<i>Natural Science Requirement (2 of 2 areas)</i>	8-10
Physical Science (4-5 cr)	
Biological Science (4-5 cr)	
<i>Social/Behavioral Science Requirement (2 of 6 areas required)</i>	6
Economics Anthropology	
Psychology Political Science	
Sociology Geography	

Recommended Course Sequence:

First Semester: SC131, SC104, MA111
Second Semester: SC132, SC105, MA112
Third Semester: SC140, MA120
Fourth Semester: SC101, SC141

Requirements: Depending on ACT scores and/or placement exams, students may be required to take developmental courses which may add to the length of study.

After Cloud: The physical science and chemistry courses are designed for students who intend to transfer to four-year colleges and universities to complete educational requirements necessary for careers as chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Physical science and chemistry courses are also part of pre-professional programs, such as engineering, agriculture, medicine, nursing and numerous health occupations.

Gainful Employment: This program results in an Associate of Science degree which prepares students for further study at a four-year institution. Students who obtain a bachelor's degree in this field could apply these skills to careers such as geologists, geophysicists, meteorologists, astronomers, and numerous related occupations. Entry-level employment in these fields are in the \$38,000 to \$47,000 range. STEM degrees are also particularly well-suited to continuing education for the career of high school teacher (requires state certification) or health related professions (requires professional degree beyond the bachelor's degree).

Obtaining an Associate of Science in one of these areas should allow a student to transfer into a four-year baccalaureate program. None of these are specifically "School to Work" or "Career Ready" programs. Associate degrees would make students more competitive for most entry level positions. Gainful employment data would be comparable to various entry level positions at/or above minimum wage values.

Transfer Institution Guide: A student who is interested in pursuing a baccalaureate degree should consult a CCCC advisor and the transfer guide and catalog of the four-year institution.

Elective Courses* 32 cr

AG108 Environmental Quality	3
AG109 Environmental Quality Lab	1
SC104 Geology	4
SC105 General Astronomy	4
SC107 Meteorology	4
SC131 Chemistry I	5
SC132 Chemistry II	5
SC134 Organic Chemistry I	5
SC140 College Physics I	5
SC141 College Physics II	5
SC142 University Physics I	5
SC143 University Physics II	5

Credits Required 64

*All electives should be selected with assistance from an advisor. These options are general areas that will transfer to focused majors. Substitutions must be approved by the department chair.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

PHYSICAL SCIENCE EMPHASIS

Associate of Science

Suggested Semester Guideline

Semester 1

MA 111	College Algebra (or higher)	3 credit hours
CM 101	English Composition I	3 credit hours
SC 131	Chemistry I	5 credit hours
	Humanities General Education	3 credit hours
SC 104	Geology	<u>4 credit hours</u>
	Total:	18 credit hours

Semester 2

MA 112	Trigonometry	3 credit hours
CM 102	English Composition II	3 credit hours
SC 132	Chemistry II	5 credit hours
SC 105	General Astronomy	<u>4 credit hours</u>
	Total:	15 credit hours

Semester 3

MA 120	Analytic Geometry and Calculus I	5 credit hours
SC 140	College Physics or SC142 University Physics I	5 credit hours
CM 115	Public Speaking	3 credit hours
	Social Science General Education	<u>3 credit hours</u>
	Total:	16 credit hours

Semester 4

SC 101	General Biology	4 credit hours
SC 141	College Physics II or SC143 University Physics II	5 credit hours
	Social Science General Education	3 credit hours
	Humanities General Education	<u>3 credit hours</u>
	Total:	15 credit hours
		64 credit hours

Programs of Study

MATH, SCIENCE, AND ENGINEERING

PHYSICS EMPHASIS

Associate of Science

Cloud County Community College has agreements with a number of Regents Universities across Kansas. These agreements allow for students to take courses at CCCC for two years, then transfer into the university system the third year classified as juniors. Students who plan to major in physics, chemistry, geology, geophysics, meteorology, astronomy, and numerous related occupational fields may begin this bachelor's degree program at Cloud County Community College. STEM majors with bachelor's degrees enter an exciting, financially rewarding and emotionally satisfying profession. Today there is a high demand for STEM majors.

Minimum General Education Required Courses 32 cr

<i>Communication Requirement</i>	9
CM101 English Composition I (3 cr)	
CM102 English Composition II (3 cr)	
CM115 Public Speaking (3 cr) or CM240 Interpersonal Communications (3 cr)	
<i>Humanities Requirement (2 areas required)</i>	6
Art Humanities	
Music Literature	
Theatre Philosophy	
Foreign Language History	
<i>Mathematics Requirement</i>	3
Mathematics General Education Course MA120 Analytic Geometry & Calc I (5 cr) (suggested)	
<i>Natural Science Requirement (2 classes) **</i>	8-10
Physical Science (4-5 cr) SC140 College Physics (5 cr) or SC142 University Physics (5 cr) (suggested)	
<i>Social/Behavioral Science Requirement (2 of 6 areas required)</i>	6
Economics Anthropology	
Psychology Political Science	
Sociology Geography	

Elective Courses* 31 cr

MA121 Analytic Geometry & Calculus II	5
MA122 Analytic Geometry & Calculus III	5
MA123 Differential Equations	4
SC104 Geology	4
SC105 General Astronomy	4
SC107 Meteorology	4
SC131 Chemistry I	5
SC132 Chemistry II	5
SC141 College Physics II	5
SC143 University Physics II	5

Credits Required 63

*All electives should be selected with assistance from an advisor. These options are general areas that will transfer to focused majors. Substitutions must be approved by the department chair.

**The biological science general education course requirement is waived for this emphasis and is replaced with a physical science with lab general education course.

Contact: Dr. Craig Lamb
(785) 243-1435, ext 717
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Program Information: The Associate of Science with Physics emphasis is designed to enable students to transfer to a variety of STEM programs at K-State, KU, WSU, or other programs across the Midwest. The following list represents a suggested guide toward a program of study and is intended to meet typical requirements of a transfer institution.

Recommended Course Sequence:

First Semester: SC131, MA120
Second Semester: SC132, SC105, MA121
Third Semester: MA122, SC140
Fourth Semester: MA123, SC104, SC141

Requirements: Depending on ACT scores and/or placement exams, students may be required to take developmental courses which may add to the length of study.

After Cloud: The physical science and chemistry courses are designed for students who intend to transfer to four-year colleges and universities to complete educational requirements necessary for careers as chemists, geologists, geophysicists, meteorologists, physicists, astronomers, and numerous related occupations. Physical science and chemistry courses are also part of pre-professional programs, such as engineering, agriculture, medicine, nursing and numerous health occupations.

Gainful Employment: This program results in an Associate of Science degree which prepares students for further study at a four-year institution. Students who obtain a bachelor's degree in this field could apply these skills to careers such as geologists, geophysicists, meteorologists, astronomers, and numerous related occupations. Entry-level employment in these fields are in the \$48,000 to \$57,000 range. STEM degrees are also particularly well-suited to continuing education for the career of high school teacher (requires state certification) or health related professions (requires professional degree beyond the bachelor's degree).

Obtaining an Associate of Science in one of these areas should allow a student to transfer into a four-year baccalaureate program. None of these are specifically "School to Work" or "Career Ready" programs. Associate degrees would make students more competitive for most entry level positions. Gainful employment data would be comparable to various entry level positions at/or above minimum wage values.

Transfer Institution Guide: A student who is interested in pursuing a baccalaureate degree should consult a CCCC advisor and the transfer guide and catalog of the four-year institution.

Programs of Study

MATH, SCIENCE, AND ENGINEERING

PHYSICS EMPHASIS

Associate of Science

Suggested Semester Guideline

Semester 1

MA 120	Analytic Geometry and Calculus I	5 credit hours
CM 101	English Composition I	3 credit hours
	Humanities General Education	3 credit hours
SC 131	Chemistry I	<u>5 credit hours</u>
	Total:	16 credit hours

Semester 2

MA 121	Analytic Geometry and Calculus II	5 credit hours
CM 102	English Composition II	3 credit hours
	Social Science General Education	3 credit hours
SC 105	General Astronomy	<u>4 credit hours</u>
	Total:	15 credit hours

Semester 3

MA 122	Analytic Geometry and Calculus III	5 credit hours
SC 142	University Physics I	5 credit hours
CM 115	Public Speaking	3 credit hours
	Social Science General Education	<u>3 credit hours</u>
	Total:	16 credit hours

Semester 4

MA 123	Differential Equations	4 credit hours
SC 143	University Physics II	5 credit hours
	Humanities General Education	3 credit hours
SC 105	General Astronomy	<u>4 credit hours</u>
	Total:	16 credit hours
		63 credit hours

Note: The biological science with lab general education course requirement is waived for this emphasis and is replaced with a physical science with lab general education course.