

ASSOCIATE OF SCIENCE DEGREE

*For students who intend to continue their education
at a four-year degree granting institution*

To receive the A.S. degree, students must satisfactorily complete a minimum of 66 credits. This includes 35 credits to meet the general education core requirements, 3 credits in computer science, and at least 28 credits in an area of concentration.

Transferable General Education Common Core

The following general education common core was developed through collaboration of New Mexico's public postsecondary institutions to facilitate transfer of students between New Mexico's institutions of higher education. For students enrolled at any public institution in New Mexico, the general education common core courses will transfer to any other New Mexico public college or university, and apply toward associate and baccalaureate degree program requirements. (Students preparing for careers in engineering, health sciences, or other profession-related fields are advised that some of this coursework may not transfer toward general education requirements but in most cases will apply toward elective requirements.)

Transferable Associate of Science

The Associate of Science degree is intended for transfer to a four-year baccalaureate granting institution. Those wishing to transfer to a baccalaureate granting institution and pursue a degree program are strongly encouraged to check with their advisor and carefully coordinate their coursework at San Juan College with the requirements of the transfer institution. Prerequisite courses must be completed prior to the courses listed below (e.g., MATH 180 and 185 prior to MATH 188). In general, however, it is suggested that students complete the New Mexico Transfer Module as outlined.

Transfer Guides and Catalogs

Several transfer guides have been developed through collaboration of New Mexico's postsecondary institutions. Students who have selected a field of study and/or the college or university where they wish to graduate are advised to consult the transfer guide or catalog for that institution for advice to guide their course selection. Planning for effective transfer is ultimately the student's responsibility. Responsible transfer planning includes early and regular consultation with the intended transfer institution to assure that all pre-transfer coursework will meet the requirements of the desired degree.

Program Concentration Choice

The general education list of 35 credit hours is the safest choice for students who have not yet selected either a major field of study or the college or university they plan to attend after San Juan College. Students wishing to prepare for possible transfer into a degree program at another institution are advised to take these courses during their freshman and sophomore years.

General Education Requirements for Associate of Science Degrees

General Education Requirements*

Credits

Area I: Communications - select 9 credits

Freshman Composition (ENGL 111)	3
Advanced Composition (ENGL 211) or Advanced Technical Composition (ENGL 218)	3
Public Speaking COMM 110 OR Interpersonal Communication COMM 111	3

Area II: Mathematics - minimum of 3 credits

College Algebra (MATH 185)	3
Calculus I (MATH 188)	3
Other college level mathematics	3

Area III: Laboratory Science - select 2 for 8 credits

Science requirements for Associate of Science Degrees are included in the program requirements.

Area IV: Social and Behavioral Science

(minimum of 6 credits, must have 15 credits total between Social/Behavioral Science area and Humanities/Fine Arts area)	
Economics (ECON 251, 252)	3
Human Geography (GEOG 145)	3
Political Science (POLS 110, 250)	3
Psychology (PSYC 120)	3
Sociology (SOC 110, 210, 215)	3
Anthropology (ANTH 110, 210, 211, 255)3-4	

Area V: Humanities and Fine Arts

(minimum of 6 credits, must have 15 credits total between Social/Behavioral Science area and Humanities/Fine Arts area)	
History (HIST 121, 122, 211, 212)	3
Philosophy (PHIL 110, 115)	3
Humanities (HUMA 210, 211)	3
Literature (ENGL 251, 252, 261, 262, 245, 230, 235)	3
Orientation in Art (ARTS 110)	3
Music (MUSI 110, 111, 112, 114, 115, 130 OR 131)	3
Theatre (THEA 110, 120)	3

General Education Requirements 27-28 credits

*Certain profession-related programs, such as engineering and nursing, may be exempt from the requirement that they apply all 35 credit hours toward general education or major requirements, but the remaining work may be accepted as elective credits. There are also special requirements for education majors.

Computer Science Requirement for Associate of Science Degree: any 3 credit Computer Science course (COSC 111 or above) (transfer colleges vary in whether they accept computer science courses as electives)

Area of Concentration for Associate of Science Degree
Students may complete their Associate of Science requirements by completing at least 28 credits with a 2.0 GPA or higher in one of the following areas of concentration. The following concentration guides show the optimal preparation for transfer in the student's chosen area of interest. Areas of concentration are intended to be used as a guide for selecting courses and the sequence for taking these courses. It is recognized that students often need preliminary preparation courses and more semesters to complete the A.S. degree.

Courses not included in the general core curriculum above may not necessarily be accepted by the transfer institution. Students are advised that grades below "C" may not transfer. Students intending to transfer to a bachelor degree granting college or university are strongly encouraged to check with their advisor and carefully coordinate their coursework at San Juan College with the requirements of the transfer institution.

BIOLOGY**Associate of Science****General Education Core for Associate of Science 28**
(See Page 101)

NOTE: Math requirement must be MATH 188
ENGL 211 or ENGL 218 requirement - Must take ENGL 211
Lab Science Requirement included Biology-core classes

Biology-core classes

BIOL 121	Introductory Biology I	4
BIOL 122	Introductory Biology II	4
BIOL 240	Ecology	4
BIOL 255	Introduction to Genetics	4
COSC 111	Computer Literacy OR Higher Computer Science	3
Approved Science Selection*		20
Total credit hours required for this degree		67

***Approved Science Selections:**

BIOL 220	General Botany
BIOL 222	Invertebrate Zoology
BIOL 223	Vertebrate Zoology
BIOL 224	Microbiology
BIOL 230	Environmental Conservation
BIOL 250	Systematic Botany
BIOL 260	Introduction to Cell Biology
CHEM 111	General Chemistry I
CHEM 112	General Chemistry II
CHEM 210	Organic Chemistry Survey
CHEM 251	Organic Chemistry I
CHEM 252	Organic Chemistry II
GEOL 110	Introduction to Geology
GEOL 111	Historical Geology
PHYS 211	General Physics I
PHYS 211L	General Physics I Lab
PHYS 212	General Physics II
PHYS 212L	General Physics II Lab

CHEMISTRY**Associate of Science****General Education Core for Associate of Science 28**
(See Page 101)

NOTE: Math requirement must take MATH 188
Lab Science Requirement included in Chemistry-core classes

Additional Mathematics:

MATH 189	Calculus II	4
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Chemistry – Core classes: 36 credit hours

CHEM 111	General Chemistry I	4
CHEM 112	General Chemistry II	4
CHEM 251	Organic Chemistry I	4
CHEM 252	Organic Chemistry II	4
CHEM 281	Analytical Chemistry	5
PHYS 215	Engineering Physics I	4
PHYS 216	Engineering Physics II	4
COSC 116	Spreadsheets, OR	
COSC 118	Computer Programming Fundamentals I with C++	3

Math or Science Elective: Select a minimum of 4 credit hours
Mathematics (MATH 268 Calculus III, or MATH 251 Statistics)
Biology (BIOL 121 Introductory Biology I, or BIOL 224 Microbiology)
Geology (GEOL 110 Introduction to Geology, or GEOL 270 Mineralogy)
Physics (PHYS 217 Engineering Physics III)
Chemistry (CHEM 299 Chemistry Special Topics)

Total credit hours required for this degree 68**COMPUTER SCIENCE****Associate of Science**

The Computer Science Associate of Science degree is designed for students interested in software design and programming. Those wishing to transfer to a baccalaureate granting institution and pursue a degree program are strongly encouraged to check with their advisor and carefully coordinate their coursework at San Juan College with the requirements of the transfer institution. The rigorous nature of this degree fulfills the expectations at the baccalaureate level. This degree also begins prospective computing professors and/or research students on their path leading to graduate degrees. Consider taking a foreign language at San Juan College if your intended transfer institution has such a requirement. These courses will be in addition to the requirements listed below.

Prerequisite courses must be completed prior to the courses listed below (e.g., MATH 180 and 185 prior to MATH 188). In general, however, it is suggested that students complete the New Mexico Transfer Module as outlined below. Student must earn a grade of "C" or higher in all COSC courses for the course to count toward a degree.

Credits**General Education Core for Associate of Science 28**
(See Page 101)

NOTE: Math requirement must take MATH 188
ENGL 211 or ENGL 218 requirement - Must take ENGL 211
Lab Science Requirement included in Chemistry-core classes

Additional Mathematics:

MATH 189	Calculus II	4
MATH 231	Discrete Mathematics	3

Mathematics:

MATH 189	Calculus II	4
MATH 231	Discrete Mathematics	3

Computer Science – Core classes:

COSC 118	Computer Programming Fundamentals I with C++ **	3
COSC 190	Database Concepts and Principles	3
COSC 218	Computer Programming Fundamentals II with C++	3
COSC 236	UNIX	3
COSC 240	Java Programming	3
COSC 243	Web Programming on UNIX Systems	3
COSC 262	Data Structures with C++	3
COSC 270	Windows GUI Programming	3
PHYS 211	General Physics I ***	4
PHYS 212	General Physics II ***	4

Total credit hours required for this degree 67

** You need to be able to use a computer, type, create documents, save files, etc. before taking COSC 118. If your computing skills are low you should take COSC 097 concurrently.

*** Read the current catalog of your intended transfer degree institution to take the most appropriate laboratory science courses. Any San Juan College approved laboratory science course may be substituted as deemed appropriate by your computer science advisor. This course also satisfies General Education laboratory science requirement. For information about NM Tech go to www.nmt.edu, NMSU www.nmsu.edu and Fort Lewis www.fortlewis.edu.

ENGINEERING**Associate of Science**

It is suggested that students complete the degree as outlined, and consider the additional courses accepted through the New Mexico Engineering Transfer Module (see details below degree requirements).

Students must have a minimum 2.0 grade point average and a grade of "C" or better in any of the courses required for transfer.

	Credits
Communications:	
ENGL 111 Freshman Composition	3
ENGL 211 Advanced Composition	3
Mathematics:	
MATH 188 Calculus I	4
MATH 189 Calculus II	4
MATH 268 Calculus III	4
MATH 282 Differential Equations	4
Social and Behavioral Science: Select one. For appropriate courses see Page 101.	3
Humanities and Fine Arts: Select two. For appropriate courses see Page 101.	6
Engineering – Core classes:	
CHEM 111 General Chemistry I	4
CHEM 112 General Chemistry II	4
COSC 118 Computer Programming Fundamentals I with C++	3
ENGR 233 Mechanics-Statics	3
ECON 251 Macroeconomics OR	3
ECON 252 Microeconomics	3
ENGR 230 Engineering Circuit Analysis	3
ENGR 112 Introduction to Engineering	3
DRFT 121 Engineering Graphics	3
ENGR 234 Mechanics-Dynamics	3
ENGR 236 Thermodynamics	3
PHYS 215 Engineering Physics I	4
PHYS 216 Engineering Physics II	4
Total credit hours required for this degree	68

New Mexico Engineering Transfer Module

Time permitting; students are encouraged to take any or all of the following courses, as they are also included in the articulated transfer module within New Mexico:

ENGL 218 Technical Writing	3
One Humanities & Fine Arts elective	3
One additional Humanities & Fine Arts elective OR Social & Behavioral elective	3

GENERAL SCIENCE

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General Education Core for Associate of Science 28
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NOTE: Math requirement must take MATH 188
Lab Science Requirement included in Chemistry-core classes

General Science – Core classes:

BIOL 121 Introductory Biology I, Science Selection*	4
BIOL 122 Introductory Biology II, Science Selection*	4
CHEM 111 General Chemistry I, Science Selection*	4
CHEM 112 General Chemistry II, Science Selection*	4
COSC 111 Computer Literacy or Higher Computer Science	3
GEOL 110 Introduction to Geology, GEOL 111 Historical Geology OR Science Selection	4
PHYS 211 General Physics I	3
PHYS 211L General Physics I Lab	1

Science Selection* (See Science Selection below)	8
Approved Elective**	3
Total credit hours required for this degree	68

* Science selection must include classes selected from Biology, Chemistry, Geology, and Physics.

** See your advisor for approved elective.

Approved Science Electives:

BIOL 220 General Botany	3
BIOL 222 Invertebrate Zoology	3
BIOL 223 Vertebrate Zoology	3
BIOL 224 Microbiology	3
BIOL 230 Environmental Conservation	3
BIOL 250 Systematic Botany	3
BIOL 260 Introduction to Cell Biology	3
CHEM 111 General Chemistry I	3
CHEM 112 General Chemistry II	3
CHEM 210 Organic Chemistry Survey	3
CHEM 251 Organic Chemistry I	3
CHEM 252 Organic Chemistry II	3
GEOL 110 Introduction to Geology	3
GEOL 111 Historical Geology	3
PHYS 211 General Physics I	3
PHYS 211L General Physics I Lab	1
PHYS 212 General Physics II	3
PHYS 212L General Physics II Lab	1

GEOGRAPHY

Associate of Science

General Education Core for Associate of Science 28
(See Page 101)

NOTE: Math requirement must take MATH 185
ENGL 211 or ENGL 218 requirement - Must take ENGL 211
Lab Science Requirement included in Chemistry-core classes

	Credits
GEOG 112 World Regional Geography OR	3
GEOG 145 Human Geography	4
GEOG 115 Map Use, Interpretation, and Design	4
GEOG 118 Introduction to Mapping Technologies	4
GEOG 111 Introduction to Physical Geography	4
GEOG 120 GPS and Surveying Methods	4
GEOG 151 Geographic Information Systems I	4
GEOG 251 Geographic Information Systems II	4
Approved Geography Elective (see below)	3 or 4
MATH 251 Statistics	4
Approved Geography Elective (see below)	3 or 4
COSC 185 Database Management Systems	3
Total	40-42

Geography Electives - select one

	Credits
GEOG 125 Weather and Climate	3
GEOG 130 Natural Hazards	3
GEOG 135 Energy and Natural Resources Geography	3
GEOG 140 Geography of the Four Corners	3
GEOG 230 Geographic Image Analysis	4
GEOL 110 Introduction to Geology	4
DRFT 150 Computer Aided Drafting (CAD)	4
COSC 214 Visual Basic I	3
COSC 118 Computer Programming Fundamentals I with C++	3
GEOG 295 *GIS Topics	1-6
GEOG 299 *GIS Special Problems	1-6
GEOG 285 *GIS Internship	3
GEOG 280 *Cooperative Education	3

GEOLOGY**Associate of Science**

	Credits
General Education Core for Associate of Science (See Page 101)	28
NOTE: Math requirement must take MATH 188 ENGL 211 or ENGL 218 requirement - Must take ENGL 211 Lab Science Requirement included in Chemistry-core classes	

Geology – Core classes:

CHEM 111 General Chemistry I	4
CHEM 112 General Chemistry II	4
COSC 111 Computer Literacy OR higher computer course	3
GEOG 118 Introduction to Mapping Technology	4
GEOL 110 Introduction to Geology	4
GEOL 111 Historical Geology	4
GEOL 270 Mineralogy	4
GEOL 271 Petrology	4
PHYS 211 General Physics I OR	
PHYS 215 Engineering Physics I	4
PHYS 212 General Physics II OR	
PHYS 216 Engineering Physics II	4
Total credit hours required for this degree	67

MATHEMATICS**Associate of Science**

	Credits
General Education Core for Associate of Science (See Page 101)	28
NOTE: Math requirement must take MATH 188 ENGL 211 or ENGL 218 requirement - Must take ENGL 211 Lab Science Requirement included in Chemistry-core classes	

Additional Mathematics:

MATH 189 Calculus II	4
MATH 268 Calculus III	4

Mathematics – Core classes:

COSC 118 Computer Programming Fundamentals I with C++ OR	
COSC 214 Visual Basics I	3
MATH 231 Discrete Mathematics	3
MATH 251 Statistics	4
PHYS 215 Engineering Physics I	4
PHYS 216 Engineering Physics II	4
Approved Science OR mathematics elective*	3-4
Approved Science OR mathematics elective*	3-4
Approved Science Elective* (See Approved Science Elective below)	4
Total credit hours required for this degree	64-66

* Approved science and mathematics elective courses are:

CHEM 111, 112
ENGR 230
ENGR 233
ENGR 234
ENGR 236
GEOL 110, 111
PHYS 217
MATH 275, 282

PHYSICS**Associate of Science**

	Credits
Communications:	
ENGL 111 Freshman Composition	3
ENGL 211 Advanced Composition	3
COMM 110 Public Speaking OR	
COMM 111 Interpersonal Communication	3

Mathematics:

MATH 188 Calculus I	4
MATH 189 Calculus II	
MATH 268 Calculus III	4

Social and Behavioral Science: Select two.

For appropriate courses see Page 101.

Humanities and Fine Arts: Select two.

For appropriate courses see Page 101.

Physics – Core classes:

CHEM 111 General Chemistry I	4
CHEM 112 General Chemistry II	4
COSC 118 Computer Programming Fundamentals I with C++	3
ENGR 230 Engineering Circuit Analysis	3
ECON 251 Macroeconomics OR	
ECON 252 Microeconomics	3
MATH 282 Differential Equations	4
ENGR 236 Thermodynamics	3
PHYS 15 Engineering Physics I	3
PHYS 215L Engineering Physics Lab I	1
PHYS 216 Engineering Physics II	3
PHYS 216L Engineering Physics Lab II	1
PHYS 217 Engineering Physics III	3

Total credit hours required for this degree 68

PRE-MEDICAL SCIENCE**Associate of Science**

General Education Core for Associate of Science (See Page 101)	28
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NOTE: Math requirement must take MATH 188
ENGL 211 or ENGL 218 requirement - Must take ENGL 211
Lab Science Requirement included in Chemistry-core classes

Pre-medical Science Core Courses:

BIOL 121 General Biology I*	4
BIOL 122 General Biology II*	4
BIOL 255 Introduction to Genetics	4
CHEM 111 General Chemistry I*	4
CHEM 112 General Chemistry II*	4
COSC 111 Computer Literacy OR higher computer science	3
Science electives	12
Total credit hours required for this degree	63

Approved Science electives:

BIOL 260 Introduction to Cell Biology	4
CHEM 251 Organic Chemistry I*	4
CHEM 252 Organic Chemistry II*	4
BIOL 224 Microbiology	4
PHYS 211 General Physics I*	3
PHYS 211L General Physics I Lab	1
PHYS 212 General Physics II*	3
PHYS 212L General Physics II Lab	1

* Needed for MCAT