

## Columbia College — Missouri S&T

### General Engineering

Transfer Guide Effective as of Fall 2024

Complete Group 1 - Core Requirements and Group 2 - Major Requirements for major of choice.

## Group 1 - Core Requirements: All Majors Take All Courses

Engineering students take all Group 1 - Core Requirements and Group 2 - Major Requirements for major of choice. Math prerequisites: While they are not part of Missouri S&T engineering degree requirements, algebra and trigonometry skills are critical to success in calculus. To prepare for entry into calculus, students should follow math placement testing and advising recommendations at their college.

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
MATH 215 and MATH 226 and MATH 235	Differential Calculus and Integral Calculus, Part I and Integral Calculus, Part II	9	MATH 1214 and MATH 1215	Calculus for Engineers I and Calculus for Engineers II Grade of C or better is required.	8
MATH 300	Multivariate Calculus	3	MATH 2222	Calculus III Grade of C or better is required.	4
MATH 370	Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHYS 211	Calculus-Based Physics I	5	PHYSICS 1135	Engineering Physics I Grade of C or better is required.	4
PHYS 212	Calculus-Based Physics II	5	PHYSICS 2135	Engineering Physics II Grade of C or better is required.	4
CHEM 110, 111L	Chemistry I and Lab	5	CHEM 1310, 1319	General Chemistry I and Lab	5
ENGL 111	English Composition I	3	ENGLISH 1120	Exposition and Argumentation	3
ECON 294 or ECON 293	Microeconomics or Macroeconomics	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3
Total Hours		36	Total Hours		34

## Group 2 - Major Requirements: Take All Courses for Major of Choice

Engineering students take all Group 1 - Core Requirements (above) and Group 2 - Major Requirements for chosen major from list below. See course requirements on following pages.

**Aerospace Engineering**  
**Architectural Engineering**  
**Biomedical Engineering/Biomufacturing or Biomaterials**  
**Ceramic Engineering**  
**Chemical Engineering and Biochemistry Emphasis**  
**Civil Engineering**  
**Computer Engineering**  
**Electrical Engineering**

**Engineering Management**  
**Environmental Engineering**  
**Geological Engineering**  
**Mechanical Engineering**  
**Metallurgical Engineering**  
**Mining Engineering**  
**Nuclear Engineering**  
**Petroleum Engineering**

Engineering Major Requirements are detailed on the following pages.

**Free Electives:** Some programs allow Free Electives as indicated within each major. Free Electives should be selected in consultation with your advisor and may not include remedial/deficiency courses, algebra, trigonometry, pre-calculus, or extra credits in required courses.

**Humanities/Social Science (HSS) Electives:** HSS electives may include any art, English and technical communication, etymology, foreign language, music, philosophy, speech and media studies, or theatre. Your campus may have additional acceptable options. Consult with your advisor or email [transfer@mst.edu](mailto:transfer@mst.edu) with questions. See Missouri S&T online catalog at <https://catalog.mst.edu/undergraduate/degreeprogramsandcourses/> for more information.

## Aerospace Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGL 112 or COMM 110 or ENGL 204	English Composition II or Intro to Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CISS 241	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 303 or MATH 338	Linear Algebra or Mathematical Statistics and Probability	3	MATH 3108 or STAT 3115	Linear Algebra I or Engineering Statistics <small>Will satisfy the Advanced Math/Comp Sci elective requirement.</small>	3
	Literature Elective	3		Literature Elective	3
MGMT 368	Business Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3	PHILOS 3235	Business Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	18		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	54		Total Hours*	52

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Aerospace Engineering degree.

## Architectural Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 121 (or HIST 122 or HIST 102)	American History to 1877 (or American History since 1877 or Western Civilization II)	3	HISTORY 1200* (or HISTORY 1300 or HISTORY 1310)	Modern Western Civilization* (or American History to 1877 or American History since 1877) <small>*HISTORY 1200 is preferred; 1300 or 1310 will also be accepted.</small>	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115*	Engineering Statistics* <small>*Will be substituted for STAT 3113.</small>	3
GEOL 110	Intro to Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENGL 112, ENGL 204, COMM 110.	3	Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENGLISH 1160, 1600, 3560 or SPMS 1185.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	12		Group 2 Major Requirements	12
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	48		Total Hours*	46

\*S&T advisor permission is required to transfer more than 69 credits toward the S&T Architectural Engineering degree.

## Biomedical Engineering-Biomanufacturing Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 110	Intro to Speech	3	SP&MS 1185	Principles of Speech	3
ENGL 204	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 112, 112L	Chemistry II (3) and Lab (2)	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIOL 110, 110L	Principles of Biology and Lab	5	BIO SCI 1113, 1219	General Biology and Lab <small>Applies to degree as Track Elective.</small>	4
CISS 240 or CISS 242 or CISS 241*	Intro to Programming or Programming II or Programming I*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving (3) or Intro to Programming Method and Lab (C++)* <small>*will be substituted for CS 1500</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	25		Group 2 Major Requirements	22
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	61		Total Hours*	56

\*S&T advisor permission is required to transfer more than 68 credit hours toward the degree.

## Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 110	Intro to Speech	3	SP&MS 1185	Principles of Speech	3
ENGL 204	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 112, 112L	Chemistry II (3) and Lab (2)	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIOL 110, 110L	Principles of Biology and Lab	5	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
CISS 240 or CISS 242 or CISS 241*	Intro to Programming or Programming II or Programming I*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving (3) or Intro to Programming Method and Lab (C++)* <small>*will be substituted for CS 1500</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	22		Group 2 Major Requirements	19
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	58		Total Hours*	53

\*S&T advisor permission is required to transfer more than 65 credits toward the S&T Biomedical Engineering degree.

## Ceramic Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 112, 112L	Chemistry II (3) and Lab (2)	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics <small>or any statistics course 3000-level or higher. Satisfies statistics elective requirement.</small>	3
ENGL 112 or COMM 110 or HSS Elective	English Composition II or Intro to Speech or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Principles of Speech or Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	20		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	56		Total Hours*	52

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Ceramic Engineering degree.

## Chemical Engineering or Chemical Engineering - Biochemical Engineering Emphasis Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 110	Intro to Speech	3	SP&MS 1185	Principles of Speech	3
ENGL 204	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 112, 112L	Chemistry II (3) and Lab (2)	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
CISS 240 or CISS 242 or CISS 241*	Intro to Programming or Programming II or Programming I*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving (3) or Intro to Programming Method and Lab (C++)* <small>*will be substituted for CS 1500</small>	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics* <small>*Will be substituted for STAT 3113.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	23		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	59		Total Hours*	55

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Chemical Engineering degree.

## Civil Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 112 or COMM 110 or ENGL 204	English Composition II or Intro to Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEOL 110	Intro to Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115*	Engineering Statistics* <small>*Will be substituted for STAT 3113.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	15		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	51		Total Hours*	49

\*S&T advisor permission is required to transfer more than 69 credits toward the S&T Civil Engineering degree.

## Computer Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 110	Intro to Speech	3	SPMS 1185	Principles of Speech	3
ENGL 112 or ENGL 204	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CISS 240 or CISS 242 or CISS 241*	Intro to Programming or Programming II or Programming I*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving (3) or Intro to Programming Method and Lab (C++)* <small>*will be substituted for CS 1500</small>	3
MATH 303 or MATH 380	Linear Algebra or Advanced Calculus I	3	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics <small>Will satisfy a required math elective.</small>	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115*	Engineering Statistics* <small>*Will be substituted for STAT 3117.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	60		Total Hours*	58

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Computer Engineering degree.

## Electrical Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 110	Intro to Speech	3	SPMS 1185	Principles of Speech	3
ENGL 112 or ENGL 204	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CISS 240 or CISS 242 or CISS 241*	Intro to Programming or Programming II or Programming I*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving (3) or Intro to Programming Method and Lab (C++)* <small>*will be substituted for CS 1500</small>	3
MATH 303	Linear Algebra	3	MATH 3108	Linear Algebra	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115*	Engineering Statistics* <small>*Will be substituted for STAT 3117.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	60		Total Hours*	58

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Electrical Engineering degree.

## Engineering Management Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
PSY 101	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
COMM 110	Intro to Speech	3	SPMS 1185	Principles of Speech	3
ENGL 112 or ENGL 204	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
CISS 241	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	3	Electives	Maximum Free Electives	0
	Group 2 Major Requirements	24		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	<b>Total Hours</b>	<b>60</b>		<b>Total Hours*</b>	<b>61</b>

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Engineering Management degree.

## Environmental Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 112 or COMM 110 or ENGL 204	English Composition II or Intro to Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 121 or HIST 122 or HIST 102	American History to 1877 or American History since 1877 or Western Civilization II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
GEOL 110	Intro to Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 112, 112L	Chemistry II (3) and Lab (2)	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIOL 110	Principles of Biology	3	BIO SCI 1113	General Biology	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115*	Engineering Statistics* <small>*Will be substituted for STAT 3113.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	23		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	<b>Total Hours</b>	<b>59</b>		<b>Total Hours*</b>	<b>55</b>

\*S&T advisor permission is required to transfer more than 69 credits toward the S&T Environmental Engineering degree.

## Geological Engineering Group 2 Major Requirements

Columbia College		Semester	Missouri S&T		
ENGL 204	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CISS 240 or CISS 242 or CISS 241*	Intro to Programming or Programming II or Programming I*	3	CS 1500 or CS 1971, 1981	Computational Problem Solving (3) or Intro to Programming Method and Lab (C++)	3
GEOL 110	Intro to Physical Geology	3	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	21		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	57		Total Hours*	55

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Geological Engineering degree.

## Mechanical Engineering Group 2 Major Requirements

Columbia College		Semester	Missouri S&T		
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGL 112 or COMM 110 or ENGL 204	English Composition II or Intro to Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CISS 241	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 303 or MATH 338	Linear Algebra or Mathematical Statistics and Probability	3	MATH 3108 or STAT 3115	Linear Algebra I or Engineering Statistics <small>Will satisfy the Advanced Math/Statistics elective requirement.</small>	3
	Literature Elective	3		Literature Elective	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	18		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	54		Total Hours*	52

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Mechanical Engineering degree.

## Metallurgical Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 112 or COMM 110 or ENGL 204	English Composition II or Intro to Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics	3
CHEM 112, 112L	Chemistry II (3) and Lab (2)	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	5	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	25		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	61		Total Hours*	55

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Metallurgical Engineering degree.

## Mining Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 112 or ENGL 204	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics	3
GEOL 110	Intro to Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	18		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	54		Total Hours*	52

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Mining Engineering degree.

## Nuclear Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 112 or COMM 110 or ENGL 204	English Composition II or Intro to Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CISS 241	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 303 or MATH 380	Linear Algebra or Advanced Calculus I	3	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics	3
MATH 338	Mathematical Statistics and Probability	3	STAT 3115	Engineering Statistics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	6	Electives	Maximum Free Electives	6
	Group 2 Major Requirements	27		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	63		Total Hours*	61

\*S&T advisor permission is required to transfer more than 68 credits toward the S&T Nuclear Engineering degree.

## Petroleum Engineering Group 2 Major Requirements

<u>Columbia College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 204 or ENGL 112	Technical Writing or English Composition II	3	ENGLISH 3560 or ENGLISH 1160	Technical Writing (preferred) or Writing and Research	3
HIST 102 or HIST 121 or HIST 122 or GOVT 112	Western Civilization II or American History to 1877 or American History since 1877 or American Government II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEOL 110	Intro to Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	15		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	51		Total Hours*	49

\*S&T advisor permission is required to transfer more than 69 credits toward the S&T Petroleum Engineering degree.