

# Missouri Southern State University — 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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>			
MATH 0150	Calculus with Analytic Geometry I	5	MATH 1214	Calculus I <small>Grade of C or better is required.</small>	4	
MATH 0250	Calculus with Analytic Geometry II	5	MATH 1215	Calculus II <small>Grade of C or better is required.</small>	4	
MATH 0260	Calculus with Analytic Geometry III	5	MATH 2222	Calculus III <small>Grade of C or better is required.</small>	4	
MATH 0322	Differential Equations	3	MATH 3304	Elementary Differential Equations	3	
PHYS 0270	General Physics I	4	PHYSICS 1135	Engineering Physics I <small>Grade of C or better is required.</small>	4	
PHYS 0290, 0291	General Physics II and Lab	5	PHYSICS 2135	Engineering Physics II <small>Grade of C or better is required.</small>	4	
CHEM 0140,141	General Chemistry I and Lab	4	CHEM 1310, 1319	General Chemistry I and Lab	5	
ENG 0101	College Composition I	3	ENGLISH 1120	Exposition and Argumentation	3	
ECON 0202 or	Principles of Economics (Micro) or	3	ECON 1100 or	Principles of Microeconomics or	3	
ECON 0201	Principles of Economics (Macro)	3	ECON 1200	Principles of Macroeconomics	3	
Total Hours			37	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/Biomanufacturing 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

Aerospace Engineering Group 2 Major Requirements			
	<u>Missouri Southern State University</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200
ENG 0102 or COMM 0100 or ENG 0313	College Composition II or Oral Communications or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560
CIS 0110	Programming I	3	CS 1971, 1981
PHYS 0372	Electronics for Experimental Physicists	4	EE 2800
MATH 0351	Linear Algebra	3	MATH 3108
ENG 0271 or ENG 0281 or ENG 0261	British Literature: Medieval - 18th Century or American Literature: Beginning - 19th Century or World Literature: Ancient - 16th Century or other literature	3	ENGLISH 1211 or ENGLISH 1221 or ENGLISH 1231
PHIL 01212	Ethics or other engineering, business, bio, social ethics approved by advisor	3	PHILOS 1130
	<i>No free electives applied to the degree.</i>	0	
	Group 2 Major Requirements	22	
	Group 1 Core Requirements	37	
	Total Hours	59	Total Hours*
			55

\*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

Architectural Engineering Group 2 Major Requirements			
	<u>Missouri Southern State University</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>
HIST 0140* (or HIST 0110 or HIST 0120)	Western Civilization since 1660* (or US History 1492-1877 or US History 1877 to Present) <small>*HISTORY 0140 is preferred; 0110 or 0120 will also be accepted.</small>	3	HISTORY 1200* (or HISTORY 1300 or HISTORY 1310)
PHYS 0322	Classical Mechanics	3	MECH ENG 2350
GEOL 0120 or GEOL 0211	Intro to Geology (3) or Fundamentals of Earth and Space Science (4)	3	GEOLOGY 1110 (GEO ENG 1150)
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: ENG 0102, 0313 or COMM 0100.	3	Humanities or Social Science or Communication
	<i>No free electives applied to the degree.</i>	0	
	Group 2 Major Requirements	12	
	Group 1 Core Requirements	37	
	Total Hours	49	Total Hours*
			45

\*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 0100	Oral Communications	3	SP&MS 1185	Principles of Speech	3
ENG 0313	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0142	General Chemistry II	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
CHEM 0301	Organic Chemistry I	5	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHEM 0302 or BIO 0101 or BIO 0231	Organic Chemistry II (5) or General Biology (4) or General and Medical Microbiology (5)	4	CHEM 2220, 2229 or BIO SCI 1113, 1219 or BIO SCI 2223	Organic Chemistry II and Lab or General Biology and Lab or General Genetics <small>Applies to degree as Track Elective.</small>	4
BIO 0121	Human Anatomy and Physiology I	4	BIO SCI 3333, 3339	Anatomy and Physiology I and Lab	4
CIS 0210 or CIS 0350 or CIS 0110*	Programming II or Data Structures or Programming I*	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology 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	33		Group 2 Major Requirements	30
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	70		Total Hours*	64

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

## Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 0100	Oral Communications	3	SP&MS 1185	Principles of Speech	3
ENG 0313	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0142	General Chemistry II	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
CHEM 0301	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*CHEM 2219 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
CHEM 0302	Organic Chemistry II	5	CHEM 2220, 2229*	Organic Chemistry II and Lab* <small>CHEM 2229 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
BIO 0101	General Biology	4	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
BIO 0121	Human Anatomy and Physiology I	4	BIO SCI 3333, 3339	Human Anatomy and Physiology I and Lab	4
CIS 0210 or CIS 0350 or CIS 0110*	Programming II or Data Structures or Programming I*	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* C++ <small>*Will be substituted for CS 1500.</small>	3
PHYS 0372	Electronics for Experimental Physicists	4	EE 2100*	Circuits I <small>*A passing grade on the Missouri S&amp;T EE Advancement Exam I is required to receive credit for EE 2100. Applies to the degree as a Track Elective (Engineering).</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	39		Group 2 Major Requirements	34
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	76		Total Hours*	68

\*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

Missouri Southern State University		Semester	Missouri S&T		
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0301	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*The lab is not required for the degree, will transfer as 1 of the 9 science elective credits (below).</small>	3
CHEM 0142	General Chemistry II	5	CHEM 1320	General Chemistry II	3
PHYS 0301	Modern Physics	4	PHYS 2305	Intro to Modern Physics	3
ENG 0102 or COMM 0100 or HSS Elective	College Composition II or Oral Communications or Any 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	26		Group 2 Major Requirements	21
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	63		Total Hours*	55

\*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

Missouri Southern State University		Semester	Missouri S&T		
COM 0100	Oral Communications	3	SP&MS 1185	Principles of Speech	3
ENG 0313	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0142	General Chemistry II	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
CHEM 0301	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*The lab will apply to the degree as 1 of the 9 science elective credits (below).</small>	4
CHEM 0302 or BIO 0231	Organic Chemistry II or General and Medical Microbiology	8	CHEM 2220 or BIO SCI 3313, 3319	Organic Chemistry II (3) or Microbiology and Lab (5) <small>Will satisfy science elective requirement. Select up to 9 hours from these options or CHEM 2219 Organic Chemistry Lab.</small>	8
CIS 0210 or CIS 0350 or CIS 0110*	Programming II or Data Structures or Programming I*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving or Intro to Programming Methodology 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	33		Group 2 Major Requirements	30
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	70		Total Hours*	64

\*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

ENG 0102 or COMM 0100 or ENG 0313	College Composition II or Oral Communications or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0120 or GEOL 0211	Intro to Geology (3) or Fundamentals of Earth and Space Science (4)	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHYS 0322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
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	14
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	52		Total Hours*	48

\*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 0100	Oral Communications	3	SPMS 1185	Principles of Speech	3
ENG 0102 or ENG 0313	College Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
CIS 0210 or CIS 0350 or CIS 0110*	Programming II or Data Structures or Programming I*	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* C++ <small>*Will be substituted for CS 1500.</small>	3
PHYS 0322 or PHYS 0341 or PHYS 0301 or CHEM 0301	Engineering Mechanics-Dynamics (3) or Thermal Physics (4) or Modern Physics (4) or Organic Chemistry I (5)	3	MECH ENG 2350 or MECH 2527 or PHYSICS 2305 or CHEM 2210	Engineering Mechanics-Dynamics (2) or Thermal Analysis (3) or Intro to Modern Physics (3) or Organic Chemistry I (4) <small>Satisfies a required engineering/science elective.</small>	3
PHYS 0372	Electronics for Experimental Physicists	4	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	3
MATH 0351 or MATH 0300	Linear Algebra or Fundamentals of Mathematical Thought	3	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics <small>Will satisfy a required math elective.</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	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	65		Total Hours*	61

\*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 0100	Oral Communications	3	SPMS 1185	Principles of Speech	3
ENG 0102 or ENG 0313	College Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
CIS 0210 or CIS 0350 or CIS 0110*	Programming II or Data Structures or Programming I*	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* C++ <small>*Will be substituted for CS 1500.</small>	3
PHYS 0322 and S&T CIV ENG 2200 <small>BOTH of the courses above or ONE of the courses below.</small> OR PHYS 0341 or PHYS 0301 or CHEM 0301	Engineering Mechanics-Dynamics (3 hours) in combination with S&T CIV Eng 2200 Statics. <small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small> OR Thermal Physics (4) or Modern Physics (4) or Organic Chemistry I (5)	4	CIV ENG 2200 and MECH ENG 2350 <small>BOTH of the courses above or ONE of the courses below.</small> OR MECH 2527 or PHYSICS 2305 or CHEM 2210	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (2) <small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small> OR Thermal Analysis (3) or Intro to Modern Physics (3) or Organic Chemistry I (3)	3
PHYS 0372	Electronics for Experimental Physicists	4	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	3
MATH 0351	Linear Algebra	3	MATH 3108	Linear Algebra	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	29		Group 2 Major Requirements	27
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	66		Total Hours*	61

\*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>Missouri Southern State University</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>			
PSYC 0100	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0100	Oral Communications	3	SPMS 1185	Principles of Speech	3
ENG 0102 or ENG 0313	College Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
CIS 0110	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHYS 0372	Electronics for Experimental Physicists	4	EE 2800	Electrical Circuits	3
PHYS 0322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 0341	Thermal Physics	4	MECH 2527	Thermal Analysis	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	32		Group 2 Major Requirements	26
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	61

\*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>Missouri Southern State University</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>			
ENG 0102 or COMM 0100 or ENG 0313	College Composition II or Oral Communications or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877-present	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
GEOLOG 0120 or GEOLOG 0211	Intro to Geology (3) or Fundamentals of Earth and Space Science (4)	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 0142	General Chemistry II	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
BIO 0101	General Biology	4	BIO SCI 1113, 1119*	General Biology and Lab* <small>*CHEM 1119 is not an S&amp;T degree requirement, will transfer as general elective credit.</small>	3
PHYS 0322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
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	24		Group 2 Major Requirements	20
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	61		Total Hours*	54

\*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

<u>Missouri Southern State University</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>	
ENG 0313 Technical Writing	3	ENGLISH 3560 Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120 Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
CIS 0210 or CIS 0350 or CIS 0110* Programming II or Data Structures or Programming I*	3	CS 1500 or CS 1971, 1981 Computational Problem Solving or Intro to Programming Methodology and Lab	3
GEOL 0120 or GEOL 0211 Intro to Geology (3) or Fundamentals of Earth and Space Science (4)	3	GEO ENG 1150 (GEOLOGY 1110) Physical and Environmental Geology	3
PHYS 0322 Classical Mechanics	3	MECH ENG 2350 Engineering Mechanics-Dynamics	2
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	20
Group 1 Core Requirements	37	Group 1 Core Requirements	34
Total Hours	58	Total Hours*	54

\*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

<u>Missouri Southern State University</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>	
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120 Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
ENG 0102 or COMM 0100 or ENG 0313 College Composition II or Oral Communications or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560 Writing and Research or Principles of Speech or Technical Writing	3
CIS 0110 Programming I	3	CS 1971, 1981 Intro to Programming Method and Lab (C++)	3
PHYS 0372 Electronics for Experimental Physicists	4	EE 2800 Electrical Circuits	3
MATH 0351 Linear Algebra	3	MATH 3108 Linear Algebra I <small>Will satisfy the Advanced Math/Comp Sci elective requirement.</small>	3
ENG 0271 or ENG 0281 or ENG 0261 British Literature: Medieval - 18th Century or American Literature: Beginning - 19th Century or World Literature: Ancient - 16th Century or other literature	3	ENGLISH 1211 or ENGLISH 1221 or ENGLISH 1231 British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 or World Literature I or other literature	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	22	Group 2 Major Requirements	21
Group 1 Core Requirements	37	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 Mechanical Engineering degree.

## Metallurgical Engineering Group 2 Major Requirements

<u>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 0102 or COMM 0100 or ENG 0313	College Composition II or Oral Communications or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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 0142	General Chemistry II	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
CHEM 0301 or PHYS 0372 or PHYS 0301	Organic Chemistry I (5) or Electronics for Experimental Physicists (4) or Modern Physics (4)	4	CHEM 2210 or EE 2800 or PHYSICS 2305	Organic Chemistry I (4) or Electrical Circuits (3) or Intro to Modern Physics (3) <small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement.</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	26		Group 2 Major Requirements	21
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	63		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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 0313 or ENG 0102	Technical Writing <i>preferred</i> or College Composition II	3	ENGLISH 3560 or ENGLISH 1160	Technical Writing <i>preferred</i> or Writing and Research	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
PHYS 0322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 0341	Thermal Physics	4	MECH ENG 2527	Thermal Analysis	3
GEOLOG 0120 or GEOLOG 0211	Intro to Geology (3) or Fundamentals of Earth and Space Science (4)	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	22		Group 2 Major Requirements	20
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	59		Total Hours*	54

\*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 0102 or COMM 0100 or ENG 0313	College Composition II or Oral Communications or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
CIS 0110	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 0351 or MATH 0300	Linear Algebra or Fundamentals of Mathematical Thought	3	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics	3
PHYS 0372	Electronics for Experimental Physicists	4	EE 2800	Electrical Circuits	3
PHYS 301	Modern Physics	4	PHYSICS 2305	Intro to Modern Physics	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	32		Group 2 Major Requirements	30
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	64

\*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 0102 or ENG 0313	College Composition II or Technical Writing	3	ENGLISH 3560 or ENGLISH 1160	Technical Writing (preferred) or Writing and Research	3
HIST 0140 or HIST 0110 or HIST 0120 or PSC 0120	Western Civilization since 1660 or US History 1492-1877 or US History 1877 to Present or American Government	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
GEOLOG 0120 or GEOLOG 0211	Intro to Geology (3) or Fundamentals of Earth and Space Science (4)	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHYS 0322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 0341	Thermal Physics	4	MECH ENG 2527	Thermal Analysis	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	22		Group 2 Major Requirements	20
	Group 1 Core Requirements	37		Group 1 Core Requirements	34
	Total Hours	59		Total Hours*	54

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