

Northwest Missouri State University — Missouri S&T

General Engineering Transfer Guide

Effective as of Fall 2020

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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
MATH 17120	Calculus I	4	MATH 1214	Calculus for Engineers I	Grade of C or better is required. 4
MATH 17121	Calculus II	4	MATH 1215	Calculus for Engineers II	Grade of C or better is required. 4
MATH 17321	Multivariate Calculus	4	MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required. 4
MATH 17361	Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHYS 25120,25121	Fundamentals of Classical Physics I and Lab	5	PHYSICS 1135	Engineering Physics I	Grade of C or better is required. 4
PHYS 25230,25231	Fundamentals of Classical Physics II and Lab	5	PHYSICS 2135	Engineering Physics II	Grade of C or better is required. 4
CHEM 24114, 24115	General Chemistry I and Lab	4	CHEM 1310, 1319	General Chemistry I and Lab	5
ENGL 10111	Composition I: Academic Literacies	3	ENGLISH 1120	Exposition and Argumentation	3
ECON 52151 or ECON 52150	General Economics II or General Economics I	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3
Total Hours		35			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
Ceramic Engineering
Chemical Engineering
Chemical Engineering/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 history, economics, political science, sociology, psychology, philosophy, fine art, literature, or foreign language. Missouri S&T approved HSS courses are listed at ugs.mst.edu. Your campus may have additional acceptable options. Consult with your advisor or email transfer@mst.edu with questions.

Aerospace Engineering Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CSIS 44149	Scientific Computing	3	CS 1972, 1982	Intro to MATLAB Programming and Lab	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	AERO ENG 2360	Dynamics	3
MATH 17311 or MATH 17230	Linear Algebra or Probability and Statistics	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
	See your advisor for course options.	3		Ethics Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	59		Total Hours*	58

*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HUM 26103 (HIST 33155 or HISST 33156)	Western Civilization II: 1500 to the Present (or The United States to 1877 or The United States since 1877) <small>*HUM 26103 is preferred; HIST 33155 or 33156 will also be accepted.</small>	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
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics	3
ENGL 10112 or COM 29230 or HSS Elective	Composition II: Writing as Engagement or Public Speaking 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 Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	19		Group 2 Major Requirements	18
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	54		Total Hours*	52

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

Ceramic Engineering Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
CHEM 24342 or CHEM 24534 or CHEM 24532	Organic Chemistry I or Physical Chemistry II or Physical Chemistry I	3	CHEM 2210 or CHEM 3410 or CHEM 3420 or	Organic Chemistry I (4) or Chemical Thermodynamics I (3) or Intro to Quantum Chemistry (3) or <small>(Not a specific requirement. Will satisfy the advanced chemistry elective requirement.)</small>
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics
ENGL 10112 or COM 29230 or HSS Elective	Composition II: Writing as Engagement or Public Speaking 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 Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	22		Group 2 Major Requirements
	Group 1 Core Requirements	35		Group 1 Core Requirements
	Total Hours	57		Total Hours*
				55

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

Chemical Engineering Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II
CHEM 24342, 24343	Organic Chemistry I and Lab	5	CHEM 2210, 2219	Organic Chemistry I and Lab
CHEM 24344 or BIOL 04140 or CHEM 24532, 24533	Organic Chemistry II (3) or General Microbiology (4) or Physical Chemistry I and Lab (4) <small>(Will satisfy science elective requirement. Select up to 8 hours from these options.)</small>	9	CHEM 2220 or BIO SCI 3313, 3319 or CHEM 3420, 3429	Organic Chemistry II (4) or Microbiology and Lab (5) or Intro to Quantum Chem and Phys Chem Lab <small>(Will satisfy science elective requirement. Select up to 8 hours from these options.)</small>
CSIS 44242 or CSIS 44149	Data Structures or Scientific Computing	3	CS 1500 or CS 1972, 1982	Computational Problem Solving (3) or Intro to MATLAB Programming and Lab
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics
COM 29230	Public Speaking	3	SP&MS 1185	Principles of Speech
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	36		Group 2 Major Requirements
	Group 1 Core Requirements	35		Group 1 Core Requirements
	Total Hours	71		Total Hours*
				69

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

Chemical Engineering - Biochemical Engineering Emphasis Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II	3
CHEM 24342, 24343	Organic Chemistry I and Lab	5	CHEM 2210, 2219	Organic Chemistry I and Lab	5
CHEM 24344 or BIOL 04140 or CHEM 24532, 24533	Organic Chemistry II (3) or General Microbiology (4) or Physical Chemistry I and Lab (4) <small>(Will satisfy science elective requirement. Select up to 8 hours from these options.)</small>	8	CHEM 2220 or BIO SCI 3313, 3319 or CHEM 3420, 3429	Organic Chemistry II (4) or Microbiology and Lab (5) or Intro to Quantum Chem and Phys Chem Lab <small>(Will satisfy science elective requirement. Select up to 8 hours from these options.)</small>	8
CSIS 44242 or CSIS 44149	Data Structures or Scientific Computing	3	CS 1500 or CS 1972, 1982	Computational Problem Solving (3) or Intro to MATLAB Programming and Lab	3
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics	3
COM 29230	Public Speaking	3	SP&MS 1185	Principles of Speech	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	35		Group 2 Major Requirements	34
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	70		Total Hours*	68

*S&T advisor permission is required to transfer more than 71 credits toward the S&T Chemical/Biochemical Engineering degree.

Civil Engineering Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	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	35		Group 1 Core Requirements	34
	Total Hours	57		Total Hours*	55

*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COM 29230	Public Speaking	3	SPMS 1185	Public Speaking	3
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CSIS 44242	Data Structures	3	CS 1500	Computational Problem Solving	3
PHYS 25322 and PHYS 25325 (BOTH of the courses above or ONE of the courses below.)	Engineering Mechanics-Statics (3) and Classical Mechanics I (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3	CIV ENG 2200 and MECH ENG 2350 (BOTH of the courses above or ONE of the courses below.)	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3
OR	OR	3	OR	OR	3
CHEM 24342 or BIOL 04310 or BIOL 04350	Organic Chemistry I (3) or Cell Biology (3) or Genetics (3)	3	CHEM 2210 or BIO SCI 2213 or BIO SCI 2223	Organic Chemistry I (4) or Cell Biology (3) or General Genetics (3)	3
MATH 17311	Linear Algebra	3	MATH 3108	Linear Algebra (Will satisfy a required math elective.)	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	Group 2 Major Requirements	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	59		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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COM 29230	Public Speaking	3	SPMS 1185	Public Speaking	3
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
PHYS 25322 and PHYS 25325 (BOTH of the courses above or ONE of the courses below.)	Engineering Mechanics-Statics (3) and Classical Mechanics I (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3	CIV ENG 2200 and MECH ENG 2350 (BOTH of the courses above or ONE of the courses below.)	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3
OR	OR	3	OR	OR	3
CHEM 24342 or BIOL 04310 or BIOL 04350	Organic Chemistry I (3) or Cell Biology (3) or Genetics (3)	3	CHEM 2210 or BIO SCI 2213 or BIO SCI 2223	Organic Chemistry I (4) or Cell Biology (3) or General Genetics (3)	3
MATH 17311	Linear Algebra	3	MATH 3108	Linear Algebra	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	Group 2 Major Requirements	21		Group 2 Major Requirements	21
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	56		Total Hours*	55

*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing
CSIS 44149	Scientific Computing	3	CS 1972, 1982	Intro to MATLAB Programming and Lab
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics (Will be substituted for STAT 3113.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Maximum Free Electives
	Group 2 Major Requirements	24		Group 2 Major Requirements
	Group 1 Core Requirements	35		Group 1 Core Requirements
	Total Hours	59		Total Hours* 58

*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing
HIST 33155 or HIST 33156 or HUM 26103	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200	American History to 1877 or American History since 1877 or Modern Western Civilization
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II
BIOL 04102	General Biology	3	BIO SCI 1113	General Biology
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	29		Group 2 Major Requirements
	Group 1 Core Requirements	35		Group 1 Core Requirements
	Total Hours	64		Total Hours* 62

*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
GEO 27110, 27111	General Geology and Lab	4	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
BIOL 04102 or CHEM 24116 or CHEM 24342	General Biology and Lab or General Chemistry II or Organic Chemistry I	3	BIO SCI 1113 or CHEM 1320 or CHEM 2210	General Biology or General Chemistry II or Organic Chemistry I	3
	<i>See your advisor for course options.</i>	3		or any 3-hour course in chemistry, geochemistry, or biology. Satisfies chemistry/geochemistry elective requirement.	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Humanities/Social Science Elective	3
	Group 2 Major Requirements	25		Maximum Free Electives	0
	Group 1 Core Requirements	35		Group 2 Major Requirements	24
	Total Hours	60		Group 1 Core Requirements	34
				Total Hours*	58

*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CSIS 44149	Scientific Computing	3	CS 1972, 1982	Intro to MATLAB Programming and Lab	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2360	Dynamics	3
MATH 17311 or MATH 17230	Linear Algebra or Probability and Statistics	3	MATH 3108 or STAT 3115	Linear Algebra I or Engineering Statistics	3
	Literature Elective	3		(Will satisfy the Advanced Math/Comp Sci elective requirement.)	3
	<i>See your advisor for course options.</i>	3		Literature Elective	3
	<i>No free electives applied to the degree.</i>	0		Humanities/Social Science Elective	3
	Group 2 Major Requirements	24		Maximum Free Electives	0
	Group 1 Core Requirements	35		Group 2 Major Requirements	24
	Total Hours	59		Group 1 Core Requirements	34
				Total Hours*	58

*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

Metallurgical Engineering Group 2 Major Requirements					
Northwest Missouri State University		Semester	Missouri S&T		
ENGL 10112 or COM 29230 or ENGL 10315	Composition II: Writing as Engagement or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics	3
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II	3
CHEM 24342 or CHEM 24534 or PHYS 25330	Organic Chemistry I or Physical Chemistry II or Electricity and Magnetism I	3	CHEM 2210 or CHEM 3410 or EE 2800	Organic Chemistry I (4) or Chemical Thermodynamics I (3) or Electrical Circuits (3)	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	5		Maximum Free Electives	5
	Group 2 Major Requirements	30		Group 2 Major Requirements	29
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	65		Total Hours*	63

*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

Mining Engineering Group 2 Major Requirements					
Northwest Missouri State University		Semester	Missouri S&T		
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics	3
PHYS 25322	Statics	3	CIV ENG 2200*	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	25		Group 2 Major Requirements	24
	Group 1 Core Requirements	35		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 Mining Engineering degree.

Nuclear Engineering Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing 3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government 3
MATH 17311	Linear Algebra	3	MATH 3108	Linear Algebra 3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics 3
MATH 17230	Probability and Statistics	3	STAT 3113	Applied Engineering Statistics 3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective 3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective 3
	<i>See your advisor for course options.</i>	6		Maximum Free Electives 6
	Group 2 Major Requirements	27		Group 2 Major Requirements 27
	Group 1 Core Requirements	35		Group 1 Core Requirements 34
	Total Hours	62		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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENGL 10112 or ENGL 10315	Composition II: Writing as Engagement or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing 3
HIST 33155 or HIST 33156 or HUM 26103 or POLS 34102	The United States to 1877 or The United States since 1877 or Western Civilization II: 1500 to the Present or Intro to American Government and Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government 3
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology 3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics 3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics 3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective 3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective 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	35		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 Petroleum Engineering degree.