

# Northwest Missouri State University — Missouri S&T

## General Engineering Transfer Guide

Effective as of Fall 2023

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&amp;T</u>		
MATH 17120	Calculus I	4	MATH 1214	Calculus I Grade of C or better is required.	4
MATH 17121	Calculus II	4	MATH 1215	Calculus II Grade of C or better is required.	4
MATH 17321	Multivariate Calculus	4	MATH 2222	Calculus 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	General Economics II or	3	ECON 1100 or	Principles of Microeconomics or	3
ECON 52150	General Economics I	3	ECON 1200	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 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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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
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
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
PHYS 25325	Classical Mechanics I	3	AERO ENG 2360	Dynamics
MATH 17311	Linear Algebra	3	MATH 3108	Linear Algebra I (Will satisfy the Advanced Math/Comp Sci elective requirement.)
ENGL 10245 or ENGL 10233	English Literature: Beowulf through the 18th Century or American Literature: Beginnings to 1865 (or other literature elective)	3	ENGLISH 1211 or ENGLISH 1221	British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 (or other literature elective)
	Ethics Elective	3		Ethics Elective Engineering, business, bio, social or other ethics approved by advisor.
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	21		Group 2 Major Requirements
	Group 1 Core Requirements	35		Group 1 Core Requirements
	Total Hours	56		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

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
HUM 26103 (HIST 33155 or HIST 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>
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics
HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	16		Group 2 Major Requirements
	Group 1 Core Requirements	35		Group 1 Core Requirements
	Total Hours	51		Total Hours*
				48

\*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&amp;T</u>		
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
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	Organic Chemistry I or Chemical Thermodynamics I or Intro to Quantum Chemistry <small>(Will satisfy the advanced chemistry elective requirement.)</small>	3
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II	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 Principles of Speech or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	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 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&amp;T</u>		
ENGL 10315	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 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* <small>*The lab is not required for the degree, will transfer as 1 of the 9 science elective credits (below).</small>	4
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 4610, 4619	Organic Chemistry II (3) or Microbiology and Lab (5) or General Biochemistry 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
CSIS 44141 or CSIS 44241	Computer Programming I or Computer Programming I	3	CS 1500	Computational Problem Solving	3
COM 29230	Public Speaking	3	SP&MS 1185	Principles of Speech	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	32		Group 2 Major Requirements	30
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	67		Total Hours*	64

\*S&T advisor permission is required to transfer more than 68 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&amp;T</u>		
ENGL 10315	Technical Writing	3	ENGLISH 3560	Technical Writing	3	
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 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 (3) and Lab* (1) <small>*The lab is not required for the degree, will transfer as 1 of the 9 science elective credits (below).</small>	4	
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>	3	CHEM 2220 or BIO SCI 3313, 3319 or CHEM 4610, 4619	Organic Chemistry II (3) or Microbiology and Lab (5) or General Biochemistry and Lab <small>(Will satisfy science elective requirement. Select up to 9 hours from these options or CHEM 2219 Organic Chemistry Lab.)</small>	3	
CSIS 44141 or CSIS 44241	Computer Programming I or Computer Programming I	3	CS 1500	Computational Problem Solving	3	
COM 29230	Public Speaking	3	SP&MS 1185	Principles of Speech	3	
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3	
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0	
	Group 2 Major Requirements	27		Group 2 Major Requirements	25	
	Group 1 Core Requirements	35		Group 1 Core Requirements	34	
	Total Hours	62		Total Hours*	59	

\*S&T advisor permission is required to transfer more than 70 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&amp;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 Principles of Speech or Technical Writing	3	
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 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	2	
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3	
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0	
	Group 2 Major Requirements	19		Group 2 Major Requirements	17	
	Group 1 Core Requirements	35		Group 1 Core Requirements	34	
	Total Hours	54		Total Hours*	51	

\*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&amp;T</u>		
COM 29230	Public Speaking	3	SPMS 1185	Principles of Speech	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
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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
CSIS 44141 or CSIS 44241	Computer Programming I or Computer Programming I	3	CS 1500	Computational Problem Solving	3
PHYS 25322 or PHYS 25325 or CHEM 24342 or BIOL 04310 or BIOL 04350	Engineering Mechanics-Statics (3) or Classical Mechanics I (3) or Organic Chemistry I (3) or Cell Biology (3) or Genetics (3)	3	CIV ENG 2200 or MECH ENG 2350 or CHEM 2210 or BIO SCI 2213 or BIO SCI 2223	Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (2) or Organic Chemistry I (3) or Cell Biology (3) or General Genetics (3) <small>Satisfies a required engineering/science elective.</small>	2
MATH 17311	Linear Algebra	3	MATH 3108	Linear Algebra <small>(Will satisfy a required math elective.)</small>	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Maximum Free Electives	3		Maximum Free Electives	3
	Group 2 Major Requirements	24		Group 2 Major Requirements	23
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	59		Total Hours*	57

\*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&amp;T</u>		
COM 29230	Public Speaking	3	SPMS 1185	Principles of Speech	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
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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
CSIS 44141 or CSIS 44241	Computer Programming I or Computer Programming I	3	CS 1500	Computational Problem Solving	3
PHYS 25322 and PHYS 25325 <small>(BOTH of the courses above or ONE of the courses below.)</small>	Engineering Mechanics-Statics and Classical Mechanics I <small>(Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)</small>	3	CIV ENG 2200 and MECH ENG 2350 <small>(BOTH of the courses above or ONE of the courses below.)</small>	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>	3
OR	OR	3	OR	OR	3
CHEM 24342 or BIOL 04310 or BIOL 04350	Organic Chemistry I or Cell Biology or Genetics	3	CHEM 2210 or BIO SCI 2213 or BIO SCI 2223	Organic Chemistry I (3) or Cell Biology (3) or General Genetics (3)	3
MATH 17311	Linear Algebra	3	MATH 3108	Linear Algebra	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Maximum Free Electives	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 Electrical Engineering degree.

## Engineering Management Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
PSYC 08103	General Psychology	3	PSYCH 1101	General Psychology	3
HUM 26103 or HIST 33155 or HIST 33156 or POL S 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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
COM 29230	Public Speaking	3	SPMS 1185	Principles of Speech	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
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Maximum Free Electives	3		Maximum Free Electives	3
	Group 2 Major Requirements	21		Group 2 Major Requirements	20
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	56		Total Hours*	54

\*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&amp;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 Principles of Speech or Technical Writing	3
HUM 26103 or HIST 33155 or HIST 33156	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
GEO 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 24116	General Chemistry II	4	CHEM 1320	General Chemistry II	3
BIOL 04102	General Biology	3	BIO SCI 1113	General Biology	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	26		Group 2 Major Requirements	23
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	61		Total Hours*	57

\*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&amp;T</u>		
ENGL 10315	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 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	2
BIOL 04102 or CHEM 24116 or CHEM 24342	General Biology and Lab or General Chemistry II or Organic Chemistry I or any 3-hour course in chemistry, geochemistry, or biology.	3	BIO SCI 1113 or CHEM 1320 or CHEM 2210	General Biology or General Chemistry II or Organic Chemistry I or any 3-hour course in chemistry, geochemistry, or biology. Satisfies chemistry/geochemistry elective requirement.	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	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	23
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	60		Total Hours*	57

\*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&amp;T</u>		
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 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
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2360	Dynamics	3
MATH 17311	Linear Algebra or Probability and Statistics	3	MATH 3108	Linear Algebra I (Will satisfy the Advanced Math/Computer Science elective requirement.)	3
ENGL 10245 or ENGL 10233	English Literature: Beowulf through the 18th Century or American Literature: Beginnings to 1865 (or other literature elective)	3	ENGLISH 1211 or ENGLISH 1221	British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 (or other literature elective)	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	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	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 Mechanical Engineering degree.

## Metallurgical Engineering Group 2 Major Requirements

<u>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&amp;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 Principles of Speech or Technical Writing	3
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	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 or Chemical Thermodynamics I or Electrical Circuits or <small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement.</small>	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Maximum Free Electives	5		Maximum Free Electives	3
	Group 2 Major Requirements	27		Group 2 Major Requirements	24
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	62		Total Hours*	58

\*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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&amp;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
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 25322	Statics	3	CIV ENG 2200*	Engineering Mechanics-Statics	3
PHYS 25325	Classical Mechanics I	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
GEOL 27110, 27111	General Geology and Lab	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	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	20
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	Total Hours	57		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>Northwest Missouri State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 17311	Linear Algebra	3	MATH 3108	Linear Algebra	3
PHYS 25322	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 25330	Electricity and Magnetism I	3	EE 2800	Electrical Circuits	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Maximum Free Electives	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
	<b>Total Hours</b>	<b>62</b>		<b>Total Hours*</b>	<b>61</b>

\*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&amp;T</u>		
ENGL 10315 or ENGL 10112	Technical Writing or Composition II: Writing as Engagement	3	ENGLISH 3560 or ENGLISH 1160	Technical Writing (preferred) or Writing and Research	3
HUM 26103 or HIST 33155 or HIST 33156 or POLS 34102	Western Civilization II: 1500 to the Present or The United States to 1877 or The United States since 1877 or Intro to American Government and Politics	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 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	2
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	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	20
	Group 1 Core Requirements	35		Group 1 Core Requirements	34
	<b>Total Hours</b>	<b>57</b>		<b>Total Hours*</b>	<b>54</b>

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