

# Truman 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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
MATH 198	Analytic Geometry and Calculus I	5	MATH 1214	Calculus I	Grade of C or better is required. 4
MATH 263	Analytic Geometry and Calculus II	5	MATH 1215	Calculus II	Grade of C or better is required. 4
MATH 264	Analytic Geometry and Calculus III	3	MATH 2222	Calculus III	Grade of C or better is required. 4
MATH 365	Ordinary Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHYS 185, 190 AND PHYS 186, 191	College Physics I and Calculus for Physics I AND College Physics II and Calculus for Physics II <small>The combination of TSU PHYS 185, 186, 190, and 191 is equivalent to the combination of S&amp;T PHYSICS 1135 and 2135. All TSU courses must be completed to receive equivalent credit.</small>	10	PHYSICS 1135 AND PHYSICS 2135	Engineering Physics I AND Engineering Physics II	Grade of C or better is required. The combination of TSU PHYS 185, 186, 190, and 191 is equivalent to the combination of S&T PHYSICS 1135 and 2135. All TSU courses must be completed to receive equivalent credit. 8
CHEM 130	Chemical Principles I	4	CHEM 1310, 1319	General Chemistry I and Lab	5
ENG 190	Writing as Critical Thinking	3	ENGLISH 1120	Exposition and Argumentation	3
ECON 201 or ECON 200	Principles of Microeconomics or Principles of Macroeconomics	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3
Total Hours		36	Total Hours		34

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

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

**Aerospace Engineering**  
**Architectural Engineering**  
**Biomedical Engineering/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

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 210 or COMM 170	Writing Across the Disciplines or Public Speaking	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
CS 180 or CS 181	Foundations of Computer Science I (4) or Foundations of Computer Science II (3)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
MATH 357 or STAT 290	Linear Algebra or 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
PHRE 188 or	Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3	PHILOS 1130	How Should I Live? An Introduction to Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	21		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	57		Total Hours*	55

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

## Architectural Engineering Group 2 Major Requirements

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 1012 (HIST 1104 or HIST 1105)	World Civilizations since ca. 1300 CE (or United States History I, 1607-1877 or United States History II, 1877-present <small>*HISTORY 1012 is preferred; 1104 or 1105 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
PHY 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics* <small>*Will be substituted for STAT 3113.</small>	3
NASC 140	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENG 210 or COMM 170.	3	Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENGLISH 1160, 1600, 3560 or SPMS 1185.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	16		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	52		Total Hours*	49

\*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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 170	Public Speaking	3	SP&MS 1185	Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 131	Chemical Principles II	4	CHEM 1320	General Chemistry II	3
CHEM 329, 330	Organic Chemistry I (3) and Lab (1)	4	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHEM 331, 332 or BIOI 100 or BIOI 300	Organic Chemistry II (3) and Lab (1) or Biology with Lab (4) or Genetics with Lab (4)	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	4
BIOI 214	Anatomy and Physiology I and Lab	4	BIO SCI 3333, 3339	Anatomy and Physiology I and Lab	4
CS 170 or CS 180* or CS 181*	Intro to Computer Science (4) or Foundations of Computer Science I (3) or Foundations of Computer Science II (3)	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	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	<b>Total Hours</b>	<b>64</b>		<b>Total Hours*</b>	<b>61</b>

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

## Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 170	Public Speaking	3	SP&MS 1185	Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 131	Chemical Principles II	4	CHEM 1320	General Chemistry II	3
CHEM 329, 330	Organic Chemistry I (3) and Lab (1)	4	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 331, 332	Organic Chemistry II (3) and Lab (1)	4	CHEM 2220, 2229*	Organic Chemistry II and Lab* <small>CHEM 2229 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
BIOI 100	Biology with Lab	4	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
BIOI 214	Anatomy and Physiology I and Lab	4	BIO SCI 3333, 3339	Human Anatomy and Physiology I and Lab	4
CS 170 or CS 180* or CS 181*	Intro to Computer Science (4) or Foundations of Computer Science I (3) or Foundations of Computer Science II (3)	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 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	32		Group 2 Major Requirements	31
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	<b>Total Hours</b>	<b>68</b>		<b>Total Hours*</b>	<b>65</b>

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

## Ceramic Engineering Group 2 Major Requirements

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
CHEM 329	Organic Chemistry I	3	CHEM 2210	Organic Chemistry I (3) <i>Will satisfy the advanced chemistry elective requirement.</i>	3
CHEM 131	Chemical Principles II	4	CHEM 1320	General Chemistry II	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115 or STAT 3117	Engineering Statistics or Intro to Probability and Statistics <i>or any statistics course 3000-level or higher. Satisfies statistics elective requirement.</i>	3
PHYS 250	Modern Physics I	3	PHYS 2305	Intro to Modern Physics	3
ENG 210 or COMM 170 or HSS Elective	Writing Across the Disciplines or Public Speaking 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	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	64		Total Hours*	61

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

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

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 170	Public Speaking	3	SP&MS 1185	Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 131	Chemical Principles II	4	CHEM 1320	General Chemistry II	3
CHEM 329, 330	Organic Chemistry I (3) and Lab (1)	4	CHEM 2210, 2219*	Organic Chemistry I and Lab* <i>*The lab will apply to the degree as 1 of the 9 science elective credits (below) .</i>	4
CHEM 331 or BIOL 200 or BIOL 204 or BIOL 304	Organic Chemistry II (3) or Cell Biology (4) or Introductory Microbiology (4) or General Microbiology (4)	8	CHEM 2220 or BIO SCI 2213, 2219 or BIO SCI 3313, 3319 or CHEM 4610, 4619	Organic Chemistry II (3) or Cell Biology and Lab (4) or Microbiology and Lab (5) or General Biochemistry and Lab <i>Will satisfy science elective requirement. Select up to 9 hours from these options or CHEM 2219 Organic Chemistry Lab.</i>	8
CS 170 or CS 180* or CS 181*	Intro to Computer Science (4) or Foundations of Computer Science I (3) or Foundations of Computer Science II (3)	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* C++ <i>*Will be substituted for CS 1500.</i>	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics* <i>*Will be substituted for STAT 3113.</i>	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	31		Group 2 Major Requirements	30
	Group 1 Core Requirements	36		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.

## Civil Engineering Group 2 Major Requirements

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 210 or COMM 170	Writing Across the Disciplines or Public Speaking	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
NASC 140	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics* <small>*Will be substituted for STAT 3113.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	19		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	55		Total Hours*	52

\*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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 170	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 210	Writing Across the Disciplines	3	ENGLISH 1160	Writing and Research	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
CS 170 or CS 180* or CS 181*	Intro to Computer Science (4) or Foundations of Computer Science I (3) or Foundations of Computer Science II (3)	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* <small>*Will be substituted for CS 1500.</small>	3
PHYS 387 or PHYS 381 or PHYS 250 or CHEM 329 or BIOL 200 or BIOL 300	Statics or Modern Physics I or Organic Chemistry I or Cell Biology or Genetics	3	CIV ENG 2200or PHYSICS 2311 or CHEM 2210 or BIO SCI 2213 or BIO SCI 2223	Engineering Mechanics-Statics (3) or Modern Physics I (3) Organic Chemistry I (4) or Cell Biology (3) or General Genetics (3) <small>Satisfies a required engineering/science elective.</small>	3
MATH 357	Linear Algebra	3	MATH 3108	Linear Algebra <small>Will satisfy a required math elective.</small>	3
STAT 570 or STAT 290	Mathematical Probability and Statistics I or Statistics or	3	STAT 3117 or STAT 3115*	Intro to Probability and Statistics or Engineering Statistics* <small>*Will be substituted for STAT 3117.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	27		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	63		Total Hours*	61

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

## Electrical Engineering Group 2 Major Requirements

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMM 170	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 210	Writing Across the Disciplines	3	ENGLISH 1160	Writing and Research	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
CS 170 or CS 180* or CS 181*	Intro to Computer Science (4) or Foundations of Computer Science I (3) or Foundations of Computer Science II (3)	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* <small>*Will be substituted for CS 1500.</small>	3
PHYS 387 and S&T MECH ENG 2350 <small>BOTH of the courses above or ONE of the courses below.</small>	Statics and Engineering Mechanics-Dynamics at S&T <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 PHYS 250 or CHEM 39 or BIOL 200 or BIOL 300	OR Modern Physics I or Organic Chemistry I or Cell Biology or Genetics	3	OR PHYSICS 2311 or CHEM 2210 or BIO SCI 2213 or BIO SCI 2223	OR Modern Physics I (3) Organic Chemistry I (3) or Cell Biology (3) or General Genetics (3)	3
MATH 357	Linear Algebra	3	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
STAT 570 or STAT 290	Mathematical Probability and Statistics I or Statistics or	3	MATH 3108	Linear Algebra	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	STAT 3117 or STAT 3115*	Intro to Probability and Statistics or Engineering Statistics* <small>*Will be substituted for STAT 3117.</small>	3
Electives	Maximum Free Electives	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	Group 2 Major Requirements	27	Electives	Maximum Free Electives	3
	Group 1 Core Requirements	36		Group 2 Major Requirements	30
	Total Hours	63		Group 1 Core Requirements	34
				Total Hours*	64

\*\*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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
PSYC 166	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 210	Writing Across the Disciplines	3	SPMS 1185	Principles of Speech	3
CS 180 or CS 181	Foundations of Computer Science I (4) or Foundations of Computer Science II (3)	3	ENGLISH 1160	Writing and Research	3
PHYS 387	Statics	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	CIV ENG 2200	Engineering Mechanics-Statics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	STAT 3115 or STAT 3117	Engineering Statistics or Intro to Probability and Statistics <small>*Will be substituted for the STAT 3115/3117 requirement.</small>	3
	<i>No free electives applied to the degree.</i>	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	Group 2 Major Requirements	24	Electives	Maximum Free Electives	0
	Group 1 Core Requirements	36		Group 2 Major Requirements	24
	Total Hours	60		Group 1 Core Requirements	34
				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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 210 or COMM 170	Writing Across the Disciplines or Public Speaking	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 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
NASC 140	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 131	Chemical Principles II	4	CHEM 1320	General Chemistry II	3
BIOL 100	Biology	4	BIO SCI 1113	General Biology	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics* <small>*Will be substituted for STAT 3113.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	27		Group 2 Major Requirements	24
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	63		Total Hours*	58

\*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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
CS 170 or CS 180 or CS 181	Intro to Computer Science (4) or Foundations of Computer Science I (3) or Foundations of Computer Science II (3)	3	CS 1500 or CS 1971, 1981	Computational Problem Solving or Intro to Programming Methodology and Lab	3
NASC 140	Physical Geology	4	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I <small>*STAT 290 is preferred. STAT 570 will be accepted.</small>	3	STAT 3115* or STAT 3117*	Engineering Statistics* (preferred) or Intro to Probability and Statistics* <small>*STAT 3115 is preferred. STAT 3117 will be accepted.</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
	<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	36		Group 1 Core Requirements	34
	Total Hours	58		Total Hours*	55

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

## Mechanical Engineering Group 2 Major Requirements

<u>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 210 or COMM 170	Writing Across the Disciplines or Public Speaking	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
CS 180 or CS 181	Foundations of Computer Science I (4) or Foundations of Computer Science II (3)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
MATH 357 or STAT 290	Linear Algebra or Statistics	3	MATH 3108 or STAT 3115	Linear Algebra I or Engineering Statistics <small>Will satisfy the Advanced Math/Statistics elective requirement.</small>	3
	Literature Elective	3		Literature Elective	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	21		Group 2 Major Requirements	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	57		Total Hours*	55

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



## Metallurgical Engineering Group 2 Major Requirements

Truman State University		Semester	Missouri S&T		
ENG 210 or COMM 170	Writing Across the Disciplines or Public Speaking	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115 or STAT 3117*	Engineering Statistics or Intro to Probability and Statistics*	3
CHEM 131	Chemical Principles II	4	CHEM 1320	General Chemistry II	3
CHEM 329 or PHYS 250	Organic Chemistry I or Modern Physics I	3	CHEM 2210 or PHYSICS 2311	Organic Chemistry I (4) or Modern Physics I (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	30		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		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 Metallurgical Engineering degree.

## Mining Engineering Group 2 Major Requirements

Truman State University		Semester	Missouri S&T		
ENG 210	Writing Across the Disciplines	3	ENGLISH 1160	Writing and Research	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115 or STAT 3117*	Engineering Statistics or Intro to Probability and Statistics*	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
NASC 140	Physical Geology	4	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	21
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	58		Total Hours*	55

\*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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 210 or COMM 170	Writing Across the Disciplines or Public Speaking	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
CS 180 or CS 181	Foundations of Computer Science I (4) or Foundations of Computer Science II (3)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 357	Linear Algebra	3	MATH 3108	Linear Algebra	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
STAT 290 or STAT 570	Statistics or Mathematical Probability and Statistics I	3	STAT 3115 or STAT 3117	Engineering Statistics or Intro to Probability and Statistics	3
PHYS 250	Modern Physics I	3	PHYSICS 2311	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	33		Group 2 Major Requirements	33
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	67

\*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>Truman State University</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENG 210	Writing Across the Disciplines	3	ENGLISH 1160	Writing and Research	3
HIST 1012 or HIST 1104 or HIST 1105 or POL 161	World Civilizations since ca. 1300 CE or United States History I, 1607-1877 or United States History II, 1877-present or American National 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
NASC 140	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHYS 387	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	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	19		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	55		Total Hours*	52

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