

## Richland College — Missouri S&T General Engineering

Transfer Guide Effective as of Fall 2024

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

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

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

<u>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
MATH 2413 and	Calculus I and	8	MATH 1214 and	Calculus I and	8
MATH 2414	Calculus II		MATH 2414	Calculus II	Grade of C or better is required in both courses. 8
MATH 2415	Calculus III	4	MATH 2222	Calculus III	Grade of C or better is required. 4
MATH 2420	Differential Equations	4	MATH 3304	Elementary Differential Equations	3
PHYS 2425	University Physics I	4	PHYSICS 1135	Engineering Physics I	Grade of C or better is required. 4
PHYS 2426	University Physics II	4	PHYSICS 2135	Engineering Physics II	Grade of C or better is required. 4
CHEM 1411	General Chemistry I	4	CHEM 1310, 1319	General Chemistry I and Lab	5
ENGR 1201 and	Intro to Engineering and		FR ENG 1100	Study and Careers in Engineering and Computing	1
ENGR 1304	Engineering Graphics	5	ENGLISH 1120	Exposition and Argumentation	3
ENGL 1301	Composition I	3	ECON 1100 or	Principles of Microeconomics or	
ECON 2302 or	Principles of Economics II or		ECON 1200	Principles of Macroeconomics	3
ECON 2301	Principles of Economics I	3			
Total Hours		39	Total Hours		35

### 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/Biomaterials 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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
ENGL 1302 or SPCH 1315 or ENGL 2311	Composition II or Fundamental of 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
ENGR 2305	Electrical Circuits I	3	EE 2800	Electrical Circuits	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MATH 2418 or ENGR 2300	Linear Algebra or Applied Linear Algebra	3	MATH 3108	Linear Algebra I <small>Will satisfy the Advanced Math/Comp Sci elective requirement.</small>	3
	Literature Elective	3		Literature Elective	3
Ethics	Ethics Elective <small>Engineering, business, bio, social or other ethics approved by advisor.</small>	3	Ethics	Ethics Elective <small>Engineering, business, bio, social or other ethics approved by advisor.</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	63		Total Hours*	59

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 2312 or HIST 1301 or HIST 1302	Western Civilization II or History of the United States I or History of the United States II	3	HISTORY 1200* (or HISTORY 1300 or HISTORY 1310)	Modern Western Civilization* (or American History to 1877 or American History since 1877) <small>*HISTORY 1200 is preferred; 1300 or 1310 will also be accepted.</small>	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
GEOL 1403	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: ENGL 1302, ENGL 2311, SPCH 1315	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	19		Group 2 Major Requirements	17
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	58		Total Hours*	52

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
SPCH 1315	Fundamentals of Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENGL 2311	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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 1412	General Chemistry II	4	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIOL 1408 or BIOL 2416	Biology for Non-Science Majors or Genetics	4	BIO SCI 1113, 1219 or BIO SCI 2223	General Biology and Lab or General Genetics <small>Applies to degree as Track Elective.</small>	4
BIOL 2401	Anatomy and Physiology I	4	BIO SCI 3333, 3339	Anatomy and Physiology I and Lab	4
COSC 1436 or COSC 1437	Programming Fundamentals I or Programming Fundamentals II	4	CS 1500	Computational Problem Solving	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	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	67		Total Hours*	61

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

## Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
SPCH 1315	Fundamentals of Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENGL 2311	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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 1412	General Chemistry II	4	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIOI 1408	Biology for Non-Science Majors	4	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
BIOL 2401	Anatomy and Physiology I	4	BIO SCI 3333, 3339	Human Anatomy and Physiology I and Lab	4
COSC 1436 or COSC 1437	Programming Fundamentals I or Programming Fundamentals II	4	CS 1500	Computational Problem Solving	3
ENGR 2301	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2305	Electrical Circuits I	3	EE 2100*	Circuits I <small>*A passing grade on the Missouri S&amp;T EE Advancement Exam I is required to receive credit for EE 2100. Applies to the degree as a Track Elective (Engineering).</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	29
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	64

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
ENGR 2301	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 1412	General Chemistry II	4	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
ENGL 1302 or SPCH 1315 or HSS Elective	Composition II or Fundamental of Public Speaking of 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	22		Group 2 Major Requirements	21
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	61		Total Hours*	56

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
SPCH 1315	Fundamentals of Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENGL 2311	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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 1412	General Chemistry II	4	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
COSC 1436 or COSC 1437	Programming Fundamentals I or Programming Fundamentals II	4	CS 1500	Computational Problem Solving	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	20		Group 2 Major Requirements	18
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	59		Total Hours*	53

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 1302 or SPCH 1315 or ENGL 2311	Composition II or Fundamental of 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
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEOL 1403	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	22		Group 2 Major Requirements	20
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	61		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

Richland College		Semester	Missouri S&T		
SPCH 1315	Fundamentals of Public Speaking	3	SPMS 1185	Principles of Speech	3
ENGL 1302 or ENGL 2311	Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
COSC 1436 or COSC 1437	Programming Fundamentals I or Programming Fundamentals II	4	CS 1500	Computational Problem Solving	3
ENGR 2301 or ENGR 2302 or BIOL 2416	Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (3) or Genetics (3)	3	CIV ENG 2200 or MECH ENG 2350 or BIO SCI 2223	Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (2) or General Genetics (3) <small>Satisfies a required engineering/science elective.</small>	3
ENGR 2305	Electrical Circuits I	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
MATH 2418 or ENGR 2300	Linear Algebra or Applied Linear Algebra	3	MATH 3108	Linear Algebra <small>Will satisfy a required math elective.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	67		Total Hours*	62

\*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

Richland College		Semester	Missouri S&T		
SPCH 1315	Fundamentals of Public Speaking	3	SPMS 1185	Principles of Speech	3
ENGL 1302 or ENGL 2311	Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
COSC 1436 or COSC 1437	Programming Fundamentals I or Programming Fundamentals II	4	CS 1500	Computational Problem Solving	3
ENGR 2301 and ENGR 2302 <small>BOTH of the courses above or ONE of the courses below.</small> OR BIOL 2416	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3) <small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small> OR General Genetics (3)	3	CIV ENG 2200 and MECH ENG 2350 <small>BOTH of the courses above or ONE of the courses below.</small> OR BIO SCI 2223	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (2) <small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small> OR General Genetics (3)	3
ENGR 2305	Electrical Circuits I	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
MATH 2418 or ENGR 2300	Linear Algebra or Applied Linear Algebra	3	MATH 3108	Linear Algebra	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	67		Total Hours*	62

\*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

Richland College		Semester	Missouri S&T		
PSYCH 2301	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
SPCH 1315	Fundamentals of Public Speaking	3	SPMS 1185	Principles of Speech	3
ENGL 1302 or ENGL 2311	Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
ENGR 2305	Electrical Circuits I	3	EE 2800	Electrical Circuits	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	3	Electives	Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	61

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

## Environmental Engineering Group 2 Major Requirements

Richland College		Semester	Missouri S&T		
ENGL 1302 or SPCH 1315 or ENGL 2311	Composition II or Fundamental of 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
HIST 2312 or HIST 1301 or HIST 1302	Western Civilization II or History of the United States I or History of the United States II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
GEOL 1403	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 1412	General Chemistry II	4	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIOI 1408	Biology for Non-Science Majors	4	BIO SCI 1113, 1219*	General Biology (3) and Lab* (1) <small>*BIO SCI 1219 is not an S&amp;T degree requirement, will transfer as general elective credit.</small>	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	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	30		Group 2 Major Requirements	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	61

\*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

Richland College		Semester	Missouri S&T		
ENGL 2311	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
COSC 1436 or COSC 1437	Programming Fundamentals I or Programming Fundamentals II	4	CS 1500	Computational Problem Solving	3
GEOL 1403	Physical Geology	4	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	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	29		Group 2 Major Requirements	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	68		Total Hours*	61

\*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

Richland College		Semester	Missouri S&T		
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
ENGL 1302 or SPCH 1315 or ENGL 2311	Composition II or Fundamental of 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
ENGR 2305	Electrical Circuits I	3	EE 2800	Electrical Circuits	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MATH 2418 or ENGR 2300	Linear Algebra or Applied Linear Algebra	3	MATH 3108	Linear Algebra I	3
	Literature Elective	3		Will satisfy the Advanced Math/Statistics elective requirement. 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	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	63		Total Hours*	59

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 1302 or SPCH 1315 or ENGL 2311	Composition II or Fundamental of 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
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 1412	General Chemistry II	4	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
ENGR 2305	Electrical Circuits I	3	EE 2800	Electrical Circuits <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	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	67		Total Hours*	62

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 1302 or ENGL 2311	Composition II or or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
GEOL 1403	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	25		Group 2 Major Requirements	23
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	64		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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 1302 or SPCH 1315 or ENGL 2311	Composition II or Fundamental of 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
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal 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
MATH 2418 or ENGR 2300	Linear Algebra or Applied Linear Algebra	3	MATH 3108	Linear Algebra	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 2305	Electrical Circuits I	3	EE 2800	Electrical Circuits	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	30		Group 2 Major Requirements	30
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	65

\*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>Richland College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 1302 or ENGL 2311	Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing (preferred)	3
HIST 2312 or HIST 1301 or HIST 1302 or GOVT 2305	Western Civilization II or History of the United States I or History of the United States II or Federal Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEOL 1403	Physical Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 2301	Engineering Mechanics- Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 2302	Engineering Mechanics- Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 2332	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	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	25		Group 2 Major Requirements	23
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	64		Total Hours*	58

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