

# Johnson County Community College — 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.

Johnson County Community College			Semester	Missouri S&T		
MATH 241 and	Calculus I and	10		MATH 1214 and	Calculus I and	8
MATH 242	Calculus II			MATH 1215	Calculus II Grade of C or better is required.	
MATH 243	Calculus III	5		MATH 2222	Calculus III Grade of C or better is required.	4
MATH 254	Differential Equations	4		MATH 3304	Elementary Differential Equations	3
PHYS 220	Engineering Physics I	5		PHYSICS 1135	Engineering Physics I Grade of C or better is required.	4
PHYS 221	Engineering Physics II	5		PHYSICS 2135	Engineering Physics II Grade of C or better is required.	4
CHEM 124, 125	General Chemistry I and Lab	5		CHEM 1310, 1319	General Chemistry I and Lab	5
ENGR 121	Engineering Orientation	2		FR ENG 1100	Study and Careers in Engineering and Computing	1
ENGL 121	Composition I	3		ENGLISH 1120	Exposition and Argumentation	3
ECON 231 or	Principles of Microeconomics or	3		ECON 1100 or	Principles of Microeconomics or	3
ECON 230	Principles of Macroeconomics			ECON 1200	Principles of Macroeconomics	
		Total Hours	42			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  
 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

Johnson County Community College			Semester	Missouri S&T		
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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	
ENGL 122 or COMS 121 or ENGL 123	Composition II or Public Speaking or Technical Writing I	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3	
CS 200 or CS 250	Concepts of Programming Algorithms Using C++ or Basic Data Structures using C++	4	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3	
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3	
MATH 246	Elementary Linear Algebra	3	MATH 3108	Linear Algebra I (Will satisfy the Advanced Math/Comp Sci elective requirement.)	3	
ENGL 236 or ENGL 246 or ENGL 251 or ENGL 217	British Literature to 1800 or American Literature I or World Literature to 1620 or Literature by Women (or other literature elective)	3	ENGLISH 1211 or ENGLISH 1221 or ENGLISH 1231 or ENGLISH 2242	British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 or World Literature I or Literature by Women (or other literature elective)	3	
	Ethics Elective	3		Ethics Elective Engineering, business, bio, social or other ethics approved by advisor.	3	
	No free electives applied to the degree.	0		Maximum Free Electives	0	
	Group 2 Major Requirements	22		Group 2 Major Requirements	21	
	Group 1 Core Requirements	42		Group 1 Core Requirements	35	
	Total Hours	64		Total Hours*	56	
*S&T advisor permission is required to transfer more than 68 credits toward the S&T Aerospace Engineering degree.						

\*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>Johnson County Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 126* (or HIST 140 or HIST 141)	Western Civ: Scientific Revolution to Modern Age* (or US History to 1877 or US History since 1877) *HIST 126 is preferred; 140 or 141 will also be accepted.		HISTORY 1200* (or HISTORY 1300 or HISTORY 1310)	Modern Western Civilization* (or American History to 1877 or American History since 1877) *HISTORY 1200 is preferred; 1300 or 1310 will also be accepted.	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 254	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
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	3
GEOS 130	General Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	14		Group 2 Major Requirements	14
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	56		Total Hours*	49
			*S&T advisor permission is required to transfer more than 69 credits toward the S&T Architectural Engineering degree.		

\*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

Johnson County Community College			Semester	Missouri S&T	
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
CHEM 220	Organic Chemistry I	5	CHEM 2210, 2219	Organic Chemistry I (4) and Lab (1) (CHEM 2210 will satisfy the advanced chemistry elective requirement; CHEM 2219 will transfer as elective credit.)	3
CHEM 131	General Chemistry II	4	CHEM 1320	General Chemistry II	3
ENGL 122 or COMS 121 or HSS Elective	Composition II or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3
	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	21		Group 2 Major Requirements	18
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	63		Total Hours*	53
			*S&T advisor permission is required to transfer more than 68 credits toward the S&T Ceramic Engineering degree.		

\*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>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 123	Technical Writing I	3	ENGLISH 3560	Technical Writing	3	
HIST 126 or	Western Civ: Scientific Revolution to Modern Age or	3	HISTORY 1200 or	Modern Western Civilization or	3	
HIST 140 or	US History to 1877 or		HISTORY 1300 or	American History to 1877 or		
HIST 141 or	US History since 1877 or		HISTORY 1310 or	American History since 1877 or		
POLS 124	American National Government		POL SCI 1200	American Government		
CHEM 131	General Chemistry II	4	CHEM 1320	General Chemistry II	3	
CHEM 220	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I (3) and Lab* (1) *The lab is not required for the degree, will transfer as 1 of the 9 science elective credits (below) .	4	
CHEM 221 or	Organic Chemistry II (5) or	9  (Will satisfy science elective requirement. Select up to 9 hours from these options.)	CHEM 2220, 2219 or	Organic Chemistry II and Lab (4 hours) or	8  (Will satisfy science elective requirement. Select up to 9 hours from these options.)	
BIOL 135 or	Principles of Cell and Molecular Biology (4) or		BIO SCI 2213, 2219 or	Cell Biology and Lab ( 4 hours) or		
BIOL 230,231	Microbiology and Lab (5)		BIO SCI 3313, 3319	Microbiology and Lab (5 hours)		
CS 235 or	Object-Oriented Programming Using C++ or		CS 1500 or	Computational Problem Solving or		
CS 250 or	Basic Data Structures using C++ or	4	CS 1971,1981*	Intro to Programming Methodology and Lab* C++)	3	
CS 200*	Concepts of Programming Algorithms Using C++*			*Will be substituted for CS 1500.		
COMS 121	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	34		Group 2 Major Requirements	30	
	Group 1 Core Requirements	42		Group 1 Core Requirements	35	
	Total Hours	76		Total Hours*	65	
			*S&T advisor permission is required to transfer more than 68 credits toward the S&T Chemical Engineering degree.			

\*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

Johnson County Community College			Semester	Missouri S&T		
ENGL 123	Technical Writing I	3	ENGLISH 3560	Technical Writing	3	
HIST 126 or	Western Civ: Scientific Revolution to Modern Age or	3	HISTORY 1200 or	Modern Western Civilization or	3	
HIST 140 or	US History to 1877 or		HISTORY 1300 or	American History to 1877 or		
HIST 141 or	US History since 1877 or		HISTORY 1310 or	American History since 1877 or		
POLS 124	American National Government		POL SCI 1200	American Government		
CHEM 131	General Chemistry II	4	CHEM 1320	General Chemistry II	3	
CHEM 220	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I (3) and Lab* (1) *The lab is not required for the degree, will transfer as 1 of the 9 science elective credits (below) .	4	
CHEM 221 or	Organic Chemistry II (5) or	9	CHEM 2220, 2219 or	Organic Chemistry II and Lab (4 hours) or	9	
BIOL 135 or	Principles of Cell and Molecular Biology (4) or		BIO SCI 2213, 2219 or	Cell Biology and Lab ( 4 hours) or		
BIOL 230,231	Microbiology and Lab (5) (Will satisfy science elective requirement. Select up to 9 hours from these options.)		BIO SCI 3313, 3319	Microbiology and Lab (5 hours) (Will satisfy science elective requirement. Select up to 9 hours from these options.)		
CS 235 or	Object-Oriented Programming Using C++ or	4	CS 1500 or	Computational Problem Solving or	3	
CS 250 or	Basic Data Structures using C++ or		CS 1971,1981*	Intro to Programming Methodology and Lab* C++) *Will be substituted for CS 1500.		
CS 200*	Concepts of Programming Algorithms Using C++*					
COMS 121	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	34		Group 2 Major Requirements	31	
	Group 1 Core Requirements	42		Group 1 Core Requirements	35	
	Total Hours	76		Total Hours*	66	
			*S&T advisor permission is required to transfer more than 70 credits toward the S&T Chemical/Biochemical Engineering degree.			

\*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

Johnson County Community College			Semester	Missouri S&T		
ENGL 122 or COMS 121 or ENGL 123	Composition II or Public Speaking or Technical Writing I	3		ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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
GEOS 130	General Geology	5		GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 251	Statics	3		CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 254	Dynamics	3		MECH ENG 2350	Engineering Mechanics-Dynamics	2
	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	20			Group 2 Major Requirements	17
	Group 1 Core Requirements	42			Group 1 Core Requirements	35
	Total Hours	62			Total Hours*	52
				*S&T advisor permission is required to transfer more than 69 credits toward the S&T Civil Engineering degree.		

\*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>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMS 121	Public Speaking	3		SPMS 1185	Public Speaking	3
ENGL 122 or	Composition II or			ENGLISH 1160 or	Writing and Research or	
ENGL 123	Technical Writing I	3		ENGLISH 3560	Technical Writing	3
HIST 126 or	Western Civ: Scientific Revolution to Modern Age or			HISTORY 1200 or	Modern Western Civilization or	
HIST 140 or	US History to 1877 or			HISTORY 1300 or	American History to 1877 or	
HIST 141 or	US History since 1877 or	3		HISTORY 1310 or	American History since 1877 or	3
POLS 124	American National Government			POL SCI 1200	American Government	
CS 210 or	Discrete Structures I or					
CS 211	Discrete Structures II	3		CS 1200	Discrete Math for Computer Science	3
CS 235 or	Object-Oriented Programming Using C++ or					
CS 250	Basic Data Structures using C++	4		CS 1500	Computational Problem Solving	3
ENGR 251or	Statics (3) or			CIV ENG 2200 or	Engineering Mechanics-Statics (3) or	
ENGR 254 or	Dynamics (3) or			MECH ENG 2350or	Engineering Mechanics-Dynamics (2) or	
CHEM 220 or	Organic Chemistry I (4) or	3		CHEM 2210 or	Organic Chemistry I (4) or	3
BIOL 135 or	Principles of Cell and Molecular Biology (4) or			BIO SCI 2213 or	Cell Biology (3) or	
BIOL 205	General Genetics (4)			BIO SCI 2223	General Genetics (3)	
MATH 246	Elementary Linear Algebra	3		MATH 3108	Linear Algebra (Will satisfy a required math elective.)	3
	Humanities/Social Science Elective	3			Humanities/Social Science Elective	3
	Maximum Free Electives	0			Maximum Free Electives	3
	Group 2 Major Requirements	25			Group 2 Major Requirements	27
	Group 1 Core Requirements	42			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.		

\*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>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
COMS 121	Public Speaking	3	SPMS 1185	Public Speaking	3	
ENGL 122 or	Composition II or	3	ENGLISH 1160 or	Writing and Research or	3	
ENGL 123	Technical Writing I		ENGLISH 3560	Technical Writing		
HIST 126 or	Western Civ: Scientific Revolution to Modern Age or	3	HISTORY 1200 or	Modern Western Civilization or	3	
HIST 140 or	US History to 1877 or		HISTORY 1300 or	American History to 1877 or		
HIST 141 or	US History since 1877 or		HISTORY 1310 or	American History since 1877 or		
POLS 124	American National Government		POL SCI 1200	American Government		
CS 235 or	Object-Oriented Programming Using C++ or	4	CS 1500	Computational Problem Solving	3	
CS 250	Basic Data Structures using C++					
ENGR 251 and	Statics (3) and	4	CIV ENG 2200 and	Engineering Mechanics-Statics (3) and	3	
ENGR 254	Dynamics (3)		MECH ENG 2350	Engineering Mechanics-Dynamics (3)		
(BOTH of the courses above or	(Both courses above combined or any one of the following courses will satisfy		(BOTH of the courses above or	(Both courses above combined or any one of the following courses will satisfy		
ONE of the courses below.)	a required engineering science elective.)		ONE of the courses below.)	a required engineering science elective.)		
OR	OR		OR	OR		
CHEM 220 or	Organic Chemistry I (4) or		CHEM 2210, 2219* or	Organic Chemistry I (4) and Lab* (1) or		
BIOL 135 or	Principles of Cell and Molecular Biology (4) or		BIO SCI 2213 or	Cell Biology (3) or		
BIOL 205	General Genetics (4)		BIO SCI 2223	General Genetics (3)		
				*CHEM 2219 is not an S&T degree requirement; will transfer as elective credit.		
MATH 246	Elementary Linear Algebra		3	MATH 3108		Linear Algebra
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3	
	Maximum Free Electives	3		Maximum Free Electives	3	
	Group 2 Major Requirements	26		Group 2 Major Requirements	21	
	Group 1 Core Requirements	42		Group 1 Core Requirements	35	
	Total Hours	68		Total Hours*	56	

\*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

Johnson County Community College			Semester	Missouri S&T		
PSYC 130	Intro to Psychology	3		PSYCH 1101	General Psychology	3
HIST 126 or	Western Civ: Scientific Revolution to Modern Age or			HISTORY 1200 or	Modern Western Civilization or	
HIST 140 or	US History to 1877 or	3		HISTORY 1300 or	American History to 1877 or	3
HIST 141 or	US History since 1877 or			HISTORY 1310 or	American History since 1877 or	
POLS 124	American National Government			POL SCI 1200	American Government	
COMS 121	Public Speaking	3		SPMS 1185	Principles of Speech	3
ENGL 122 or	Composition II or	3		ENGLISH 1160 or	Writing and Research or	3
ENGL 123	Technical Writing I			ENGLISH 3560	Technical Writing	
CS 200 or	Concepts of Programming Algorithms Using C++ or	4		CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
CS 250	Basic Data Structures using C++					
ENGR 251	Statics	3		CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 254	Dynamics	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	28			Group 2 Major Requirements	26
	Group 1 Core Requirements	42			Group 1 Core Requirements	35
	Total Hours	70			Total Hours*	61
				*S&T advisor permission is required to transfer more than 68 credits toward the S&T Engineering Management degree.		

\*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

Johnson County Community College		Semester	Missouri S&T		
ENGL 122 or COMS 121 or ENGL 123	Composition II or Public Speaking or Technical Writing I	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 126 or HIST 140 or HIST 141	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History 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
GEOS 130	General Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 131	General Chemistry II	4	CHEM 1320	General Chemistry II	3
BIOL 121	Introductory Biology for Non-Majors	4	BIO SCI 1113	General Biology	4
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 254	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
	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	28		Group 2 Major Requirements	24
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	59
			*S&T advisor permission is required to transfer more than 69 credits toward the S&T Environmental Engineering degree.		

\*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>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 123	Technical Writing I	3		ENGLISH 3560	Technical Writing	3
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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
GEOS 130	General Geology	5		GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
ENGR 251	Statics	3		CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 254	Dynamics	3		MECH ENG 2350	Engineering Mechanics-Dynamics	2
BIOL 121 or CHEM 131 or CHEM 220	Introductory Biology for Non-Majors (4) or General Chemistry II (4) or Organic Chemistry I (5)	4		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	27			Group 2 Major Requirements	23
	Group 1 Core Requirements	42			Group 1 Core Requirements	35
	Total Hours	69			Total Hours*	58

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

## Mechanical Engineering Group 2 Major Requirements

<u>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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
ENGL 122 or COMS 121 or ENGL 123	Composition II or Public Speaking or Technical Writing I	3		ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CS 200 or CS 250	Concepts of Programming Algorithms Using C++ or Basic Data Structures using C++	4		CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
ENGR 251	Statics	3		CIV ENG 2200	Engineering Mechanics-Statics	3
MATH 246	Elementary Linear Algebra	3		MATH 3108	Linear Algebra I (Will satisfy the Advanced Math/Comp Sci elective requirement.)	3
ENGL 236 or ENGL 246 or ENGL 251 or ENGL 217	British Literature to 1800 or American Literature I or World Literature to 1620 or Literature by Women (or other literature elective)	3		ENGLISH 1211 or ENGLISH 1221 or ENGLISH 1231 or ENGLISH 2242	British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 or World Literature I or Literature by Women (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	22			Group 2 Major Requirements	21
	Group 1 Core Requirements	42			Group 1 Core Requirements	35
	Total Hours	64			Total Hours*	56

\*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

Johnson County Community College		Semester	Missouri S&T		
ENGL 122 or COMS 121 or ENGL 123	Composition II or Public Speaking or Technical Writing I	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Rev to Modern Age or US History to 1877 or US History since 1877 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
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
CHEM 131	General Chemistry II	4	CHEM 1320	General Chemistry II	3
CHEM 220	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I (4) and Lab* (1) Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement. *CHEM 2219 is not an S&T requirement; will transfer as elective credit.	4
	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	29		Group 2 Major Requirements	25
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	71		Total Hours*	60
*S&T advisor permission is required to transfer more than 68 credits toward the S&T Metallurgical Engineering degree.					

\*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>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 122 or COMS 121	Composition II or Public Speaking	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3	
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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	
ENGR 251	Statics	3	CIV ENG 2200*	Engineering Mechanics-Statics	3	
ENGR 254	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2	
GEOS 130	General Geology	5	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	
	No free electives applied to the degree.	0		Maximum Free Electives	0	
	Group 2 Major Requirements	23		Group 2 Major Requirements	20	
	Group 1 Core Requirements	42		Group 1 Core Requirements	35	
	Total Hours	65		Total Hours*	55	
*S&T advisor permission is required to transfer more than 68 credits toward the S&T Mining Engineering degree.						

\*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>Johnson County Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 122 or COMS 121 or ENGL 123	Composition II or Public Speaking or Technical Writing I	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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 200 or CS 250	Concepts of Programming Algorithms Using C++ or Basic Data Structures using C++	4	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 246	Elementary Linear Algebra	3	MATH 3108	Linear Algebra	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	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	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	62
			*S&T advisor permission is required to transfer more than 68 credits toward the S&T Nuclear Engineering degree.		

\*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>Johnson County Community College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 122 or COMS 121	Composition II or Public Speaking	3		ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 126 or HIST 140 or HIST 141 or POLS 124	Western Civ: Scientific Revolution to Modern Age or US History to 1877 or US History since 1877 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
GEOS 130	General Geology	5		GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 251	Statics	3		CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 254	Dynamics	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	23			Group 2 Major Requirements	20
	Group 1 Core Requirements	42			Group 1 Core Requirements	35
	Total Hours	65			Total Hours*	55
				*S&T advisor permission is required to transfer more than 69 credits toward the S&T Petroleum Engineering degree.		

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