

# Metropolitan Community Colleges — Missouri S&T

## General Engineering Transfer Guide

Effective as of Fall 2017

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>Metropolitan Community Colleges</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>		
MATH 180	Analytic Geometry and Calculus I	5	MATH 1214	Calculus for Engineers I	Grade of C or better is required.	4
MATH 190	Analytic Geometry and Calculus II	5	MATH 1215	Calculus for Engineers II	Grade of C or better is required.	4
MATH 210	Analytic Geometry and Calculus III	5	MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required.	4
MATH 230	Differential Equations	3	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 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab		5
ENGR 101	Introduction to the Profession	1	FR ENG 1100	Study and Careers in Engineering		1
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl		3
ENGL 101	Composition and Reading		ENGLISH 1120	Exposition and Argumentation		3
ECON 211 or ECON 210	Microeconomics or Macroeconomics	3	ECON 1100 or 1200	ECON Principles of Microeconomics or Principles of Macroeconomics		3
<b>Total Hours</b>			<b>40</b>			<b>Total Hours</b> <b>38</b>

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

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

**Aerospace Engineering**  
**Architectural Engineering**  
**Ceramic Engineering**  
**Chemical Engineering**  
**Chemical Engineering/Biochemistry  
Emphasis**  
**Civil Engineering**  
**Computer Engineering**  
**Electrical Engineering**

**Engineering Management**  
**Environmental Engineering**  
**Geological Engineering**  
**Mechanical Engineering**  
**Metallurgical Engineering**  
**Mining Engineering**  
**Nuclear Engineering**  
**Petroleum Engineering**

Engineering Major Requirements are detailed on the following pages.

**Free Electives:** Some programs allow Free Electives as indicated within each major. Free Electives should be selected in consultation with your advisor and may not include remedial/deficiency courses, algebra, trigonometry, pre-calculus, or extra credits in required courses.

**Humanities/Social Science (HSS) Electives:** HSS electives may include any history, economics, political science, sociology, psychology, philosophy, fine art, literature, or foreign language. Missouri S&T approved HSS courses are listed at [ugs.mst.edu](http://ugs.mst.edu). Your campus may have additional acceptable options. Consult with your advisor or email [transfer@mst.edu](mailto:transfer@mst.edu) with questions.

## Aerospace Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T	
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
ENGL 102 or COMM 100 or ENGL 215	Composition and Reading II or Fundamentals of Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing
CSIS 1123 or CSIS 223	Programming Fundamentals C++ or Object-Oriented Programming	3	CS 1971, 1981 or CS 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to Programming and Lab (C++)
ENGR 233	Circuit Analysis I	4	EE 2800	Circuit Analysis I
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
ENGR 230	Dynamics	3	AERO ENG 2360	Dynamics
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519	Thermodynamics
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics <small>(Will satisfy the Advanced Math/Comp Sci elective requirement.)</small>
	<i>See your advisor for course options.</i>	3		Literature Elective
	<i>See your advisor for course options.</i>	3		Ethics Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	35		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	75		Total Hours*
				71

\*S&T advisor permission is required to transfer more than 66 credits toward the S&T Aerospace Engineering degree.

## Architectural Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T	
HIST 134* (or HIST 120 or HIST 121)	Western Civilization II* (or American History I or American History II) <small>*HIST 134 is preferred; 120 or 121 will 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>
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials
SRVY 135	Elementary Surveying	3	CIV ENG 2401	Fundamentals of Surveying
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics <small>(Will be substituted for STAT 3113.)</small>
ENGL 102 or COMM 100 or HSS Elective	Composition and Reading II or Fundamentals of Speech or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	ENGLISH 1160 or SPMS 1185 or Elective	Writing and Research or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language
GEOL 101 or PHYS 106	Physical Geology or General Astronomy and Lab	5	GEOLOGY 1111 or PHYSICS 1505	Introductory Astronomy (or other chemistry, geology, biology, physics, or astronomy course that is not otherwise required for the degree) <small>Applies to the degree as a basic science elective</small>
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	26		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	66		Total Hours*
				62

\*S&T advisor permission is required to transfer more than 66 credits toward the S&T Architectural Engineering degree.

## Ceramic Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T		
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 221	Organic Chemistry I	5	CHEM 2210/2219	Organic Chemistry I and Lab (Not a specific requirement. Will satisfy technical elective requirement.)	5
CHEM 112	General College Chemistry II	5	CHEM 1320	General Chemistry II	3
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
ENGL 102 or COMM 100 or HSS Elective	Composition and Reading II or Fundamentals of Speech or Humanities/Social Science Elective: history, economics, political science, sociology, <i>See your advisor for course options.</i>	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, Humanities/Social Science Elective	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	40		Group 1 Core Requirements	38
	Total Hours	68		Total Hours*	64

\*S&T advisor permission is required to transfer more than 64 credits toward the S&T Ceramic Engineering degree.

## Chemical Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or ENGL 215	Composition and Reading II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CHEM 112	General College Chemistry II	5	CHEM 1320	General Chemistry II	5
CHEM 221	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I	3
CHEM 222	Organic Chemistry II	5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)	3
CSIS 123 or ENGR 204 or CSIS 223	Programming Fundamentals C++ or Programming for Engineers and Scientists or Object-Oriented Programming	3	CS 1971, 1981 or CS 1972, 1982 or 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab or Intro to Programming and Lab (C++)	3
ENGR 229	Statics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	33		Group 2 Major Requirements	29
	Group 1 Core Requirements	40		Group 1 Core Requirements	38
	Total Hours	73		Total Hours*	67

\*S&T advisor permission is required to transfer more than 67 credits toward the S&T Chemical Engineering degree.

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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or ENGL 215	Composition and Reading II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CHEM 112	General College Chemistry II	5	CHEM 1320	General Chemistry II	5
CHEM 221	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I	3
CHEM 222	Organic Chemistry II	5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)	3
CSIS 123 or ENGR 204 or CSIS 223	Programming Fundamentals C++ or Programming for Engineers and Scientists or Object-Oriented Programming	3	CS 1971, 1981 or CS 1972, 1982 or 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab or Intro to Programming and Lab (C++)	3
ENGR 229	Statics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	33		Group 2 Major Requirements	29
	Group 1 Core Requirements	40		Group 1 Core Requirements	38
	Total Hours	73		Total Hours*	67

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

## Civil Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T	
ENGL 102 or COMM 100 or ENGL 215 HIST 120 or HIST 121 or HIST 134 or POLS 136	Composition and Reading II or Fundamentals of Speech or Technical Writing American History I or American History II or Western Civilization II or Intro to American National Politics	3     3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 GEO 1111/GE 1150	Writing and Research or Public Speaking or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Intro to Physical Geology
GEO 101	Physical Geology	5	CIV ENG 2200	Engineering Mechanics-Statics
ENGR 229	Statics	3	MECH ENG 2350	Engineering Mechanics-Dynamics
ENGR 230	Dynamics	3	CIV ENG 2210	Mechanics of Materials
ENGR 240	Mechanics of Materials	3	CIV ENG 2401	Fundamentals of Surveying
SRVY 135	Elementary Surveying	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)
MATH 215	Engineering Statistics and Computations	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Maximum Free Electives
	<i>No free electives applied to the degree.</i>	0		
	Group 2 Major Requirements	29		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	69		Total Hours*
				65

\*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

Metropolitan Community Colleges		Semester	Missouri S&T	
COMM 100	Fundamentals of Speech	3	SPMS 1185	Public Speaking
ENGL 102 or ENGL 215 HIST 120 or HIST 121 or HIST 134 or POLS 136	Composition and Reading II or Technical Writing American History I or American History II or Western Civilization II or Intro to American National Politics	3     3	ENGLISH 1160 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	Writing and Research or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
CSIS 223	Object Oriented Programming	3	CS 1570, 1580	Intro to Programming and Lab (C++)
CSIS 271	Data Structures	3	CS 1575	Data Structures
ENGR 229 and ENGR 230	Statics and Dynamics	6	CIV ENG 2200 and MECH ENG 2350	Engineering Mechanics-Statics and Engineering Mechanics-Dynamics (Both courses combined will satisfy a required engineering science elective.)
ENGR 233	Circuit Analysis I	4	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3117.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Maximum Free Electives
	Group 2 Major Requirements	34		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	74		Total Hours*
				72

\*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

Metropolitan Community Colleges		Semester	Missouri S&T	
COMM 100	Fundamentals of Speech	3	SPMS 1185	Public Speaking
ENGL 102 or ENGL 215 HIST 120 or HIST 121 or HIST 134 or POLS 136	Composition and Reading II or Technical Writing American History I or American History II or Western Civilization II or Intro to American National Politics	3     3	ENGLISH 1160 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	Writing and Research or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
ENGR 229 and ENGR 230	Statics and Dynamics	6	CS 1570, 1580 CIV ENG 2200 and MECH ENG 2350	Intro to Programming and Lab (C++) Engineering Mechanics-Statics and Engineering Mechanics-Dynamics (Both courses combined will satisfy a required engineering science elective.)
ENGR 233	Circuit Analysis I	4	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3117.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Maximum Free Electives
	Group 2 Major Requirements	28		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	68		Total Hours*
				69

\*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

Metropolitan Community Colleges		Semester	Missouri S&T		
PSYC 140	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 120 or	American History I or		HISTORY 1300 or	American History to 1877 or	
HIST 121 or	American History II or		HISTORY 1310 or	American History since 1877 or	
HIST 134 or POLS	Western Civilization II or	3	HISTORY 1200 or	Modern Western Civilization or	3
136	Intro to American National Politics		POL SCI 1200	American Government	
ENGL 102 or	Composition and Reading II or		ENGLISH 1160 or	Writing and Research or	
COMM 100 or	Fundamentals of Speech or	3	SPMS 1185 or	Principles of Speech or	3
ENGL 215	Technical Writing		ENGLISH 3560	Technical Writing	
ENGR 204	Programming for Engineers and Scientists	3	CS 1972, 1982	Intro to MATLAB Programming and Lab	3
ENGR 233	Circuit Analysis I	4	EE 2800	Circuit Analysis I	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH 2527	Thermal Analysis	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	Group 2 Major Requirements	38		Group 2 Major Requirements	36
	Group 1 Core Requirements	40		Group 1 Core Requirements	38
	Total Hours	78		Total Hours*	74

\*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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or	Composition and Reading II or		ENGLISH 1160 or	Writing and Research or	
COMM 100 or	Fundamentals of Speech or	3	SPMS 1185 or	Public Speaking or	3
ENGL 215	Technical Writing		ENGLISH 3560	Technical Writing	
HIST 120 or	American History I or		HISTORY 1300 or	American History to 1877 (preferred) or	
HIST 121 or	American History II or	3	HISTORY 1310 or	American History since 1877 (preferred) or	3
HIST 134	Western Civilization II		HISTORY 1200	Modern Western Civilization	
GEO 101	Physical Geology	5	GEO 1111/GE 1150	Intro to Physical Geology	3
CHEM 112	General College Chemistry II	5	CHEM 1320	General Chemistry II	3
BIOL 101	General Biology	5	BIO SCI 1113	General Biology	4
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	36		Group 2 Major Requirements	31
	Group 1 Core Requirements	40		Group 1 Core Requirements	38
	Total Hours	76		Total Hours*	69

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

## Geological Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or	Composition and Reading II or		ENGLISH 1160 or	Writing and Research or	
COMM 100 or	Fundamentals of Speech or	3	SPMS 1185 or	Public Speaking or	3
ENGL 215	Technical Writing		ENGLISH 3560	Technical Writing	
HIST 120 or	American History I or		HISTORY 1300 or	American History to 1877 or	
HIST 121 or	American History II or		HISTORY 1310 or	American History since 1877 or	
HIST 134 or POLS	Western Civilization II or	3	HISTORY 1200 or	Modern Western Civilization or	3
136	Intro to American National Politics		POL SCI 1200	American Government	
GEO 101	Physical Geology	5	GEO1110/GE1150 and GEO1119/GE1119	Physical and Environmental Geology and Lab	4
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
BIOL 101 or	General Biology or		BIO SCI 1113 or	General Biology or	
CHEM 112 or	General Chemistry II or	5	CHEM 1320 or	General Chemistry II or	4
CHEM 221	Organic Chemistry I		CHEM 2210	Organic Chemistry I	
	<i>or any 3-hour course in chemistry, geochemistry, or biology.</i>	3		<i>or any 3-hour course in chemistry, geochemistry, or biology.</i>	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	29
	Group 1 Core Requirements	40		Group 1 Core Requirements	38
	Total Hours	71		Total Hours*	67

\*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

Metropolitan Community Colleges		Semester	Missouri S&T	
HIS 112 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
ENGL 102 or COMM 100 or ENGL 215	Composition and Reading II or Fundamentals of Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing
CSIS 123 or ENGR 204 or CSIS 223	Programming Fundamentals C++ or Programming for Engineers and Scientists or Object-Oriented Programming	3	CS 1971, 1981 or CS 1972, 1982 or 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab or Intro to Programming and Lab (C++)
ENGR 233	Circuit Analysis I	4	EE 2800	Circuit Analysis I
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
ENGR 230	Dynamics	3	MECH ENG 2360	Dynamics
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519	Thermodynamics
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics <small>(Will satisfy the Advanced Math/Comp Sci elective requirement.)</small>
	<i>See your advisor for course options.</i>	3		Literature Elective
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	26		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	66		Total Hours*
				62

\*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

Metropolitan Community Colleges		Semester	Missouri S&T	
ENGL 102 or COMM 100 or ENGL 215	Composition and Reading II or Fundamentals of Speech or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials
CHEM 112	General College Chemistry II	5	CHEM 1320	General Chemistry II
CHEM 221 or ENGR 233	Organic Chemistry 1 or Circuit Analysis I	4	CHEM 2210 or EE 2800	Organic Chemistry I or Electrical Circuits
	<i>See your advisor for course options.</i>	3		<small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement</small> Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	5		Maximum Free Electives
	Group 2 Major Requirements	35		Group 2 Major Requirements
	Group 1 Core Requirements	40		Group 1 Core Requirements
	Total Hours	75		Total Hours*
				70

\*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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or ENGL 215	Composition and Reading II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
ENGR 229	Statics	3	CIV ENG 2200*	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350*	Engineering Mechanics-Dynamics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210*	Mechanics of Materials	3
*The combination of CIV ENG 2200 and MECH ENG 2350 will be substituted for MECH ENG 2340. The Combination of CIV ENG 22000 and 2210 and MECH ENG 2350 will be substituted for MI ENG 3812					
GEO 101	Physical Geology	5	GEO 1111/GE 1150	Intro to Physical Geology	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
		29			27
		40			38
Total Hours		69	Total Hours*		65

\*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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or ENGL 215	Composition and Reading II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CSIS 123 or ENGR 204 or CSIS 223	Programming Fundamentals C++ or Programming for Engineers and Scientists or Object-Oriented Programming	3	CS 1971, 1981 or CS 1972, 1982 or 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab or Intro to Programming and Lab (C++)	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210*	Mechanics of Materials	3
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	See your advisor for course options.	6		Maximum Free Electives	6
		30			30
		40			38
Total Hours		70	Total Hours*		68

\*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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGL 102 or ENGL 215	Composition and Reading II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 120 or HIST 121 or HIST 134 or POLS 136	American History I or American History II or Western Civilization II or Intro to American National Politics	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
GEO 101	Physical Geology	5	GEO1110/GE1150 and GEO1119/GE1119	Physical and Environmental Geology and Lab	4
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210*	Mechanics of Materials	3
MATH 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2527	Thermal Analysis	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
		27			25
		40			38
Total Hours		67	Total Hours*		63

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