

Metropolitan Community Colleges — Missouri S&T

General Engineering Transfer Guide

Effective as of Fall 2020

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.

Metropolitan Community Colleges			Semester	Missouri S&T			
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 and Computing		1	
ENGL 101	Composition and Reading	3	ENGLISH 1120	Exposition and Argumentation		3	
ECON 211 or ECON 210	Microeconomics or Macroeconomics	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics		3	
Total Hours			40	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 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. Your campus may have additional acceptable options. Consult with your advisor or email transfer@mst.edu with questions.

Aerospace Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGL 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	3
CSIS 123 or CSIS 223 or ENGR 204	Programming Fundamentals or Object-Oriented Programming with C++ or Programming for Engineers and Scientists	3	CS 1971, 1981 or CS 1972,1982	Intro to Programming Method and Lab (C++) or 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	AERO ENG 2360	Dynamics	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519	Thermodynamics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics <small>(Will satisfy the Advanced Math/Comp Sci elective requirement.)</small>	3
ENGL 220 or ENGL 222 or ENGL 254 or ENGL 260 or ENGL 262/268	British Literature to 1750 or American Literature I or World Literature I or African-American Literature or Women's Lives and Autobiography/Women's Literature <small>(or other literature elective)</small>	3	ENGLISH 1211 or ENGLISH 1221 or ENGLISH 1231 or ENGLISH 2245 or ENGLISH 2242 or	British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 or World Literature I or African American Literature or Literature by Women <small>(or other literature elective)</small>	3
	<i>See your advisor for course options.</i>	3		Ethics Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	38		Group 2 Major Requirements	36
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	78		Total Hours*	71

*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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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>	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
SRVY 135	Elementary Surveying	3	CIV ENG 2401	Fundamentals of Surveying	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics <small>(Will be substituted for STAT 3113.)</small>	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, 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
GEOI 101	Physical Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2527	Thermal Analysis	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	33		Group 2 Major Requirements	30
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	73		Total Hours*	65

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

Ceramic Engineering Group 2 Major Requirements

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
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, 1510*	General Chemistry II and Qualitative Analysis* *Note: CHEM 1510 is not an S&T degree requirement; course will transfer as elective credit.	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (or any statistics course 3000-level or higher. Satisfies statistics elective requirement.)	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, 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
	<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	35
	Total Hours	71		Total Hours*	64

*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>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II and Qualitative Analysis* *Note: CHEM 1510 is not an S&T degree requirement; course will transfer as elective credit.	3
CHEM 221	Organic Chemistry I	5	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHEM 222	Organic Chemistry II	5	CHEM 2220, 2229	Organic Chemistry II and Lab	4
CSIS 271 or CSIS 123 or CSIS 223 or ENGR 204	Data Structures and Algorithm Analysis or Programming Fundamentals or Object-Oriented Programming With C++ or Programming for Engineers and Scientists	3	CS 1500 or CS 1971, 1981 or CS 1972, 1982	Computational Problem Solving or Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519*	Thermodynamics* *The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&T course) will be substituted for CHEM ENG 2110 by the chemical engineering department. Students must complete both courses to receive credit.	3
COMM 100	Fundamentals of Speech	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	40		Group 2 Major Requirements	35
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	80		Total Hours*	70

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

Chemical Engineering - Biochemical Engineering Emphasis Group 2 Major Requirements

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II and Qualitative Analysis* <small>*Note: CHEM 1510 is not an S&T degree requirement; course will transfer as elective credit.</small>	3
CHEM 221	Organic Chemistry I	5	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHEM 222	Organic Chemistry II	5	CHEM 2220, 2229	Organic Chemistry II and Lab	4
CSIS 271 or CSIS 123 or CSIS 223 or ENGR 204	Data Structures and Algorithm Analysis or Programming Fundamentals or Object-Oriented Programming With C++ or Programming for Engineers and Scientists	3	CS 1500 or CS 1971, 1981 or CS 1972, 1982	Computational Problem Solving or Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519*	Thermodynamics* <small>*The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&T course) will be substituted for CHEM ENG 2110 by the chemical engineering department. Students must complete both courses to receive credit.</small>	3
COMM 100	Fundamentals of Speech	3	SP&MS 1185	Principles of Speech	3
	Humanities/Social Science Elective			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	34		Group 2 Major Requirements	35
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	74		Total Hours*	70

*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

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEO 101	Physical Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	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
SRVY 135	Elementary Surveying	3	CIV ENG 2401	Fundamentals of Surveying	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	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	32		Group 2 Major Requirements	30
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	72		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

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COMM 100	Fundamentals of Speech	3	SPMS 1185	Public Speaking	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
MATH 141	Discrete Structures for Comp Sci I	3	CS 1200	Discrete Math for Computer Science	3
CSIS 271 or CSIS 123 or CSIS 223	Data Structures and Algorithm Analysis or Programming Fundamentals or Object-Oriented Programming with C++ or	3	CS 1500 or CS 1971,1981	Computational Problem Solving or Object-Oriented Programming with C++	3
ENGR 229 and ENGR 230 (BOTH of the courses above or ONE of the courses below.)	Statics (3) and Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3-5	CIV ENG 2200 and MECH ENG 2350 (BOTH of the courses above or ONE of the courses below.)	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3-4
OR ENGR 223 or CHEM 221 or BIOL 214	OR Thermodynamics and Heat Transfer (4) or Organic Chemistry I (5) or Principles of Genetics (4)		OR MECH ENG 2519 or CHEM 2210 or BIO SCI 2223	OR Thermodynamics (3) or Organic Chemistry I (4) or General Genetics (3)	
ENGR 233,234	Circuit Analysis I (4) and Lab (1)	5	EE 2100**, 2101	Circuits I** (3) and Lab (1) **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	4
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3117.)	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	See your advisor for course options.	3		Maximum Free Electives	3
	Group 2 Major Requirements	31		Group 2 Major Requirements	30
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	71		Total Hours*	65

*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>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
COMM 100	Fundamentals of Speech	3	SPMS 1185	Public Speaking	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGR 229 and ENGR 230 (BOTH of the courses above or ONE of the courses below.)	Statics (3) and Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3-5	CIV ENG 2200 and MECH ENG 2350 (BOTH of the courses above or ONE of the courses below.)	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3-4
OR ENGR 223 or CHEM 221 or BIOL 214	OR Thermodynamics and Heat Transfer (4) or Organic Chemistry I (5) or Principles of Genetics (4)		OR MECH ENG 2519 or CHEM 2210 or BIO SCI 2223	OR Thermodynamics (3) or Organic Chemistry I (4) or General Genetics (3)	
ENGR 233,234	Circuit Analysis I (4) and Lab (1)	5	EE 2100**, 2101	Circuits I** (3) and Lab (1) **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	4
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3117.)	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	See your advisor for course options.	3		Maximum Free Electives	3
	Group 2 Major Requirements	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	68		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

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
PSYC 140	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGL 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	3
CSIS 123 or CSIS 223 or ENGR 204	Programming Fundamentals or Object-Oriented Programming in C++ or Programming for Engineers and Scientists	3	CS 1971, 1981 or CS 1972, 1982	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab	3
ENGR 233	Circuit Analysis I	4	EE 2800	Circuit Analysis I	3
ENGR 233	Circuit Analysis I	4	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 229	Statics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
ENGR 230	Dynamics	3	MECH 2527	Thermal Analysis	3
ENGR 223	Thermodynamics and Heat Transfer	4	CIV ENG 2210	Mechanics of Materials	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	Group 2 Major Requirements	42		Group 2 Major Requirements	39
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	82		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

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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	3
HIST 120 or HIST 121 or HIST 134	American History I or American History II or Western Civilization II	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200	American History to 1877 or American History since 1877 or Modern Western Civilization	3
GEO 101	Physical Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II and Qualitative Analysis* <small>*Note: CHEM 1510 is not an S&T degree requirement; course will transfer as elective credit.</small>	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
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	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	39		Group 2 Major Requirements	34
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	79		Total Hours*	69

*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>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEO 101	Physical Geology	5	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	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
BIOL 101 or CHEM 112 or CHEM 221	General Biology or General Chemistry II or Organic Chemistry I <i>or any 3+-hour course in chemistry, geochemistry, or biology</i>	5	BIO SCI 1113 or CHEM 1320 or CHEM 2210	General Biology or General Chemistry II or Organic Chemistry I <i>or any 3-hour course in chemistry, geochemistry, or biology. Satisfies chemistry/geochemistry elective requirement.</i>	4
	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	34		Group 2 Major Requirements	31
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	74		Total Hours*	66

*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>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGL 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	3
CSIS 123 or CSIS 223 or ENGR 204	Programming Fundamentals or Object-Oriented Programming with C++ or Programming for Engineers and Scientists	3	CS 1971, 1981 or CS 1972,1982	Intro to Programming Method and Lab (C++) or 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 2360	Dynamics	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519	Thermodynamics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics <i>(Will satisfy the Advanced Math/Comp Sci elective requirement.)</i>	3
ENGL 220 or ENGL 222 or ENGL 254 or ENGL 260 or ENGL 262/268	British Literature to 1750 or American Literature I or World Literature I or African-American Literature or Women's Lives and Autobiography/Women's Literature <i>(or other literature elective)</i>	3	ENGLISH 1211 or ENGLISH 1221 or ENGLISH 1231 or ENGLISH 2245 or ENGLISH 2242 or	British Literature I: The Beginnings to 1800 or American Literature: 1600 to 1865 or World Literature I or African American Literature or Literature by Women <i>(or other literature elective)</i>	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	38		Group 2 Major Requirements	36
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	78		Total Hours*	71

*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		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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	3
HIST 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II and Qualitative Analysis* <small>*Note: CHEM 1510 is not an S&T degree requirement; course will transfer as elective credit.</small>	3
CHEM 221 or ENGR 233	Organic Chemistry 1 or Circuit Analysis I	4	CHEM 2210 or EE 2800	Organic Chemistry I or Electrical Circuits <small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement</small>	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	See your advisor for course options.	5		Maximum Free Electives	5
	Group 2 Major Requirements	38		Group 2 Major Requirements	35
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	78		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		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGR 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 223	Thermodynamics and Heat Transfer	4	MECH ENG 2527	Thermal Analysis	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
GEO 101	Physical 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	36		Group 2 Major Requirements	33
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	76		Total Hours*	68

*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>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 215	Engineering Statistics and Computations	3	STAT 3115	Engineering Statistics	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	Humanities/Social Science Elective	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	6		Maximum Free Electives	6
	Group 2 Major Requirements	30		Group 2 Major Requirements	30
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	70		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>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design & Microcomputer Applications	3	MECH ENG 1720	Engineering Design with Computer Appl	3
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 134 or HIST 120 or HIST 121 or POLS 136	Western Civilization II or United States History to 1865 or United States History since 1865 or Introduction to American Politics	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GEO 101	Physical Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	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
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2527	Thermal Analysis	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	33		Group 2 Major Requirements	30
	Group 1 Core Requirements	40		Group 1 Core Requirements	35
	Total Hours	73		Total Hours*	65

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