

Metropolitan Community Colleges — Missouri S&T

General Engineering

Transfer Guide Effective as of Fall 2025

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

Students are not required to complete all courses on this guide before transferring to Missouri S&T.

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&T</u>		
MATH 180	Analytic Geometry and Calculus I	5	MATH 1214	Calculus I	4
MATH 190	Analytic Geometry and Calculus II	5	MATH 1215	Calculus II	4
MATH 210	Analytic Geometry and Calculus III	5	MATH 2222	Calculus III	4
MATH 230	Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHYS 220	Engineering Physics I	5	PHYSICS 1135	Engineering Physics I	4
PHYS 221	Engineering Physics II	5	PHYSICS 2135	Engineering Physics II	4
ENGR 101	Intro to the Engineering Profession	1	FR ENG 1100	Study and Careers in Engineering and Computing	1
ENGL 101	Composition and Reading I	3	ENGLISH 1120	Exposition and Argumentation	3
		Total Hours			Total Hours
		32			27

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

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

Aerospace Engineering
Architectural Engineering
Biomedical Engineering/Biomanufacturing or Biomaterials
Ceramic Engineering
Chemical Engineering and Biochemistry Emphasis
Civil Engineering
Computer Engineering
Electrical Engineering

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

Engineering Major Requirements are detailed on the following pages.

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

Aerospace 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	Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310*, 1319	General Chemistry I and Lab <small>*CHEM 1310 will be substituted for CHEM 1305.</small>	5
CSIS 123 or ENGR 204	Programming Fundamentals or Programming for Engineers and Scientists	3	COMP SCI 1971, 1981 or COMP SCI 1972, 1982	Intro to Programming Method and Lab (C++) (3) or Intro to MATLAB Programming and Lab (3)	3
ENGR 233	Circuit Analysis I	4	ELEC ENG 2800	Electrical Circuits	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 Computation	3	STAT 3115	Engineering Statistics <small>Satisfies the Advanced Math/Comp Sci elective requirement.</small>	3
PHIL 203	Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3	PHILOS 1130	How Should I Live? An Intro to Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3
Humanities, Arts, and Social Sciences General Education Requirements					
From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines.					
*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts					
Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences					
Select 6 hours from at least two specific disciplines.					
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences					
Select 3 hours.					
HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3	HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3
		0			0
		52			50
		32			27
Total Hours		84			Total Hours* 77

*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	Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310*, 1319	General Chemistry I and Lab <small>*CHEM 1310 will be substituted for CHEM 1305.</small>	5
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519*	Thermodynamics* <small>*Will be substituted for MECH ENG 2527.</small>	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 Computation	3	STAT 3115	Engineering Statistics <small>Will be substituted for STAT 3113.</small>	3
GEOL 101	Physical Geology	5	GEOLGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities, Arts, and Social Sciences General Education Requirements					
From the options listed in each group below, select 12 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines.					
*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines to include HISTORY 1200.					
HIST 134*	Modern Western Civilization* <small>*Satisfies the State of Missouri Government requirement.</small>	3	HISTORY 1200*	Modern Western Civilization* <small>*Satisfies the State of Missouri Government requirement.</small>	3
PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3	PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3
<i>No free electives applied to the degree.</i>		0	Maximum Free Electives		0
		47	Group 2 Major Requirements		43
		32	Group 1 Core Requirements		27
Total Hours		79	Total Hours*		70

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

Biomedical Engineering-Biomanufacturing Group 2 Major Requirements

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COMM 100	Fundamentals of Speech	3	SP&MS 1185	Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</small>	3
CHEM 221 CHEM 222 or BIOL 101 or BIOL 204	Organic Chemistry I Organic Chemistry II (5) or General Biology (5) or Genetics (3)	3	CHEM 2210, 2219 CHEM 2220, 2229 or BIO SCI 1113, 1219 or BIO SCI 2223	Organic Chemistry I and Lab Organic Chemistry II and Lab or General Biology and Lab or General Genetics <small>Applies to degree as Track Elective.</small>	4
CSIS 223 or CSIS 271 or CSIS 123 or ENGR 204	Object-Oriented Programming With C++ or Data Structures and Algorithm Analysis or Programming Fundamentals or Programming for Engineers and Scientists	3	COMP SCI 1500 or COMP SCI 1971,1981* or COMP SCI 1570, 1580* or COMP SCI 1972, 1982*	Computational Problem Solving (3) or Intro to Programming Methodology and Lab*(C++) (3) or Intro to Programming and Lab* (C++) (4) or Intro to MATLAB Programming and Lab* (3) <small>*Will be substituted for COMP SCI 1500.</small>	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 biomedical engineering department. Students must complete both courses to receive credit.</small>	3
Humanities, Arts, and Social Sciences General Education Requirements					
From the options listed in each group below, select 12 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 3 hours Behavioral and Social Sciences.					
*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts					
Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences					
Select 3 hours.					
HIST 133 or HIST 134* or GEOG 105 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3
Humanities, Arts, and Social Sciences					
ENGLISH 3560 required.					
ENGL 215	Technical Writing	3	ENGLISH 3560	Technical Writing	3
<i>No free electives applied to the degree.</i>		0		Maximum Free Electives	0
Group 2 Major Requirements		40		Group 2 Major Requirements	37
Group 1 Core Requirements		32		Group 1 Core Requirements	27
Total Hours		72		Total Hours*	64

*S&T advisor permission is required to transfer more than 69 credit hours toward the degree.

Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COMM 100	Fundamentals of Speech	3	SP&MS 1185	Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</small>	3
CHEM 221	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*CHEM 2219 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
CHEM 222	Organic Chemistry II	5	CHEM 2220, 2229*	Organic Chemistry II and Lab* <small>CHEM 2229 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
BIOL 101	General Biology	5	BIO SCI 1113*, 1219*	General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
CSIS 223 or CSIS 271 or CSIS 123 or ENGR 204	Object-Oriented Programming With C++ or Data Structures and Algorithm Analysis or Programming Fundamentals or Programming for Engineers and Scientists	3	COMP SCI 1500 or COMP SCI 1971, 1981* or COMP SCI 1570, 1580* or COMP SCI 1972, 1982*	Computational Problem Solving (3) or Intro to Programming Methodology and Lab*(C++) (3) or Intro to Programming and Lab* (C++) (4) or Intro to MATLAB Programming and Lab* (3) <small>*Will be substituted for COMP SCI 1500.</small>	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 233, 234	Circuit Analysis I (4) and Lab (1)	5	ELEC ENG 2100*, 2101	Circuits I* (3) and Circuit Analysis Lab (1) <small>*A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for ELEC ENG 2100. Applies to the degree as a Track Elective (Engineering).</small>	4
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 12 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 3 hours Behavioral and Social Sciences. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 3 hours.					
HIST 133 or HIST 134* or GEOG 105 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3
Humanities, Arts, and Social Sciences ENGLISH 3560 required.					
ENGL 215	Technical Writing	3	ENGLISH 3560	Technical Writing	3
<i>No free electives applied to the degree.</i>					
		0			0
		51			45
		32			27
		83			72
<small>*S&T advisor permission is required to transfer more than 69 credits toward the S&T Biomedical Engineering degree.</small>					

Ceramic Engineering Group 2 Major Requirements

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	Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	Composition and Reading II or Technical Writing or Fundamentals of Speech	3		ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	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 111	General College Chemistry I	5		CHEM 1310, 1319	General Chemistry I and Lab	5
CHEM 112	General College Chemistry II	5		CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</small>	3
CHEM 221	Organic Chemistry I	5		CHEM 2210, 2219*	Organic Chemistry I (3) and Lab* (1) <small>Satisfies the advanced chemistry elective requirement. *The lab is not a degree requirement, transfers as general elective credit.</small>	3
ENGR 215	Engineering Statistics and Computation	3		STAT 3115	Engineering Statistics <small>or any statistics course 3000-level or higher. Satisfies statistics elective requirement.</small>	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.						
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.						
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6		ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.						
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6		HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences Select 3 hours.						
HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3		HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3
		0		Maximum Free Electives		0
		45		Group 2 Major Requirements		41
		32		Group 1 Core Requirements		27
		77		Total Hours*		68

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

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

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGR 113	Engineering Design Microcomputer Applications	3	MECH ENG 1720	Intro to Engineering Design	3
COMM 100	Fundamentals of Speech	3	SP&MS 1185	Principles of Speech <i>Applies to degree as Gen Ed Communication requirement.</i>	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis* (2) <i>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</i>	3
CHEM 221	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <i>*CHEM 2210 is a degree requirement. CHEM 2219 applies to the degree as 1 of 9 required science elective credits See note below .</i>	4
CHEM 221	Organic Chemistry I	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <i>*The lab will apply to the degree as 1 of the 9 science elective credits (below) .</i>	4
CHEM 222	Organic Chemistry II	5	CHEM 2220, 2229*	Organic Chemistry II (3) and Lab* (1) <i>CHEM 2220 Will satisfy 3 of 9 required hours of science electives CHEM 2229 is not required for the degree, will transfer as general credit.</i>	4
BIOL 208	Microbiology	5	BIO SCI 3313, 3319	Microbiology and Lab (5) <i>Will satisfy 5 of 9 required hours of science electives .</i>	5
CSIS 223 or CSIS 271 or CSIS 123 or ENGR 204	Object-Oriented Programming With C++ or Data Structures and Algorithm Analysis or Programming Fundamentals or Programming for Engineers and Scientists	3	COMP SCI 1500 or COMP SCI 1972, 1982*	Computational Problem Solving or Intro to MATLAB Programming and Lab* <i>*Will be substituted for COMP SCI 1500.</i>	3
ENGR 215	Engineering Statistics and Computation	3	STAT 3115	Engineering Statistics <i>Will be substituted for STAT 3113.</i>	3
ENGR 223	Thermodynamics and Heat Transfer	4	MECH ENG 2519*	Thermodynamics* <i>*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.</i>	3
Humanities, Arts, and Social Sciences General Education Requirements					
From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines.					
*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts					
Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <i>*Satisfies the State of Missouri government requirement.</i>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <i>*Satisfies the State of Missouri government requirement.</i>	6
Behavioral and Social Sciences					
Select 6 hours from at least two specific disciplines.					
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <i>*Satisfies the State of Missouri government requirement.</i>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <i>*Satisfies the State of Missouri government requirement.</i>	6
Humanities, Arts, and Social Sciences					
ENGLISH 3560 required.					
ENGL 215	Technical Writing	3	ENGLISH 3560	Technical Writing	3
		0	<i>No free electives applied to the degree.</i>		0
		61	Group 2 Major Requirements		55
		32	Group 1 Core Requirements		27
Total Hours		93			Total Hours*
					82

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

Civil Engineering Group 2 Major Requirements

<u>Metropolitan Community Colleges</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 113	Engineering Design Microcomputer Applications	3	MECH ENG 1720	Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
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	2
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 Computation	3	STAT 3115	Engineering Statistics <small>Will be substituted for STAT 3113.</small>	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.					
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences Select 3 hours.					
HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3	HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3
<i>No free electives applied to the degree.</i>		0	Maximum Free Electives		0
Group 2 Major Requirements		46	Group 2 Major Requirements		43
Group 1 Core Requirements		32	Group 1 Core Requirements		27
Total Hours		78	Total Hours*		70

*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 Principles of Speech Applies to degree as Gen Ed Communication requirement.
CHEM 111	General College Chemistry I 5	CHEM 1310, 1319 General Chemistry I and Lab
MATH 121* and MATH 122*	Discrete Structures for Computer Science I* and Discrete Structures for Computer Science II* *The combination of MCC MATH 121 AND 122 is equivalent to Missouri S&T COMP SCI 1200. Both courses must be taken to receive credit for Missouri S&T COMP SCI 1200. 6	COMP SCI 1200* Discrete Mathematics for Computer Science* *The combination of MCC MATH 121 AND 122 is equivalent to Missouri S&T COMP SCI 1200. Both courses must be taken to receive credit for Missouri S&T COMP SCI 1200.
CSIS 223 or CSIS 271	Object-Oriented Programming with C++ or Data Structures and Algorithm Analysis 3	COMP SCI 1500 Computational Problem Solving
ENGR 229 or ENGR 230 or ENGR 223 or CHEM 221 or BIOL 214	Statics (3) or Dynamics (3) Thermodynamics and Heat Transfer (4) or Organic Chemistry I (5) or Principles of Genetics (4) 3	CIV ENG 2200 or MECH ENG 2350 or MECH ENG 2519 or CHEM 2210 or BIO SCI 2223 Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (2) or Thermodynamics (3) or Organic Chemistry I (4) or General Genetics (3)
ENGR 233, 234	Circuit Analysis I (4) and Lab (1) 5	ELEC ENG 2100*, 2101 Circuits I* (3) and Circuit Analysis Lab (1) *A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for ELEC ENG 2100.
ENGR 215	Engineering Statistics and Computation 3	STAT 3115 Engineering Statistics Will be substituted for STAT 3117.
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.		
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.		
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation *Satisfies the State of Missouri government requirement. 6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190 British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video *Satisfies the State of Missouri government requirement.
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.		
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language *Satisfies the State of Missouri government requirement. 6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYC 1101 or ECON 1100 or ECON 1200 or Foreign Language Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language *Satisfies the State of Missouri government requirement.
Humanities, Arts, and Social Sciences Select 3 hours.		
ENGL 102 or ENGL 215	Composition and Reading II or Technical Writing 3	ENGLISH 1160 or ENGLISH 3560 Writing and Research or Technical Writing
Electives	Maximum Free Electives 3	Electives Maximum Free Electives 3
	Group 2 Major Requirements 46	Group 2 Major Requirements 42
	Group 1 Core Requirements 32	Group 1 Core Requirements 27
	Total Hours 78	Total Hours* 69

*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	Intro to Engineering Design	3
COMM 100	Fundamentals of Speech		SPMS 1185	Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CSIS 223 or CSIS 271	Object-Oriented Programming with C++ or Data Structures and Algorithm Analysis	3	COMP SCI 1500	Computational Problem Solving	3
ENGR 229 and ENGR 230	Statics (3) and Dynamics (3)		CIV ENG 2200 and MECH ENG 2350	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3)	
<small>BOTH of the courses above or ONE of the courses below.</small>	<small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small>		<small>BOTH of the courses above or ONE of the courses below.</small>	<small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small>	
OR	OR	4	OR	OR	3
ENGR 223 or CHEM 221 or BIOL 214	Thermodynamics and Heat Transfer (4) or Organic Chemistry I (5) or Principles of Genetics (4)		MECH ENG 2519 or CHEM 2210 or BIO SCI 2223	Thermodynamics (3) or Organic Chemistry I (4) or General Genetics (3)	
ENGR 233, 234	Circuit Analysis I (4) and Lab (1)	5	ELEC ENG 2100*, 2101	Circuits I* (3) and Circuit Analysis Lab (1) <small>*A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for ELEC ENG 2100.</small>	4
ENGR 215	Engineering Statistics and Computation	3	STAT 3115	Engineering Statistics <small>Will be substituted for STAT 3117.</small>	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present or American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.					
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences Select 3 hours.					
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
Electives	Maximum Free Electives	6	Electives	Maximum Free Electives	6
	Group 2 Major Requirements	44		Group 2 Major Requirements	45
	Group 1 Core Requirements	32		Group 1 Core Requirements	27
	Total Hours	76		Total Hours*	72

*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		
ENGR 113	Engineering Design Microcomputer Applications	3	MECH ENG 1720	Intro to Engineering Design	3
COMM 100	Fundamentals of Speech		SPMS 1185	Principles of Speech	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CSIS 123 or CSIS 223 or ENGR 204	Programming Fundamentals or Object-Oriented Programming in C++ or Programming for Engineers and Scientists	3	COMP SCI 1971, 1981 or COMP SC 1972, 1982	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab	3
ENGR 233	Circuit Analysis I	4	ELEC ENG 2800	Electrical Circuits	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
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
ENGR 215	Engineering Statistics and Computation	3	STAT 3115	Engineering Statistics	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines to include PSYCH 1101.					
PSYC 140	General Psychology	3	PSYCH 1101	General Psychology Required	3
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3
Humanities, Arts, and Social Sciences Select 3 hours.					
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
<i>No free electives applied to the degree.</i>					
	Group 2 Major Requirements	46	Electives	Maximum Free Electives	0
	Group 1 Core Requirements	32		Group 2 Major Requirements	46
	Total Hours	78		Group 1 Core Requirements	27
				Total Hours*	61

*S&T advisor permission is required to transfer more than 61 credits toward the S&T Engineering Management degree.

Environmental Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGR 113	Engineering Design Microcomputer Applications	3	MECH ENG 1720	Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
GEO 101	Physical Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CHEM 112	General College Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</small>	3
BIOL 101	General Biology	5	BIO SCI 1113, 1219*	General Biology (3) and Lab* (1) <small>*The lab is not a degree requirement, transfers as general elective credit.</small>	3
ENGR 229	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 230	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 215	Engineering Statistics and Computation	3	STAT 3115	Engineering Statistics <small>Will be substituted for STAT 3113.</small>	3
Humanities, Arts, and Social Sciences General Education Requirements					
From the options listed in each group below, select 12 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines.					
*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts					
Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences					
Select 6 hours from at least two specific disciplines to include HISTORY 1200					
HIST 134*	Modern Western Civilization* <small>*Satisfies the State of Missouri Government requirement.</small>	3	HISTORY 1200*	Modern Western Civilization* <small>*Satisfies the State of Missouri Government requirement.</small>	3
PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3	PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	3
<i>No free electives applied to the degree.</i>		0			0
		50			43
		32			27
Total Hours		82			Total Hours*
					70
<small>*S&T advisor permission is required to transfer more than 69 credits toward the S&T Environmental Engineering degree.</small>					

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	Intro to Engineering Design	3
ENGL 215	Technical Writing		ENGLISH 3560	Technical Writing <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
CSIS 223 or CSIS 271 or CSIS 123 or ENGR 204	Object-Oriented Programming With C++ or Data Structures and Algorithm Analysis or Programming Fundamentals or Programming for Engineers and Scientists	3	COMP SCI 1500 or COMP SCI 1972, 1982	Computational Problem Solving or Intro to MATLAB Programming and Lab	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	2
ENGR 240	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 215	Engineering Statistics and Computation	3	STAT 3115	Engineering Statistics	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.					
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences Select 3 hours.					
HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3	HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3
<i>No free electives applied to the degree.</i>		0	Maximum Free Electives		0
		43	Group 2 Major Requirements		43
		32	Group 1 Core Requirements		27
Total Hours		75	Total Hours*		70

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

Mechanical Engineering Group 2 Major Requirements

Metropolitan Community Colleges		Semester	Missouri S&T		
ENGR 113	Engineering Design Microcomputer Applications	3	MECH ENG 1720	Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
CHEM 111	General College Chemistry I	5	CHEM 1310*, 1319	General Chemistry I and Lab <small>*CHEM 1310 will be substituted for CHEM 1305.</small>	
CSIS 123 or CSIS 223 or ENGR 204	Programming Fundamentals or Object-Oriented Programming in C++ or Programming for Engineers and Scientists	3	COMP SCI 1971, 1981 or COMP SCI 1972, 1982	Intro to Programming Method and Lab (C++) or Intro to MATLAB Programming and Lab	3
ENGR 233	Circuit Analysis I	4	ELEC ENG 2800	Electrical Circuits	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 Computation	3	STAT 3115	Engineering Statistics <small>Satisfies the Advanced Math/Statistics elective requirement.</small>	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.					
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.					
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.					
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences Select 3 hours.					
HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3	HASS Elective	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3
		0			0
		49			42
		32			27
		81			69
<small>*S&T advisor permission is required to transfer more than 68 credits toward the S&T Mechanical Engineering degree.</small>					

Metallurgical 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 Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185 Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>	3
ENGR 215 Engineering Statistics and Computation	3	STAT 3115 Engineering Statistics	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 111 General College Chemistry I	5	CHEM 1310, 1319 General Chemistry I and Lab	5
CHEM 112 General College Chemistry II	5	CHEM 1320, 1510* General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</small>	3
CHEM 221 or ENGR 233 Organic Chemistry 1 or Circuit Analysis I	4	CHEM 2210 or ELEC ENG 2800 Organic Chemistry I (3) or Electrical Circuits (3) <small>Not specifically required for the degree but satisfies out-of-department technical elective requirement</small>	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.			
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.			
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106 British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190 British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.			
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
Humanities, Arts, and Social Sciences Select 3 hours.			
HASS Elective Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3	HASS Elective Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	3
Maximum Free Electives	3	Maximum Free Electives	3
Group 2 Major Requirements	47	Group 2 Major Requirements	44
Group 1 Core Requirements	32	Group 1 Core Requirements	27
Total Hours	79	Total Hours*	71

*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 Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or Composition and Reading II or Technical Writing or Fundamentals of Speech	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185 Writing and Research or Technical Writing or Principles of Speech	3
ENGR 215 Engineering Statistics and Computation	3	STAT 3115 Engineering Statistics	3
CHEM 111 General College Chemistry I	5	CHEM 1310, 1319 General Chemistry I and Lab	5
ENGR 229 Statics	3	CIV ENG 2200 Engineering Mechanics-Statics	3
ENGR 230 Dynamics	3	MECH ENG 2350 Engineering Mechanics-Dynamics	2
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, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 12 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.			
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.			
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106 British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190 British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>	6
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines.			
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	6
<i>No free electives applied to the degree.</i>			
	0		0
	44		40
	32		27
	76		67
			Total Hours*

*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 Intro to Engineering Design	3
ENGL 102 or ENGL 215 or COMM 100 or	3	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185	3
CHEM 111 General College Chemistry I	5	CHEM 1310, 1319 General Chemistry I and Lab	5
CSIS 123 or ENGR 204 Programming Fundamentals or Programming for Engineers and Scientists	3	COMP SCI 1971, 1981 or COMP SCI 1972, 1982	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 Computation	3	STAT 3115 Engineering Statistics	3
ENGR 233 Circuit Analysis I	4	ELEC ENG 2800 Electrical Circuits	3
ENGR 223 Thermodynamics and Heat Transfer	4	MECH ENG 2519 Thermodynamics	3
Humanities, Arts, and Social Sciences General Education Requirements From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines. *At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.			
Humanities and Fine Arts Select 6 hours from at least two specific disciplines.			
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSI 108 or SPDR 106	6	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1150	6
		British Literature 1750-1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre for Social Change <small>*Satisfies the State of Missouri government requirement.</small>
Behavioral and Social Sciences Select 6 hours from at least two specific disciplines to include either ECON 1100 or 1200.			
ECON 211 or ECON 210	3	ECON 1100 or ECON 1200	3
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or Foreign Language	3	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or Foreign Language	3
		Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>
Humanities, Arts, and Social Sciences Select 3 hours.			
HASS Elective	3	HASS Elective	3
		Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.
		Maximum Free Electives	0
		Group 2 Major Requirements	46
		Group 1 Core Requirements	32
Total Hours			78
		Maximum Free Electives	0
		Group 2 Major Requirements	44
		Group 1 Core Requirements	27
Total Hours*			71

*S&T advisor permission is required to transfer more than 69 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>
ENGL 102 or ENGL 215 or COMM 100 or	3	Composition and Reading II or Technical Writing or Fundamentals of Speech	ENGLISH 1160 or ENGLISH 3560 or SPMS 1185
CHEM 111	5	General College Chemistry I	CHEM 1310, 1319
CSIS 271	3	Data Structures and Algorithm Analysis	COMP SCI 1500
ENGR 204	3	Programming for Engineers and Scientists	COMP SCI 1972, 1982
GEO 101	5	Physical Geology	GEOLOGY 1110 (GEO ENG 1150)
ENGR 229	3	Statics	CIV ENG 2200
ENGR 230	3	Dynamics	MECH ENG 2350
ENGR 240	3	Mechanics of Materials	CIV ENG 2210
ENGR 223	4	Thermodynamics and Heat Transfer	MECH ENG 2527
			Writing and Research or Technical Writing or Principles of Speech <small>Applies to degree as Gen Ed Communication requirement.</small>
			General Chemistry I and Lab
			Computational Problem Solving
			Intro to MATLAB Programming and Lab
			Physical and Environmental Geology
			Engineering Mechanics-Statics
			Engineering Mechanics-Dynamics
			Mechanics of Materials
			Thermal Analysis
Humanities, Arts, and Social Sciences General Education Requirements			
From the options listed in each group below, select 15 hours to include 6 hours Humanities and Fine Arts from at least two specific disciplines and 6 hours Behavioral and Social Sciences from at least two specific disciplines.			
*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.			
Humanities and Fine Arts			
Select 6 hours from at least two specific disciplines.			
ENGL 220 or ENGL 221 or ENGL 222 or ENGL 223 or ENGL 254 or HIST 120* or HIST 121* or ART 108 or MUSIC 108 or SPDR 106	6	British Literature to 1750 or British Literature 1750-Present or American Literature to 1860 or American Literature 1860-Present or World Literature I or United States History to 1865* or United States History since 1865* or Survey of Art or Music Appreciation or Theatre Appreciation <small>*Satisfies the State of Missouri government requirement.</small>	ENGLISH 1211 or ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1222 or ENGLISH 1231 or HISTORY 1300* or HISTORY 1310* or ART 1180 or MUSIC 1150 or THEATRE 1190
			British Literature I: The Beginnings to 1800 or British Literature II: 1800 to Present American Literature: 1600 to 1865 or American Literature: 1865 to Present or World Literature I: Beginnings to the Renaissance or American History to 1877* or American History Since 1877* or Art Appreciation or Music Understanding and Appreciation or Theatre via Video <small>*Satisfies the State of Missouri government requirement.</small>
Behavioral and Social Sciences			
Select 6 hours from at least two specific disciplines.			
HIST 133 or HIST 134* or GEOG 105 or PHIL 100 or PHIL 103 or PHIL 200 or POLS 136* or PSYC 140 or ECON 211 or ECON 210 or Foreign Language	6	Foundations of Western Civilization or Modern Western Civilization* or World Geography or Intro to Philosophy or Intro to Critical Thinking or Logic or Intro to US National Politics* or General Psychology or Microeconomics or Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>	HISTORY 1100 or HISTORY 1200* or HISTORY 2110 or PHIL 1105 or PHIL 1115 or POL SCI 1200* or PSYCH 1101 or ECON 1100 or ECON 1200 or Foreign Language
			Early Western Civilization or Modern Western Civilization* or World Regional Geography or Self and World: Intro to Philosophy or Logic and Reasoning: An Introduction or American Government* or General Psychology or Principles of Microeconomics or Principles of Macroeconomics or Elementary or Intermediate Foreign Language <small>*Satisfies the State of Missouri government requirement.</small>
Humanities, Arts, and Social Sciences			
Select 3 hours.			
HASS Elective	3	Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.	HASS Elective
			Humanities, Arts, Social Sciences Elective: Any history, art, music, theater, English and technical communication, philosophy, political science, psychology, economics, etymology, or foreign language.
	0	<i>No free electives applied to the degree.</i>	Maximum Free Electives
	47	Group 2 Major Requirements	Group 2 Major Requirements
	32	Group 1 Core Requirements	Group 1 Core Requirements
	79	Total Hours	Total Hours*
			70

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