

# St. Louis Community College — Missouri S&T

## General Engineering

Transfer Guide Effective as of Fall 2024

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

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

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

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>			
MTH 210	Analytic Geometry and Calculus I	5	MATH 1214	Calculus I <small>Grade of C or better is required.</small>	4	
MTH 220	Analytic Geometry and Calculus II	5	MATH 1215	Calculus II <small>Grade of C or better is required.</small>	4	
MTH 230	Analytic Geometry and Calculus III	5	MATH 2222	Calculus III <small>Grade of C or better is required.</small>	4	
MTH 240	Differential Equations	3	MATH 3304	Elementary Differential Equations	3	
PHY 122	Engineering Physics I	5	PHYSICS 1135	Engineering Physics I <small>Grade of C or better is required.</small>	4	
PHY 223	Engineering Physics II	5	PHYSICS 2135	Engineering Physics II <small>Grade of C or better is required.</small>	4	
CHM 105	General Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5	
ENG 101	College Composition I	3	ENGLISH 1120	Exposition and Argumentation	3	
ECO 152 or	Principles of Microeconomics or	3	ECON 1100 or	Principles of Microeconomics or	3	
ECO 151	Principles of Macroeconomics	3	ECON 1200	Principles of Macroeconomics	3	
Total Hours			39	Total Hours		34

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

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

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

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

Engineering Major Requirements are detailed on the following pages.

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

**Humanities/Social Science (HSS) Electives:** HSS electives may include any art, English and technical communication, etymology, foreign language, music, philosophy, speech and media studies, or theatre. Your campus may have additional acceptable options. Consult with your advisor or email [transfer@mst.edu](mailto:transfer@mst.edu) with questions. See Missouri S&T online catalog at <https://catalog.mst.edu/undergraduate/degreeprogramsandcourses/> for more information.

## Aerospace Engineering Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
ENG 102 or COM 107 or ENG 103	College Composition II or Public Speaking or Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
ESC 101 or IS 167	Scientific Computer Programming (3) or C++ Programming I (4)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
ESC 200	Engineering Circuits I	3	EE 2800	Electrical Circuits	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	AERO ENG 2360	Dynamics	3
ESC 207	Engineering Thermodynamics	3	MECH ENG 2519	Thermodynamics	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ME 249	Materials and Metallurgy	3	MET ENG 2110	Metallurgy for Engineers	3
MTH 215	Linear Algebra	3	MATH 3108	Linear Algebra I or <small>Will satisfy the Advanced Math/Computer Science elective requirement.</small>	3
ENG 211 or ENG 204 or ENG 231 or ENG 216 or ENG 217	British Literature II or American Literature I or World Literature or Women in Literature or Major Black Writers <small>or other literature</small>	3	ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1231 or ENGLISH 2242 or ENGLISH 2245 or	British Literature II: 1800 to Present or American Literature: 1600 to 1865 or World Literature I or Literature by Women or African American Literature <small>or other literature</small>	3
PHL 104 or PHL 112	Ethics or Business Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3	PHILOS 1130 or PHILOS 3235	How Should I Live? An Introduction to Ethics or Business Ethics <small>or other engineering, business, bio, social ethics approved by advisor</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	39		Group 2 Major Requirements	39
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	78		Total Hours*	73

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

## Architectural Engineering Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 128* (or HST 101 or HST 102)	Western Civilization 1500 to Present* (or US History to 1865 or US History 1865 to Present) <small>*HISTORY 128 is preferred; 101 or 102 will also 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
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ESC 206	Strength of Materials Lab	1	CIV ENG 2211	Materials Testing	1
ESC 207	Engineering Thermodynamics	3	MECH ENG 2527	Thermal Analysis	3
CE 240	Plane Surveying	3	CIV ENG 2401	Fundamentals of Surveying	3
GEO 111	Physical Geology	5	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENG 102, 103 or COM 107.	3	Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENGLISH 1160, 3560 or SPMS 1185.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	61

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 107	Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENG 103	Report Writing	3	ENGLISH 3560	Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
CHM 106	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*Chem 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
CHM 206, 210	Organic Chemistry I and Lab	5	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHM 207 or BIO 111 or BIO 225	Organic Chemistry II and Lab or Introductory Biology I or Genetics	5	CHEM 2220, 2229 or BIO SCI 1113, 1219 or BIO SCI 2223	Organic Chemistry II and Lab or General Biology and Lab or General Genetics <small>Applies to degree as Track Elective.</small>	4
BIO 218	Microbiology for Biotechnology	4	BIO SCI 3333, 3339	Anatomy and Physiology I and Lab	4
IS 187 or IS 280 or IS 167* or ESC 101*	Java Programming I (4) or Python (3) or C++ Programming I* (4) or Scientific Computer Programming (3)*	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* <small>*Will be substituted for CS 1500.</small>	3
ESC 207	Engineering Thermodynamics	3	MECH ENG 2519*	Thermodynamics* <small>*The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&amp;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 or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	34		Group 2 Major Requirements	33
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	73		Total Hours*	67

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

## Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 107	Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENG 103	Report Writing	3	ENGLISH 3560	Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
CHM 106	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*Chem 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
CHM 206, 210	Organic Chemistry I and Lab	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
CHM 207, 211	Organic Chemistry II and Lab	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
BIO 111	Introductory Biology	5	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
BIO 218	Microbiology for Biotechnology	4	BIO SCI 3333, 3339	Human Anatomy and Physiology I and Lab	4
IS 187 or IS 280 or IS 167* or ESC 101*	Java Programming I (4) or Python (3) or C++ Programming I* (4) or Scientific Computer Programming (3)*	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* <small>*Will be substituted for CS 1500.</small>	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 200	Engineering Circuits I	3	EE 2100*	Circuits I *A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100. Applies to the degree as a Track Elective (Engineering).	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	42		Group 2 Major Requirements	37
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	81		Total Hours*	71

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

## Ceramic Engineering Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 206	Organic Chemistry I	3	CHEM 2210	Organic Chemistry I (3) <i>Will satisfy the advanced chemistry elective requirement.</i>	3
CHM 106	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <i>*Chem 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</i>	3
ENG 102 or COM 107 or HSS Elective	College Composition II or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Principles of Speech or Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	29		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	68		Total Hours*	61

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

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

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
COM 107	Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENG 103	Report Writing	3	ENGLISH 3560	Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
CHM 106	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <i>*Chem 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</i>	3
CHM 206, 210	Organic Chemistry I and Lab	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
CHM 207 or BIO 218	Organic Chemistry II and Lab (5) or Microbiology for Biotechnology (4)	9	CHEM 2220 or BIO SCI 3313, 3319	Organic Chemistry II (3) or Microbiology and Lab (5) <i>Will satisfy science elective requirement. Select up to 9 hours from these options or CHEM 2219 Organic Chemistry Lab.</i>	8
IS 187 or IS 280 or IS 167* or ESC 101*	Java Programming I (4) or Python (3) or C++ Programming I* (4) or Scientific Computer Programming (3)*	3	CS 1500 or CS 1971, 1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* <i>CS 1971, 1981 will be substituted by the department for CS 1500.</i>	3
ESC 207	Engineering Thermodynamics	3	MECH ENG 2519*	Thermodynamics* <i>*The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&amp;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 or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	40		Group 2 Major Requirements	36
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	79		Total Hours*	70

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 102 or COM 107 or ENG 103	College Composition II or Public Speaking or Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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 111	Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ESC 203	Engineering Mechanics I (Statics)	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Mechanics II	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ESC 206	Strength of Materials Lab	1	CIV ENG 2211	Materials Testing	1
CE 240	Plane Surveying	3	CIV ENG 2401	Fundamentals of Surveying	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	67		Total Hours*	61

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
COM 107	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 102 or ENG 103	College Composition II or Report Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
MTH 212	Discrete Mathematics	3	CS 1200	Discrete Math for Computer Science	3
IS 167	C++ Programming I or	3	CS 1500	Computational Problem Solving	3
ESC 203 or ESC 204 or ESC 207 or CHM 206 or BIO 225	Engineering Statics (3) or Engineering Dynamics (3) or Engineering Thermodynamics (3) or Organic Chemistry I (3) or Genetics (3)	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) Organic Chemistry I (4) or General Genetics (3)	3
ESC 200	Engineering Circuits I	3	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	3
MTH 215	Linear Algebra	3	MATH 3108	Linear Algebra <small>Will satisfy a required math elective.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	30		Group 2 Major Requirements	30
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	64

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
COM 107	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 102 or ENG 103	College Composition II or Report Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
IS 167	C++ Programming I or	3	CS 1500	Computational Problem Solving	3
ESC 203 and ESC 204 (BOTH of the courses above or ONE of the courses below.)	Engineering Statics (3) and Engineering Dynamics (3) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3	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 (2) (Both courses above combined or any one of the following courses will satisfy a required engineering science elective.)	3
OR	OR	3	OR	OR	3
ESC 207 or CHM 206 or BIO 225	Engineering Thermodynamics (3) or Organic Chemistry I (3) or Genetics (3)	3	MECH ENG 2519 or CHEM 2210 or BIO SCI 2223	Thermodynamics (3) or Organic Chemistry I (3) or General Genetics (3)	3
ESC 200	Engineering Circuits I	3	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	3
MTH 215	Linear Algebra	3	MATH 3108	Linear Algebra	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	30		Group 2 Major Requirements	30
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	64

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
PSY 200	General Psychology I	3	PSYCH 1101	General Psychology	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
COM 107	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 102 or ENG 103	College Composition II or Report Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
ESC 101 or IS 167	Scientific Computer Programming (3) or C++ Programming I (4)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
ESC 200	Engineering Circuits I	3	EE 2800	Electrical Circuits	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 202	Thermal Analysis	3	MECH 2527	Thermal Analysis	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	3	Electives	Maximum Free Electives	0
	Group 2 Major Requirements	39		Group 2 Major Requirements	35
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	78		Total Hours*	61

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

## Environmental Engineering Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 102 or COM 107 or ENG 103	College Composition II or Public Speaking or Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 128 or HST 101 or HST 102	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
GEO 111	Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHM 106	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*Chem 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
BIO 140	Principles of Biology I	3	BIO SCI 1113	General Biology	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ESC 206	Strength of Materials Lab	1	CIV ENG 2211	Materials Testing	1
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	33		Group 2 Major Requirements	30
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	72		Total Hours*	64

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 103	Report Writing	3	ENGLISH 3560	Technical Writing	3
HST 128 or HST 101 or HST 102 or	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or	Modern Western Civilization or American History to 1877 or American History since 1877 or	3
PSC 101	Intro to American Politics		POL SCI 1200	American Government	
IS 187 or IS 280 or IS 167 or	Java Programming I (4) or Python (3) or C++ Programming I (4) or	3	CS 1500 or CS 1971, 1981	Computational Problem Solving or Intro to Programming Methodology and Lab	3
ESC 101	Scientific Computer Programming (3)				
GEO 111	Physical Geology	3	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	29
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	63

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 128 or HST 101 or HST 102 or	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or	Modern Western Civilization or American History to 1877 or American History since 1877 or	3
PSC 101	Intro to American Politics		POL SCI 1200	American Government	
ENG 102 or COM 107 or ENG 103	College Composition II or Public Speaking or Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
ESC 101 or IS 167	Scientific Computer Programming (3) or C++ Programming I (4)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
ESC 200	Engineering Circuits I	3	EE 2800	Electrical Circuits	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2360	Dynamics	3
ESC 207	Engineering Thermodynamics	3	MECH ENG 2519	Thermodynamics	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ESC 206	Strength of Materials Lab	1	CIV ENG 2211	Materials Testing	1
MTH 215	Linear Algebra	3	MATH 3108	Linear Algebra I or <small>Will satisfy the Advanced Math/Computer Science elective requirement.</small>	3
ME 249	Materials and Metallurgy	3	MET ENG 2110	Metallurgy for Engineers	3
ENG 211 or ENG 204 or ENG 231 or ENG 216 or ENG 217	British Literature II or American Literature I or World Literature or Women in Literature or Major Black Writers or other literature	3	ENGLISH 1212 or ENGLISH 1221 or ENGLISH 1231 or ENGLISH 2242 or ENGLISH 2245 or	British Literature II: 1800 to Present or American Literature: 1600 to 1865 or World Literature I or Literature by Women or African American Literature or other literature	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	40		Group 2 Major Requirements	40
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	79		Total Hours*	74

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



## Metallurgical Engineering Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 102 or COM 107 or ENG 103	College Composition II or Public Speaking or Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ME 249	Materials and Metallurgy	3	MET ENG 2110	Metallurgy for Engineers	3
CHM 106	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*Chem 1510 is not an S&amp;T degree requirement. Will transfer as general credit.</small>	3
CHM 206 or ESC 200	Organic Chemistry I or Engineering Circuits	3	CHEM 2210 or EE 2800	Organic Chemistry I (4) or Electrical Circuits (3) or <small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	5	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	37		Group 2 Major Requirements	33
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	76		Total Hours*	67

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

## Mining Engineering Group 2 Major Requirements

<u>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 102 or ENG 103	College Composition II or Report Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 207	Engineering Thermodynamics	3	MECH ENG 2527	Thermal Analysis	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
GEO 111	Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	29
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	63

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 102 or ENG 103	College Composition II or Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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
ESC 101 or IS 167	Scientific Computer Programming (3) or C++ Programming I (4)	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MTH 215	Linear Algebra	3	MATH 3108	Linear Algebra	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ESC 200	Engineering Circuits I	3	EE 2800	Electrical Circuits	3
ESC 207	Engineering Thermodynamics	3	MECH ENG 2519	Thermodynamics	3
ME 249	Materials and Metallurgy	3	MET ENG 2110	Metallurgy for Engineers	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	6	Electives	Maximum Free Electives	6
	Group 2 Major Requirements	42		Group 2 Major Requirements	42
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	81		Total Hours*	76

\*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>St. Louis Community College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ESC 100	Engineering Computer Application and Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 102 or ENG 103	College Composition II or Report Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 128 or HST 101 or HST 102 or PSC 101	Western Civilization 1500 to Present or US History to 1865 or US History 1865 to Present or Intro 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 111	Physical Geology	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ESC 203	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ESC 204	Engineering Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ESC 205	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ESC 207	Engineering Thermodynamics	3	MECH ENG 2527	Thermal Analysis	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	29
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	69		Total Hours*	63

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