

## 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.

| Metropolitan Community Colleges |                                     |             | Semester | Missouri S&T |  |                                     |
|---------------------------------|-------------------------------------|-------------|----------|--------------|--|-------------------------------------|
| MATH 180                        | Analytic Geometry and Calculus I    | 5           |          | MATH 1214    | Calculus I                                     | Grade of C or better is required. 4 |
| MATH 190                        | Analytic Geometry and Calculus II   | 5           |          | MATH 1215    | Calculus II                                    | Grade of C or better is required. 4 |
| MATH 210                        | Analytic Geometry and Calculus III  | 5           |          | MATH 2222    | Calculus III                                   | Grade of C or better is required. 4 |
| MATH 230                        | Differential Equations              | 3           |          | MATH 3304    | Elementary Differential Equations              | 3                                   |
| PHYS 220                        | Engineering Physics I               | 5           |          | PHYSICS 1135 | Engineering Physics I                          | Grade of C or better is required. 4 |
| PHYS 221                        | Engineering Physics II              | 5           |          | PHYSICS 2135 | Engineering Physics II                         | Grade of C or better is required. 4 |
| 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 | 32       |              |  | Total Hours 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.

This transfer guide is published by Missouri University of Science and Technology and is in effect as of Fall 2025.  
Further information or updates are available from Missouri S&T Transfer Admissions at [transfer@mst.edu](mailto:transfer@mst.edu), [transfer@mst.edu](mailto:transfer@mst.edu), or 800-522-0938.

## Aerospace 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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<br><small>*CHEM 1310 will be substituted for CHEM 1305.</small>   | 5            |
| CSIS 123 or<br>ENGR 204  | Programming Fundamentals or<br>Programming for Engineers and Scientists  | 3  | COMP SCI 1971, 1981 or<br>COMP SCI 1972, 1982   | Intro to Programming Method and Lab (C++) (3) or<br>Intro to MATLAB Programming and Lab (3)   | 3            |
| ENGR 233   | Circuit Analysis I   | 4  | ELEC ENG2800  | 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<br><small>Satisfies the Advanced Math/Comp Sci elective requirement.</small>   | 3            |
| PHIL 203   | Ethics<br><small>or other engineering, business, bio, social ethics approved by advisor</small>  | 3  | PHILOS 1130   | How Should I Live? An Intro to Ethics<br><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<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><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<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><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            |
| No free electives applied to the degree.   |  | 0  | Maximum Free Electives  |   | 0            |
| Group 2 Major Requirements   |  | 52 | Group 2 Major Requirements  |   | 50           |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |
| Total Hours  |  | 84 |   |   | Total Hours* |
|  |  |    |   |   | 77           |
| <small>*S&amp;T advisor permission is required to transfer more than 68 credits toward the S&amp;T Aerospace Engineering degree.</small>   |  |    |   |   |              |

## 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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<br><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*<br><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<br><small>Will be substituted for STAT 3113.</small>   | 3            |
| GEOL 101   | Physical Geology   | 5  | GEOLOGY 1110<br>(GEO ENG 1150)  | Physical and Environmental Geology  | 3            |
| Humanities, Arts, and Social Sciences General Education Requirements<br>From the options listed in each group below, select 12 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |  |    |   |   |              |
| Humanities and Fine Arts<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6            |
| Behavioral and Social Sciences<br>Select 6 hours from at least two specific disciplines to include HISTORY 1200.   |  |    |   |   |              |
| HIST 134*  | Modern Western Civilization*<br><small>*Satisfies the State of Missouri Government requirement.</small>  | 3  | HISTORY 1200*   | Modern Western Civilization*<br><small>*Satisfies the State of Missouri Government requirement.</small>   | 3            |
| PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>   | 3  | PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYC 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language  | Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>   | 3            |
| No free electives applied to the degree.   |  | 0  | Maximum Free Electives  |   | 0            |
| Group 2 Major Requirements   |  | 47 | Group 2 Major Requirements  |   | 43           |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |
| Total Hours  |  | 79 |   |   | Total Hours* |
| <small>*S&amp;T advisor permission is required to transfer more than 69 credits toward the S&amp;T Architectural Engineering degree.</small>   |  |    |   |   |              |

## Biomedical Engineering-Biomanufacturing Group 2 Major Requirements

| Metropolitan Community Colleges   |   | Semester | Missouri S&T  |  |              |
|---|---|----------|---|--|--------------|
| COMM 100  | Fundamentals of Speech  | 3        | SP&MS 1185  | Principles of Speech<br>Applies to degree as Gen Ed Communication requirement.   | 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)<br>*CHEM 1510 is not a degree requirement, transfers as general elective credit.   | 3            |
| CHEM 221  | Organic Chemistry I   | 5        | CHEM 2210, 2219   | Organic Chemistry I and Lab  | 4            |
| CHEM 222 or<br>BIOL 101 or<br>BIOL 204  | Organic Chemistry II (5) or<br>General Biology (5) or<br>Genetics (3)   | 3        | CHEM 2220, 2229 or<br>BIO SCI 1113, 1219 or<br>BIO SCI 2223   | Organic Chemistry II and Lab or<br>General Biology and Lab or<br>General Genetics<br>Applies to degree as Track Elective.  | 4            |
| CSIS 223 or<br>CSIS 271 or<br>CSIS 123 or<br>ENGR 204   | Object-Oriented Programming With C++ or<br>Data Structures and Algorithm Analysis or<br>Programming Fundamentals or<br>Programming for Engineers and Scientists   | 3        | COMP SCI 1500 or<br>COMP SCI 1971,1981* or<br>COMP SCI 1570, 1580* or<br>COMP SCI 1972, 1982*   | Computational Problem Solving (3) or<br>Intro to Programming Methodology and Lab* (C++) (3) or<br>Intro to Programming and Lab* (C++) (4) or<br>Intro to MATLAB Programming and Lab* (3)<br>*Will be substituted for COMP SCI 1500.  | 3            |
| ENGR 223  | Thermodynamics and Heat Transfer  | 4        | MECH ENG 2519*  | Thermodynamics*<br>*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.  | 3            |
| Humanities, Arts, and Social Sciences General Education Requirements<br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br>*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<br>Select 6 hours from at least two specific disciplines.  |   |          |   |  |              |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106   | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br>*Satisfies the State of Missouri government requirement. | 6        | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br>*Satisfies the State of Missouri government requirement. | 6            |
| Behavioral and Social Sciences<br>Select 3 hours.   |   |          |   |  |              |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language   | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br>*Satisfies the State of Missouri government requirement.  | 3        | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language                                     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br>*Satisfies the State of Missouri government requirement.   | 3            |
| Humanities, Arts, and Social Sciences<br>ENGLISH 3560 required.   |   |          |   |  |              |
| ENGL 215  | Technical Writing   | 3        | ENGLISH 3560  | Technical Writing  | 3            |
| No free electives applied to the degree.  |   | 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* |
| *S&T advisor permission is required to transfer more than 69 credit hours toward the degree.  |   |          |   |  |              |

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

## Biomedical Engineering-Biomaterials Group 2 Major Requirements

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

## Ceramic 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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)<br><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)<br><small>Satisfies the advanced chemistry elective requirement.<br/>*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<br><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<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><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<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><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            |
| No free electives applied to the degree.   |  | 0  | Maximum Free Electives  |   | 0            |
| Group 2 Major Requirements   |  | 45 | Group 2 Major Requirements  |   | 41           |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |
| Total Hours  |  | 77 |   |   | Total Hours* |
|  |  |    |   |   | 68           |
| <small>*S&amp;T advisor permission is required to transfer more than 68 credits toward the S&amp;T Ceramic Engineering degree.</small>   |  |    |   |   |              |

# 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   | 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)<br>*CHEM 1510 is not a degree requirement, transfers as general elective credit.  | 3               |
| CHEM 221  | Organic Chemistry I   | 5  | CHEM 2210, 2219*  | Organic Chemistry I and Lab*<br>*CHEM 2210 is a degree requirement. CHEM 2219 applies to the degree as 1 of 9 required science elective credits See note below .   | 4               |
| CHEM 221  | Organic Chemistry I   | 5  | CHEM 2210, 2219*  | Organic Chemistry I and Lab*<br>*The lab will apply to the degree as 1 of the 9 science elective credits (below) .   | 4               |
| CHEM 222  | Organic Chemistry II  | 5  | CHEM 2220, 2229*  | Organic Chemistry II (3) and Lab* (1)<br>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.  | 4               |
| BIOL 208  | Microbiology  | 5  | BIO SCI 3313, 3319  | Microbiology and Lab (5)<br>Will satisfy 5 of 9 required hours of science electives .  | 5               |
| CSIS 223 or<br>CSIS 271 or<br>CSIS 123 or<br>ENGR 204   | Object-Oriented Programming With C++ or<br>Data Structures and Algorithm Analysis or<br>Programming Fundamentals or<br>Programming for Engineers and Scientists   | 3  | COMP SCI 1500 or<br>COMP SCI 1972, 1982*  | Computational Problem Solving or<br>Intro to MATLAB Programming and Lab*<br>*Will be substituted for COMP SCI 1500.  | 3               |
| ENGR 215  | Engineering Statistics and Computation  | 3  | STAT 3115   | Engineering Statistics<br>Will be substituted for STAT 3113.   | 3               |
| ENGR 223  | Thermodynamics and Heat Transfer  | 4  | MECH ENG 2519*  | Thermodynamics*<br>*The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&T course) will be substituted for CHEM ENG 2110 by the chemical engineering department. Students must complete both courses to receive credit.  | 3               |
| Humanities, Arts, and Social Sciences General Education Requirements<br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br>*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<br>Select 6 hours from at least two specific disciplines.  |   |    |   |  |                 |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106   | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br>*Satisfies the State of Missouri government requirement. | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br>*Satisfies the State of Missouri government requirement. | 6               |
| Behavioral and Social Sciences<br>Select 6 hours from at least two specific disciplines.  |   |    |   |  |                 |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language   | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br>*Satisfies the State of Missouri government requirement.                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government*or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br>*Satisfies the State of Missouri government requirement.   | 6               |
| Humanities, Arts, and Social Sciences<br>ENGLISH 3560 required.   |   |    |   |  |                 |
| ENGL 215  | Technical Writing   | 3  | ENGLISH 3560  | Technical Writing  | 3               |
| No free electives applied to the degree.  |   | 0  |   | Maximum Free Electives   | 0               |
| Group 2 Major Requirements  |   | 61 |   | Group 2 Major Requirements   | 55              |
| Group 1 Core Requirements   |   | 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

| 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<br>ENGL 215 or<br>COMM 100 or   | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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            |
| GEO 101   | Physical Geology   | 5  | GEOLOGY 1110<br>(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<br><i>Will be substituted for STAT 3113.</i>   | 3            |
| <b>Humanities, Arts, and Social Sciences General Education Requirements</b><br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |  |    |   |   |              |
| <b>Humanities and Fine Arts</b><br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br><b>HIST 120*</b> or<br><b>HIST 121*</b> or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106   | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br><b>United States History to 1865*</b> or<br><b>United States History since 1865*</b> or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><i>*Satisfies the State of Missouri government requirement.</i> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br><b>HISTORY 1300*</b> or<br><b>HISTORY 1310*</b> or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br><b>American History to 1877*</b> or<br><b>American History Since 1877*</b> or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><i>*Satisfies the State of Missouri government requirement.</i> | 6            |
| <b>Behavioral and Social Sciences</b><br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |
| HIST 133 or<br><b>HIST 134*</b> or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br><b>POLS 136*</b> or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language   | Foundations of Western Civilization or<br><b>Modern Western Civilization*</b> or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br><b>Intro to US National Politics*</b> or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><i>*Satisfies the State of Missouri government requirement.</i>                            | 6  | HISTORY 1100 or<br><b>HISTORY 1200*</b> or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br><b>POL SCI 1200*</b> or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br><b>Modern Western Civilization*</b> or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br><b>American Government*</b> or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><i>*Satisfies the State of Missouri government requirement.</i>  | 6            |
| <b>Humanities, Arts, and Social Sciences</b><br>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            |
|   |  | 46 |   |   | 43           |
|   |  | 32 |   |   | 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

| Metropolitan Community Colleges   |   |    | Semester  | Missouri S&T  |              |    |
|---|---|----|---|---|--------------|----|
| COMM 100  | Fundamentals of Speech  | 3  | SPMS 1185   | Principles of Speech<br><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            |    |
| MATH 121* and<br>MATH 122*  | Discrete Structures for Computer Science I* and<br>Discrete Structures for Computer Science II*<br><small>*The combination of MCC MATH 121 AND 122 is equivalent to Missouri S&amp;T CS 1200.<br/>Both courses must be taken to receive credit for Missouri S&amp;T CS 1200.</small>  | 6  | CS 1200*  | Discrete Mathematics for Computer Science*<br><small>*The combination of MCC MATH 121 AND 122 is equivalent to Missouri S&amp;T CS 1200.<br/>Both courses must be taken to receive credit for Missouri S&amp;T CS 1200.</small>   | 3            |    |
| CSIS 223 or<br>CSIS 271   | Object-Oriented Programming with C++ or<br>Data Structures and Algorithm Analysis   | 3  | COMP SCI 1500   | Computational Problem Solving   | 3            |    |
| ENGR 229 or<br>ENGR 230 or<br>ENGR 223 or<br>CHEM 221 or<br>BIOL 214  | Statics (3) or<br>Dynamics (3)<br>Thermodynamics and Heat Transfer (4) or<br>Organic Chemistry I (5) or<br>Principles of Genetics (4)   | 3  | CIV ENG 2200 or MECH<br>ENG 2350 or<br>MECH ENG 2519 or<br>CHEM 2210 or<br>BIO SCI 2223   | Engineering Mechanics-Statics (3) or<br>Engineering Mechanics-Dynamics (2) or<br>Thermodynamics (3) or<br>Organic Chemistry I (4) or<br>General Genetics (3)  | 3            |    |
| ENGR 233, 234   | Circuit Analysis I (4) and Lab (1)  | 5  | ELEC ENG 2100*, 2101  | Circuits I* (3) and Circuit Analysis Lab (1)<br><small>*A passing grade on the Missouri S&amp;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<br><small>Will be substituted for STAT 3117.</small>   | 3            |    |
| <b>Humanities, Arts, and Social Sciences General Education Requirements</b><br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |   |    |   |   |              |    |
| <b>Humanities and Fine Arts</b><br>Select 6 hours from at least two specific disciplines.   |   |    |   |   |              |    |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106   | British Literature 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br><b>United States History to 1865*</b> or<br><b>United States History since 1865*</b> or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br><b>HISTORY 1300*</b> or<br><b>HISTORY 1310*</b> or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br><b>American History to 1877*</b> or<br><b>American History Since 1877*</b> or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6            |    |
| <b>Behavioral and Social Sciences</b><br>Select 6 hours from at least two specific disciplines.   |   |    |   |   |              |    |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language   | Foundations of Western Civilization or<br><b>Modern Western Civilization*</b> or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br><b>Intro to US National Politics*</b> or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                         | 6  | HISTORY 1100 or<br><b>HISTORY 1200*</b> or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br><b>POL SCI 1200*</b> or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br><b>Modern Western Civilization*</b> or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br><b>American Government*</b> or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>  | 6            |    |
| <b>Humanities, Arts, and Social Sciences</b><br>Select 3 hours.   |   |    |   |   |              |    |
| ENGL 102 or<br>ENGL 215   | Composition and Reading II or<br>Technical Writing  | 3  | ENGLISH 1160 or<br>ENGLISH 3560   | Writing and Research or<br>Technical Writing  | 3            |    |
| 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

| 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 223 or<br>CSIS 271  | Object-Oriented Programming with C++ or<br>Data Structures and Algorithm Analysis  | 3  | COMP SCI 1500   | Computational Problem Solving   | 3  |
| ENGR 229 and<br>ENGR 230   | Statics (3) and<br>Dynamics (3)  |    | CIV ENG 2200 and<br>MECH ENG 2350   | Engineering Mechanics-Statics (3) and<br>Engineering Mechanics-Dynamics (3)   |    |
| BOTH of the courses above or ONE of<br>the courses below.  | Both courses above combined or any one of the following courses will satisfy a required<br>engineering science elective.   |    | BOTH of the courses above or ONE of<br>the courses below.   | Both courses above combined or any one of the following courses will satisfy a required<br>engineering science elective.  |    |
| OR   | OR   | 4  | OR  | OR  | 3  |
| ENGR 223 or<br>CHEM 221 or<br>BIOL 214   | Thermodynamics and Heat Transfer (4) or<br>Organic Chemistry I (5) or<br>Principles of Genetics (4)  |    | MECH ENG 2519 or<br>CHEM 2210 or<br>BIO SCI 2223  | Thermodynamics (3) or<br>Organic Chemistry I (4) or<br>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)<br><small>*A passing grade on the Missouri S&amp;T EE Advancement Exam I is required to receive<br/>credit for ELEC ENG 2100.</small>  | 4  |
| ENGR 215   | Engineering Statistics and Computation   | 3  | STAT 3115   | Engineering Statistics<br><small>Will be substituted for STAT 3117.</small>   | 3  |
| Humanities, Arts, and Social Sciences General Education Requirements<br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |  |    |   |   |    |
| Humanities and Fine Arts<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |    |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  |
| Behavioral and Social Sciences<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |    |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYC 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language      | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government*or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>   | 6  |
| Humanities, Arts, and Social Sciences<br>Select 3 hours.   |  |    |   |   |    |
| ENGL 102 or<br>ENGL 215  | Composition and Reading II or<br>Technical Writing   | 3  | ENGLISH 1160 or<br>ENGLISH 3560   | Writing and Research or<br>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 |
| <small>*S&amp;T advisor permission is required to transfer more than 68 credits toward the S&amp;T<br/>Electrical Engineering degree.</small>  |  |    |   |   |    |

\*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<br>CSIS 223 or<br>ENGR 204   | Programming Fundamentals or<br>Object-Oriented Programming in C++ or<br>Programming for Engineers and Scientists  | 3  | COMP SCI 1971, 1981 or<br>COMP SC 1972, 1982  | Intro to Programming Method and Lab (C++) or<br>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<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br>*Satisfies the State of Missouri government requirement. | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br>*Satisfies the State of Missouri government requirement. | 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<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language   | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br>*Satisfies the State of Missouri government requirement.   | 3  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language                      | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br>*Satisfies the State of Missouri government requirement.   | 3            |
| Humanities, Arts, and Social Sciences  |   |    |   |  |              |
| Select 3 hours.  |   |    |   |  |              |
| ENGL 102 or<br>ENGL 215  | Composition and Reading II or<br>Technical Writing  | 3  | ENGLISH 1160 or<br>ENGLISH 3560   | Writing and Research or<br>Technical Writing   | 3            |
| No free electives applied to the degree.   |   | 0  | Electives   | Maximum Free Electives   | 0            |
| Group 2 Major Requirements   |   | 46 | Group 2 Major Requirements  |  | 46           |
| Group 1 Core Requirements  |   | 32 | Group 1 Core Requirements   |  | 27           |
| Total Hours  |   | 78 |   |  | Total Hours* |
| *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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><small>Applies to degree as Gen Ed Communication requirement.</small>  | 3            |    |
| GEO 101  | Physical Geology   | 5  | GEOLOGY 1110<br>(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)<br><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)<br><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<br><small>Will be substituted for STAT 3113.</small>   | 3            |    |
| Humanities, Arts, and Social Sciences General Education Requirements<br>From the options listed in each group below, select 12 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |  |    |   |   |              |    |
| Humanities and Fine Arts<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |    |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6            |    |
| Behavioral and Social Sciences<br>Select 6 hours from at least two specific disciplines to include HISTORY 1200  |  |    |   |   |              |    |
| HIST 134*  | Modern Western Civilization*<br><small>*Satisfies the State of Missouri Government requirement.</small>  | 3  | HISTORY 1200*   | Modern Western Civilization*<br><small>*Satisfies the State of Missouri Government requirement.</small>   | 3            |    |
| PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>   | 3  | PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language   | Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>   | 3            |    |
| No free electives applied to the degree.   |  | 0  | Maximum Free Electives  |   | 0            |    |
| Group 2 Major Requirements   |  | 50 | Group 2 Major Requirements  |   | 43           |    |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |    |
| Total Hours  |  | 82 |   |   | Total Hours* | 70 |
| <small>*S&amp;T advisor permission is required to transfer more than 69 credits toward the S&amp;T Environmental Engineering degree.</small>   |  |    |   |   |              |    |

## Geological 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 215   | Technical Writing   |    | ENGLISH 3560  | Technical Writing<br><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<br>CSIS 271 or<br>CSIS 123 or<br>ENGR 204  | Object-Oriented Programming With C++ or<br>Data Structures and Algorithm Analysis or<br>Programming Fundamentals or<br>Programming for Engineers and Scientists   | 3  | COMP SCI 1500 or<br>COMP SCI 1972, 1982   | Computational Problem Solving or<br>Intro to MATLAB Programming and Lab  | 3            |
| GEO 101  | Physical Geology  | 5  | GEO ENG 1150<br>(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<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><br>*Satisfies the State of Missouri government requirement. | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><br>*Satisfies the State of Missouri government requirement. | 6            |
| Behavioral and Social Sciences   |   |    |   |  |              |
| Select 6 hours from at least two specific disciplines.   |   |    |   |  |              |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><br>*Satisfies the State of Missouri government requirement.                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><br>*Satisfies the State of Missouri government requirement.  | 6            |
| Humanities, Arts, and Social Sciences  |   |    |   |  |              |
| Select 3 hours.  |   |    |   |  |              |
| HASS Elective  | Humanities, Arts, Social Sciences Elective: Any history, art,<br>music, theater, English and technical communication,<br>philosophy, political science, psychology, economics,<br>etymology, or foreign language.   | 3  | HASS Elective   | Humanities, Arts, Social Sciences Elective: Any history, art,<br>music, theater, English and technical communication,<br>philosophy, political science, psychology, economics,<br>etymology, or foreign language.  | 3            |
|  |   | 0  |   |  | 0            |
|  |   | 43 |   |  | 43           |
|  |   | 32 |   |  | 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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<br><small>*CHEM 1310 will be substituted for CHEM 1305.</small>   |              |    |
| CSIS 123 or<br>CSIS 223 or<br>ENGR 204   | Programming Fundamentals or<br>Object-Oriented Programming in C++ or<br>Programming for Engineers and Scientists   | 3  | COMP SCI 1971, 1981 or<br>COMP SCI 1972, 1982   | Intro to Programming Method and Lab (C++) or<br>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<br><small>Satisfies the Advanced Math/Statistics elective requirement.</small>   | 3            |    |
| Humanities, Arts, and Social Sciences General Education Requirements<br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |  |    |   |   |              |    |
| Humanities and Fine Arts<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |    |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6            |    |
| Behavioral and Social Sciences<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |    |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYC 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language      | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>  | 6            |    |
| Humanities, Arts, and Social Sciences<br>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            |    |
| No free electives applied to the degree.   |  | 0  | Maximum Free Electives  |   | 0            |    |
| Group 2 Major Requirements   |  | 49 | Group 2 Major Requirements  |   | 42           |    |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |    |
| Total Hours  |  | 81 |   |   | Total Hours* | 69 |
| <small>*S&amp;T advisor permission is required to transfer more than 68 credits toward the S&amp;T Mechanical Engineering degree.</small>  |  |    |   |   |              |    |

## Metallurgical 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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)<br><small>*CHEM 1510 is not a degree requirement, transfers as general elective credit.</small>   | 3            |    |
| CHEM 221 or<br>ENGR 233  | Organic Chemistry 1 or<br>Circuit Analysis I   | 4  | CHEM 2210 or<br>ELEC ENG 2800   | Organic Chemistry I (3) or<br>Electrical Circuits (3)<br><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<br>From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>6 hours Behavioral and Social Sciences from at least two specific disciplines.<br><b>*At least one course must be selected from HISTORY 1200, 1300, 1310, or POL SCI 1200 to satisfy the State of Missouri government requirement.</b> |  |    |   |   |              |    |
| Humanities and Fine Arts<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |    |
| ENGL 220 or<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6            |    |
| Behavioral and Social Sciences<br>Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |    |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYC 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language      | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government*or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>   | 6            |    |
| Humanities, Arts, and Social Sciences<br>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 |
| <small>*S&amp;T advisor permission is required to transfer more than 68 credits toward the S&amp;T Metallurgical Engineering degree.</small>   |  |    |   |   |              |    |

## 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><small>Applies to degree as Gen Ed Communication requirement.</small>  | 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<br>(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<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><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<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>  | 6            |  |
| No free electives applied to the degree.   |  | 0  | Maximum Free Electives  |   | 0            |  |
| Group 2 Major Requirements   |  | 44 | Group 2 Major Requirements  |   | 40           |  |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |  |
| Total Hours  |  | 76 |   |   | Total Hours* |  |
| <small>*S&amp;T advisor permission is required to transfer more than 68 credits toward the S&amp;T Mining Engineering degree.</small>  |  |    |   |   |              |  |



## Nuclear 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<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3  | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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 123 or<br>ENGR 204  | Programming Fundamentals or<br>Programming for Engineers and Scientists  | 3  | COMP SCI 1971, 1981 or<br>COMP SCI 1972, 1982   | Intro to Programming Method and Lab (C++) (3) or<br>Intro to MATLAB Programming and Lab (3)   | 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<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6  | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><small>*Satisfies the State of Missouri government requirement.</small> | 6            |  |
| Behavioral and Social Sciences   |  |    |   |   |              |  |
| Select 6 hours from at least two specific disciplines.   |  |    |   |   |              |  |
| ECON 211 or<br>ECON 210  | Microeconomics or<br>Macroeconomics  | 3  | ECON 1100 or<br>ECON 1200   | Principles of Microeconomics or<br>Principles of Macroeconomics   | 3            |  |
| HIST 133 or<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>  | 6  | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>Foreign Language                                     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>  | 3            |  |
| 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   |  | 0  | Maximum Free Electives  |   | 0            |  |
| Group 2 Major Requirements   |  | 49 | Group 2 Major Requirements  |   | 44           |  |
| Group 1 Core Requirements  |  | 32 | Group 1 Core Requirements   |   | 27           |  |
| Total Hours  |  | 81 |   |   | Total Hours* |  |
|  |  |    |   |   | 71           |  |
| <small>*S&amp;T advisor permission is required to transfer more than 69 credits toward the S&amp;T Nuclear Engineering degree.</small>   |  |    |   |   |              |  |

## Petroleum Engineering Group 2 Major Requirements

| Metropolitan Community Colleges  |  | Semester | Missouri S&T  |   |    |
|--|--|----------|---|---|----|
| ENGL 102 or<br>ENGL 215 or<br>COMM 100 or  | Composition and Reading II or<br>Technical Writing or<br>Fundamentals of Speech  | 3        | ENGLISH 1160 or<br>ENGLISH 3560 or<br>SPMS 1185   | Writing and Research or<br>Technical Writing or<br>Principles of Speech<br><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 271   | Data Structures and Algorithm Analysis   | 3        | COMP SCI 1500   | Computational Problem Solving   | 3  |
| ENGR 204   | Programming for Engineers and Scientists   | 3        | COMP SCI 1972, 1982   | Intro to MATLAB Programming and Lab   | 3  |
| GEO 101  | Physical Geology   | 5        | GEOLOGY 1110<br>(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  |
| ENGR 223   | Thermodynamics and Heat Transfer   | 4        | MECH ENG 2527   | Thermal Analysis  | 3  |
| Humanities, Arts, and Social Sciences General Education Requirements   |  |          |   |   |    |
| From the options listed in each group below, select 15 hours to include<br>6 hours Humanities and Fine Arts from at least two specific disciplines and<br>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<br>ENG 221 or<br>ENGL 222 or<br>ENGL 223 or<br>ENGL 254 or<br>HIST 120* or<br>HIST 121* or<br>ART 108 or<br>MUSI 108 or<br>SPDR 106  | British Literature to 1750 or<br>British Literature 1750-Present or<br>American Literature to 1860 or<br>American Literature 1860-Present or<br>World Literature I or<br>United States History to 1865* or<br>United States History since 1865* or<br>Survey of Art or<br>Music Appreciation or<br>Theatre Appreciation<br><small>*Satisfies the State of Missouri government requirement.</small> | 6        | ENGLISH 1211 or<br>ENGLISH 1212 or<br>ENGLISH 1221 or<br>ENGLISH 1222 or<br>ENGLISH 1231 or<br>HISTORY 1300* or<br>HISTORY 1310* or<br>ART 1180 or<br>MUSIC 1150 or<br>THEATRE 1150 | British Literature I: The Beginnings to 1800 or<br>British Literature II: 1800 to Present<br>American Literature: 1600 to 1865 or<br>American Literature: 1865 to Present or<br>World Literature I: Beginnings to the Renaissance or<br>American History to 1877* or<br>American History Since 1877* or<br>Art Appreciation or<br>Music Understanding and Appreciation or<br>Theatre for Social Change<br><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<br>HIST 134* or<br>GEOG 105 or<br>PHIL 100 or<br>PHIL 200 or<br>POLS 136* or<br>PSYC 140 or<br>ECON 211 or<br>ECON 210 or<br>Foreign Language  | Foundations of Western Civilization or<br>Modern Western Civilization* or<br>World Geography or<br>Intro to Philosophy or<br>Logic or<br>Intro to US National Politics* or<br>General Psychology or<br>Microeconomics or<br>Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><small>*Satisfies the State of Missouri government requirement.</small>                            | 6        | HISTORY 1100 or<br>HISTORY 1200* or<br>HISTORY 2110 or<br>PHIL 1105 or<br>PHIL 1115 or<br>POL SCI 1200* or<br>PSYCH 1101 or<br>ECON 1100 or<br>ECON 1200 or<br>Foreign Language     | Early Western Civilization or<br>Modern Western Civilization* or<br>World Regional Geography or<br>Self and World: Intro to Philosophy or<br>Logic and Reasoning: An Introduction or<br>American Government* or<br>General Psychology or<br>Principles of Microeconomics or<br>Principles of Macroeconomics or<br>Elementary or Intermediate Foreign Language<br><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,<br>music, theater, English and technical communication,<br>philosophy, political science, psychology, economics,<br>etymology, or foreign language.  | 3        | HASS Elective   | Humanities, Arts, Social Sciences Elective: Any history, art,<br>music, theater, English and technical communication,<br>philosophy, political science, psychology, economics,<br>etymology, or foreign language.   | 3  |
| No free electives applied to the degree.   |  | 0        | Maximum Free Electives  |   | 0  |
| Group 2 Major Requirements   |  | 47       | Group 2 Major Requirements  |   | 43 |
| Group 1 Core Requirements  |  | 32       | Group 1 Core Requirements   |   | 27 |
| Total Hours  |  | 79       | Total Hours*  |   | 70 |
| <small>*S&amp;T advisor permission is required to transfer more than 69 credits toward the S&amp;T<br/>Petroleum Engineering degree.</small>   |  |          |   |   |    |

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