

Missouri State University — Missouri S&T

General Engineering

Transfer Guide Effective as of Fall 2024

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

Group 1 - Core Requirements: All Majors Take All Courses

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

<u>Missouri State University</u>			<u>Semester</u>	<u>Missouri S&T</u>		
MTH 261	Analytic Geometry and Calculus I	5	MATH 1214	Calculus I	Grade of C or better is required.	4
MTH 280	Analytic Geometry and Calculus II	5	MATH 1215	Calculus II	Grade of C or better is required.	4
MTH 302	Multivariate Calculus	3	MATH 2222	Calculus III	Grade of C or better is required.	4
MTH 303	Differential Equations	3	MATH 3304	Elementary Differential Equations		3
PHY 203	Foundations of Physics I	5	PHYSICS 1135	Engineering Physics I	Grade of C or better is required.	4
PHY 204	Foundations of Physics II	5	PHYSICS 2135	Engineering Physics II	Grade of C or better is required.	4
CHM 160, 161	General Chemistry I and Lab	5	CHEM 1310, 1319	General Chemistry I and Lab		5
EGR 110	Study and Careers in Engineering	1	FR ENG 1100	Study and Careers in Engineering and Computing		1
ENG 110	Writing I	3	ENGLISH 1120	Exposition and Argumentation		3
ECO 165 or ECO 155	Principles of Microeconomics or Principles of Macroeconomics	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics		3
Total Hours			38			Total Hours 35

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

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

Aerospace Engineering
Architectural Engineering
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.

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

Aerospace Engineering Group 2 Major Requirements

Missouri State University		Semester	Missouri S&T		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENG 210 or ENG 310 or COM 115 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CSC 125	Intro to C++ Programming	4	COMP SCI 1971,1981	Intro to Programming Method and Lab (C++)	3
PHY 252	Intro to Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MTH 333 or MTH 545 or MTH 345* or CSC 421	Linear Algebra or Applied Statistics or Statistics for Scientists and Engineers* or Numerical Analysis	3	MATH 3108 or STAT 3115 or STAT 3117* or CS 3200	Linear Algebra I or Engineering Statistics or Intro to Probability and Statistics or Intro to Numerical Methods Math 3108, STAT 3115, or CS 3200 will directly satisfy the Advanced Math/Comp Sci elective requirement. *STAT 3117 will be substituted for the Advanced Math/Comp Sci elective requirement.	3
	Literature Elective	3		Literature Elective	3
PHI 115	Ethics and Contemporary Issues or other engineering, business, bio, social ethics approved by advisor	3	PHILOS 1130	How Should I Live? An Introduction to Ethics or other engineering, business, bio, social ethics approved by advisor	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	30
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	65

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

Architectural Engineering Group 2 Major Requirements

Missouri State University		Semester	Missouri S&T		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 104 (or HST 121 or HST 122)	World History since 1600 C.E. (or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877) <small>*HST 104 is preferred; 121 or 122 will also be accepted.</small>	3	HISTORY 1200* (or HISTORY 1300 or HISTORY 1310)	Modern Western Civilization* (or American History to 1877 or American History since 1877) <small>*HISTORY 1200 is preferred; 1300 or 1310 will also be accepted.</small>	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 333	Intermediate Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
TCM 315	Thermodynamics and Heat Transfer	3	MECH ENG 2527	Thermal Analysis	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
GRY 275	Intro to Plane Surveying	3	CIV ENG 2401	Fundamentals of Surveying	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics* <small>*Will be substituted for STAT 3113.</small>	3
GLG 110	Principles of Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENG 210, 310, 221, 321 or COM 115.	3	Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENGLISH 1160, 1600, 3560 or SPMS 1185.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	29
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	64

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

Biomedical Engineering-Biomanufacturing Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COM 115	Fundamentals of Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENG 221 or ENG 321	Writing II: Writing for the Professions or Writing II: Beginning Technical Writing	3	ENGLISH 3560	Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHM 170	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHM 342	Organic Chemistry I	3	CHEM 2210	Organic Chemistry I	3
CHEM 343 or BIO 121 or BIO 235	Organic Chem II (3) or General Biology I (4) or Genetics (3)	4	CHEM 2220 or BIO SCI 1113, 1219 or BIO SCI 2223	Organic Chemistry II or General Biology and Lab or General Genetics	4
BIO 320	Cellular and Molecular Biology	4	BIO SCI 2213, 2219	Cell Biology and Lab	4
CSC 131 or CSC 232 or CSC 125*	Computational Thinking (4) or Data Structures (4) or Intro to C++ Programming* (4)	3	CS 1500 or CS 1971*,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Course will be substituted for CS 1500.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	26		Group 2 Major Requirements	29
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	64		Total Hours*	64

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

Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COM 115	Fundamentals of Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENG 221 or ENG 321	Writing II: Writing for the Professions or Writing II: Beginning Technical Writing	3	ENGLISH 3560	Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHM 170	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHM 342	Organic Chemistry I	3	CHEM 2210	Organic Chemistry I	4
CHM 343	Organic Chemistry II	3	CHEM 2220	Organic Chemistry II	4
BIO 121	General Biology I	4	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
BIO 320	Cellular and Molecular Biology	4	BIO SCI 2213, 2219	Cell Biology and Lab	4
CSC 131 or CSC 232 or CSC 125*	Computational Thinking (4) or Data Structures (4) or Intro to C++ Programming* (4)	3	CS 1500 or CS 1971*,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Course will be substituted for CS 1500.</small>	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 252	Intro to Circuit Analysis	3	EE 2100*	Circuits I <small>*A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100. Applies to the degree as a Track Elective (Engineering).</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	35		Group 2 Major Requirements	37
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	73		Total Hours*	72

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

Ceramic Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHM 342 or CHM 375	Organic Chemistry I or Inorganic Chemistry	3	CHEM 2210 or CHEM 2310	Organic Chemistry I (3) or Inorganic Chemistry I (3) Will satisfy the advanced chemistry elective requirement.	3
CHM 170	General Chemistry II	3	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) *CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115 or STAT 3117	Engineering Statistics or Intro to Probability and Statistics or any statistics course 3000-level or higher. Satisfies statistics elective requirement.	3
ENG 210 or ENG 310 or COM 115 or HSS Elective	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	PHYS 2305	Intro to Modern Physics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Principles of Speech or Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	33
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	68		Total Hours*	68

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

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

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
COM 115	Fundamentals of Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENG 221 or ENG 321	Writing II: Writing for the Professions or Writing II: Beginning Technical Writing	3	ENGLISH 3560	Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHM 170	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHM 342	Organic Chemistry I	3	CHEM 2210	Organic Chemistry I	4
CHM 343 or CHM 302 or CHM 452 or BIO 320 or BIO 310	Organic Chemistry II (3) or Intro to Analytical Chemistry (5) or Biochemistry (3) or Cellular and Molecular Biology (4) or Microbiology (3) Will satisfy science elective requirement. Select up to 9 hours from these options.	3	CHEM 2220 or CHEM 2510 or BIO SCI 2213, 2219 or BIO SCI 3313, 3319 or CHEM 4610, 4619	Organic Chemistry II (3) or Analytical Chemistry (4) or Cell Biology and Lab (4) or Microbiology and Lab (5) or General Biochemistry and Lab (5) Will satisfy science elective requirement. Select up to 9 hours from these options.	8
CSC 131 or CSC 232 or CSC 125*	Computational Thinking (4) or Data Structures (4) or Intro to C++ Programming* (4)	3	CS 1500 or CS 1971*, 1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) *Course will be substituted for CS 1500.	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics* *Will be substituted for STAT 3113.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	36
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	68		Total Hours*	71

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

Civil Engineering Group 2 Major Requirements

<u>Missouri State University</u>	<u>Semester</u>		<u>Missouri S&T</u>	
TCM 110		Intro to Engineering Design	MECH ENG 1720	Intro to Engineering Design
ENG 210 or ENG 310 or COM 115 or ENG 221 or ENG 321	3	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing
HST 104 or HST 121 or HST 122 or PLS 101	3	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government
GLG 110	4	Principles of Geology	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology
PHY 233	3	Engineering Statics	CIV ENG 2200	Engineering Mechanics-Statics
PHY 333	3	Intermediate Mechanics	MECH ENG 2350	Engineering Mechanics-Dynamics
TCM 273	3	Mechanics of Materials	CIV ENG 2210	Mechanics of Materials
GRY 275	3	Intro to Plane Surveying	CIV ENG 2401	Fundamentals of Surveying
MTH 545 or MTH 345	3	Applied Statistics or Statistics for Scientists and Engineers	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics*
				<small>*Will be substituted for STAT 3113.</small>
Humanities or Social Science	3	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.
	0	<i>No free electives applied to the degree.</i>		Maximum Free Electives
	31	Group 2 Major Requirements		Group 2 Major Requirements
	38	Group 1 Core Requirements		Group 1 Core Requirements
	69	Total Hours		Total Hours*
				64

*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

Missouri State University		Semester	Missouri S&T		
COM 115	Fundamentals of Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 210 or ENG 310 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Writing II: Writing for the Professions or Beginning Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
MTH 314	Discrete Mathematics	3	CS 1200	Discrete Math for Computer Science	3
CSC 131 or CSC 232 or CSC 125	Computational Thinking (4) or Data Structures (4) or Intro to C++ Programming (4)	3	CS 1500	Computational Problem Solving	3
PHY 233 or PHY 333 or TCM 315 or CHM 342 or PHY 325 or BIO 320 or BIO 235	Statics (3) or Intermediate Mechanics (3) or Thermodynamics and Heat Transfer (3) or Organic Chemistry I (3) or Modern Physics (3) or Cellular and Molecular Biology (4) or Genetics (3)	3	CIV ENG 2200 or MECH ENG 2350 or MECH 2527 or CHEM 2210 or PHYSICS 2305 or BIO SCI 2213 or BIO SCI 2223	Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (3) or Thermal Analysis (3) or Organic Chemistry I (4) or Intro to Theoretical Physics (3) or Cell Biology (3) or General Genetics (3)	3
PHY 252	Intro to Circuit Analysis	3	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	3
MTH 333 or MTH 315	Linear Algebra or Algebraic Structures	3	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics Will satisfy a required math elective.	3
MTH 345 or MTH 545*	Statistics for Scientists and Engineers or Applied Statistics*	3	STAT 3117 or STAT 3115*	Intro to Probability and Statistics or Engineering Statistics* *Will be substituted for STAT 3117.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	33		Group 2 Major Requirements	33
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	71		Total Hours*	68

*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

Missouri State University		Semester	Missouri S&T		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
COM 115	Fundamentals of Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 210 or ENG 310 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Writing II: Writing for the Professions or Beginning Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CSC 131 or CSC 232 or CSC 125	Computational Thinking (4) or Data Structures (4) or Intro to C++ Programming (4)	3	CS 1500	Computational Problem Solving	3
PHY 233 and PHY 333 BOTH of the courses above or ONE of the courses below OR TCM 315 or CHM 342 or PHY 325 or BIO 320 or BIO 235	Statics and Intermediate Mechanics Both courses above combined or any one of the following courses will satisfy a required engineering science elective. OR Thermodynamics and Heat Transfer (3) or Organic Chemistry I (3) or Modern Physics (3) or Cellular and Molecular Biology (4) or Genetics (3)	3	CIV ENG 2200 and MECH ENG 2350 BOTH of the courses above or ONE of the courses below. OR MECH 2527 or CHEM 2210 or PHYSICS 2305 or BIO SCI 2213 or BIO SCI 2223	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (3) Both courses above combined or any one of the following courses will satisfy a required engineering science elective. OR Thermal Analysis (3) or Organic Chemistry I (4) or Intro to Theoretical Physics (3) or Cell Biology (3) or General Genetics (3)	3
PHY 252	Intro to Circuit Analysis	3	EE 2100**	Circuits I **A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.	3
MTH 333	Linear Algebra	3	MATH 3108	Linear Algebra	3
MTH 345 or MTH 545*	Statistics for Scientists and Engineers or Applied Statistics*	3	STAT 3117 or STAT 3115*	Intro to Probability and Statistics or Engineering Statistics* *Will be substituted for STAT 3117.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	33		Group 2 Major Requirements	33
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	71		Total Hours*	68

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

Engineering Management Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
PSY 121	Intro to Psychology	3	PSYCH 1101	General Psychology	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
COM 115	Fundamentals of Public Speaking	3	SPMS 1185	Principles of Speech	3
ENG 210 or ENG 310 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Writing II: Writing for the Professions or Beginning Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
CSC 125	Intro to C++ Programming	4	COMP SCI 1971,1981	Intro to Programming Method and Lab (C++)	3
PHY 252	Intro to Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 333	Intermediate Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
TCM 315	Thermodynamics and Heat Transfer	3	MECH 2527	Thermal Analysis	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115 or STAT 3117	Engineering Statistics or Intro to Probability and Statistics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	3	Electives	Maximum Free Electives	0
	Group 2 Major Requirements	43		Group 2 Major Requirements	38
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	81		Total Hours*	61

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

Environmental Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 210 or ENG 310 or COM 115 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 104 or HST 121 or HST 122	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
GLG 110	Principles of Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHM 170	General Chemistry II	3	CHEM 1320	General Chemistry II	3
BIO 121	General Biology I	4	BIO SCI 1113	General Biology	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 333	Intermediate Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115* or STAT 3117*	Engineering Statistics* or Intro to Probability and Statistics*	3
				<small>*Will be substituted for STAT 3113.</small>	
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	35		Group 2 Major Requirements	32
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	73		Total Hours*	67

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

Geological Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 221 or ENG 321	Writing II: Writing for the Professions or Writing II: Beginning Technical Writing	3	ENGLISH 3560	Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CSC 125 or CSC 131 or CSC 197 or CSC 232	Intro to C++ Programming (4) or Computational Thinking (4) or Introductory Topics in Computer Science (3) or Data Structures (4)	3	CS 1500 or CS 1971, 1981	Computational Problem Solving or Intro to Programming Methodology and Lab	3
GLG 110	Principles of Geology	4	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 333	Intermediate Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115* or STAT 3117*	Engineering Statistics* (preferred) or Intro to Probability and Statistics*	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	34		Group 2 Major Requirements	32
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	72		Total Hours*	67

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

Mechanical Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENG 210 or ENG 310 or COM 115 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CSC 125	Intro to C++ Programming	4	COMP SCI 1971,1981	Intro to Programming Method and Lab (C++)	3
PHY 252	Intro to Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MTH 333 or MTH 545 or MTH 345*	Linear Algebra or Applied Statistics or Statistics for Scientists and Engineers*	3	MATH 3108 or STAT 3115 or STAT 3117*	Linear Algebra I or Engineering Statistics or Intro to Probability and Statistics Math 3108 or STAT 3115 will directly satisfy the Advanced Math/Comp Sci elective requirement. *STAT 3117 will be substituted for the Advanced Math/Comp Sci elective requirement.	3
	Literature Elective	3		Literature Elective	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	30
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	65

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

Metallurgical Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 210 or ENG 310 or COM 115 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
MTH 545 or MTH 345*	Applied Statistics or Statistics for Scientists and Engineers*	3	STAT 3115 or STAT 3117*	Engineering Statistics or Intro to Probability and Statistics*	3
				*Will be substituted for the STAT 3113/3115 requirement.	
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHM 170	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHM 342 or CHM 375 or CHM 506 or PHY 252 or GLG 332 or MTH 507 or PHY 375	Organic Chemistry I or Inorganic Chemistry I or Physical Chemistry I or Intro to Circuit Analysis or Mineralogy or Intro to Partial Differential Equations or Modern Physics	3	CHEM 2210 or CHEM 2310 or CHEM 3410 or EE 2800 or GEOLOGY 2610 or MATH 5325 or PHYSICS 2305	Organic Chemistry I (4) or Inorganic Chemistry I (3) or Chemical Thermodynamics I (3) or Electrical Circuits (3) or Mineralogy and Crystallography (3) or Partial Differential Equations (3) or Intro to Modern Physics (3)	3
				Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement.	
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	5	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	35		Group 2 Major Requirements	33
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	73		Total Hours*	68

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

Mining Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 210 or ENG 310 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
MTH 545 or MTH 345*	Applied Statistics or Statistics for Scientists and Engineers*	3	STAT 3115 or STAT 3117*	Engineering Statistics or Intro to Probability and Statistics*	3
				*Will be substituted for the STAT 3113/3115 requirement.	
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 333	Intermediate Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
TCM 315	Thermodynamics and Heat Transfer	3	MECH ENG 2527	Thermal Analysis	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
GLG 110	Principles of Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	34		Group 2 Major Requirements	32
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	72		Total Hours*	67

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

Nuclear Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 210 or ENG 310 or COM 115 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Fundamentals of Public Speaking or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CSC 125	Intro to C++ Programming	4	COMP SCI 1971,1981	Intro to Programming Method and Lab (C++)	3
MTH 333 or MTH 315 or MTH/CSC 421	Linear Algebra or Algebraic Structures or Numerical Analysis	3	MATH 3108 or MATH 3109 or CS 3200	Linear Algebra or Foundations of Mathematics or Intro to Numerical Methods	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MTH 545 or MTH 345	Applied Statistics or Statistics for Scientists and Engineers	3	STAT 3115 or STAT 3117	Engineering Statistics or Intro to Probability and Statistics	3
PHY 252	Intro to Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHY 375	Modern Physics	3	PHYSICS 2305	Intro to Modern Physics	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	6	Electives	Maximum Free Electives	6
	Group 2 Major Requirements	43		Group 2 Major Requirements	42
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	81		Total Hours*	77

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

Petroleum Engineering Group 2 Major Requirements

<u>Missouri State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
TCM 110	Intro to Engineering Design	3	MECH ENG 1720	Intro to Engineering Design	3
ENG 210 or ENG 310 or ENG 221 or ENG 321	Writing II: Writing Across the Disciplines or Writing II: Writing for Grad. and Prof. Schools or Writing II: Writing for the Professions or Beginning Writing II: Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 104 or HST 121 or HST 122 or PLS 101	World History since 1600 C.E. or Survey of the History of the U.S. to 1877 or Survey of the History of the U.S. since 1877 or American Democracy and Citizenship	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
GLG 110	Principles of Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHY 233	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHY 333	Intermediate Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
TCM 273	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
TCM 315	Thermodynamics and Heat Transfer	3	MECH ENG 2527	Thermal Analysis	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	29
	Group 1 Core Requirements	38		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	64

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