

East Central College — Missouri S&T

General Engineering Transfer Guide

Effective as of Fall 2017

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>East Central College</u>			<u>Semester</u>	<u>Missouri S&T</u>			
MTH 190	Analytic Geometry and Calculus I	5		MATH 1214	Calculus for Engineers I	Grade of C or better is required. 4	
MTH 210	Analytic Geometry and Calculus II	5		MATH 1215	Calculus for Engineers II	Grade of C or better is required. 4	
MT 220	Analytic Geometry and Calculus III	5		MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required. 4	
MTH 245	Differential Equations	3		MATH 3304	Elementary Differential Equations	3	
PHY 211, 212	General Physics I and Lab	5		PHYSICS 1135	Engineering Physics I	Grade of C or better is required. 4	
PHY 221, 222	General Physics II and Lab	5		PHYSICS 2135	Engineering Physics II	Grade of C or better is required. 4	
CHM 111	General Chemistry I and Lab	5		CHEM 1310, 1319	General Chemistry I and Lab	5	
COL 101	Foundation Seminar	1		FR ENG 1100	Study and Careers in Engineering	1	
EGR 103	Intro to Engineering Design	3		MECH ENG 1720	Engineering Design with Computer Appl	3	
ENG 101	English Composition I	3		ENGLISH 1120	Exposition and Argumentation	3	
ECO 102 or	Principles of Microeconomics or	3		ECON 1100 or	Principles of Microeconomics or	3	
ECO 101	Principles of Macroeconomics	3		ECON 1200	Principles of Macroeconomics	3	
Total Hours			43	Total Hours			38

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

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

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

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

Engineering Major Requirements are detailed on the following pages.

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

Humanities/Social Science (HSS) Electives: HSS electives may include any history, economics, political science, sociology, psychology, philosophy, fine art, literature, or foreign language. Missouri S&T approved HSS courses are listed at ugs.mst.edu. Your campus may have additional acceptable options. Consult with your advisor or email transfer@mst.edu with questions.

Ceramic Engineering Group 2 Major Requirements

East Central College		Semester	Missouri S&T	
HST 101 or HST 102 or CIV 202 or PSC 102 EGR 203	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State Engineering Mechanics-Statics	3 3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CIV ENG 2200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Engineering Mechanics-Statics
CHM 205	Organic Chemistry I Lecture and Lab	5	CHEM 2210/2219	Organic Chemistry I and Lab (Not a specific requirement. Will satisfy technical elective requirement.)
CHM 112	General Chemistry II Lecutre and Lab	5	CHEM 1320	General Chemistry II
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics
ENG 102 or COM 110	English Composition II or Public Speaking <i>See your advisor for course options.</i>	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		
	<i>No free electives applied to the degree.</i>	0		
	Group 2 Major Requirements	25		Group 2 Major Requirements
	Group 1 Core Requirements	43		Group 1 Core Requirements
	Total Hours	68		Total Hours*
				61

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

Chemical Engineering Group 2 Major Requirements

East Central College		Semester	Missouri S&T	
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
CHM 112	General Chemistry II Lecutre and Lab	5	CHEM 1320	General Chemistry II
CHM 205	Organic Chemistry I Lecture and Lab	5	CHEM 2210	Organic Chemistry I
CHM 206	Organic Chemistry II Lecture and Lab	5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)
EGR 221, 222	C++ Program for Engineers and Lab	4	CS 1570, 1580	Intro to Programming and Lab (C++)
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	34		Group 2 Major Requirements
	Group 1 Core Requirements	43		Group 1 Core Requirements
	Total Hours	77		Total Hours*
				68

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

Chemical Engineering - Biochemical Engineering Emphasis Group 2 Major Requirements

East Central College		Semester	Missouri S&T	
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
CHM 112	General Chemistry II Lecutre and Lab	5	CHEM 1320	General Chemistry II
CHM 205	Organic Chemistry I Lecture and Lab	5	CHEM 2210	Organic Chemistry I
CHM 206	Organic Chemistry II Lecture and Lab	5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)
EGR 221, 222	C++ Program for Engineers and Lab	4	CS 1570, 1580	Intro to Programming and Lab (C++)
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	34		Group 2 Major Requirements
	Group 1 Core Requirements	43		Group 1 Core Requirements
	Total Hours	77		Total Hours*
				68

*S&T advisor permission is required to transfer more than 71 credits toward the S&T Chemical/Biochemical Engineering degree.

Civil Engineering Group 2 Major Requirements

East Central College		Semester	Missouri S&T	
ENG 102 or COM 110 or ENG 104	English Composition II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
EGR 203	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
EGR 214	Engineering Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)
GEO 101	Intro to Physical Geology	3	GEO 1110/GE 1150	Intro to Physical Geology
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	21		Group 2 Major Requirements
	Group 1 Core Requirements	43		Group 1 Core Requirements
	Total Hours	64		Total Hours*
				59

*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

East Central College		Semester	Missouri S&T	
COM 110	Public Speaking	3	SPMS 1185	Public Speaking
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
EGR 221	C++ Program for Engineers and Lab	4	CS 1570, 1580	Intro to Programming and Lab (C++)
EGR 251	Data Structures	3	CS 1575	Data Structures
EGR 213 & EGR 214	Engineering Mechanics-Statics & Engineering Mechanics- Dynamics	6	CIV ENG 2200 and MECH ENG 2350	Engineering Mechanics-Statics and Engineering Mechanics-Dynamics (Both courses combined will satisfy a required engineering science elective.)
EGR 231	Intro to Circuit Theory	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.
MTH 241	Linear Algebra	3	MATH 3108	Linear Algebra (Will satisfy a required math elective.)
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3117.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Maximum Free Electives
	Group 2 Major Requirements	37		Group 2 Major Requirements
	Group 1 Core Requirements	43		Group 1 Core Requirements
	Total Hours	80		Total Hours*
				75

*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

East Central College		Semester	Missouri S&T	
COM 110	Public Speaking	3	SPMS 1185	Public Speaking
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
EGR 221, 222	C++ Program for Engineers and Lab	4	CS 1570, 1580	Intro to Programming and Lab (C++)
EGR 213 & EGR 214	Engineering Mechanics-Statics & Engineering Mechanics- Dynamics	6	CIV ENG 2200 and MECH ENG 2350	Engineering Mechanics-Statics and Engineering Mechanics-Dynamics (Both courses combined will satisfy a required engineering science elective.)
EGR 231	Intro to Circuit Theory	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.
MTH 241	Linear Algebra	3	MATH 3108	Linear Algebra
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3117.)
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective
	<i>See your advisor for course options.</i>	3		Maximum Free Electives
	Group 2 Major Requirements	34		Group 2 Major Requirements
	Group 1 Core Requirements	43		Group 1 Core Requirements
	Total Hours	77		Total Hours*
				72

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

Engineering Management Group 2 Major Requirements

East Central College		Semester	Missouri S&T		
PSY 101	General Psychology	3	PSYCH 1101	General Psychology	3
HST 101 or HST 102 or CIV 202 or PSC 102 or ENG 102 or COM 110 or ENG 104	US History to 1865 or US History 1865-1945 or European Civilization II B156 US Government National and State English Composition II or Public Speaking or Technical Writing	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 ENGLISH 1160 or SPMS 1185 or ENGLISH 3560 EE 2800	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Writing and Research or Principles of Speech or Technical Writing Circuit Analysis I	3
EGR 231	Intro to Circuit Theory	3	CIV ENG 2200	Engineering Mechanics-Statics	3
EGR 203	Engineering Mechanics-Statics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
EGR 214	Engineering Mechanics-Dynamics	3	STAT 3115	Engineering Statistics	3
MTH 242	Engineering Statistics	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	<i>See your advisor for course options.</i>	3			
	Group 2 Major Requirements	27		Group 2 Major Requirements	27
	Group 1 Core Requirements	43		Group 1 Core Requirements	38
	Total Hours	70		Total Hours*	65

*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

East Central College		Semester	Missouri S&T		
ENG 102 or COM 110 or ENG 104	English Composition II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HST 101 or HST 102 or CIV 202	US History to 1865 or US History 1865-1945 or European Civilization II	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200	American History to 1877 (preferred) or American History since 1877 (preferred) or Modern Western Civilization	3
CHM 112	General Chemistry II Lecutre and Lab	5	CHEM 1320	General Chemistry II	3
BIO 111	General Biology Lecture and Lab	5	BIO SCI 1113	General Biology	4
EGR 203	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
EGR 214	Engineering Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics (Will be substituted for STAT 3113.)	3
GEO 101	Intro to Physical Geology	3	GEO 1110/GE 1150	Intro to Physical Geology	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	28
	Group 1 Core Requirements	43		Group 1 Core Requirements	38
	Total Hours	74		Total Hours*	66

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

Geological Engineering Group 2 Major Requirements

East Central College		Semester	Missouri S&T		
ENG 102 or COM 110 or ENG 104	English Composition II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Public Speaking or Technical Writing	3
HST 101 or HST 102 or CIV 202 or PSC 102 or GEO 101	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State Intro to Physical Geology	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 GEO 1110/GE 1150	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Intro to Physical Geology	3
GEO 102	Intro to Physical Geology Lab	2	GEO 1119/GE 1119	Physical and Environmental Geology Lab	1
EGR 203	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
EGR 214	Engineering Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
BIO 111 or CHM 112 or CHM 205	General Biology Lecture and Lab or General Chemistry II and Lab or Organic Chemistry I and Lab	5	BIO SCI 1113 or CHEM 1320 or CHEM 2210	General Biology or General Chemistry II or Organic Chemistry I	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	28		Group 2 Major Requirements	22
	Group 1 Core Requirements	43		Group 1 Core Requirements	38
	Total Hours	71		Total Hours*	60

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

Mining Engineering Group 2 Major Requirements

<u>East Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics	3
EGR 203	Engineering Mechanics-Statics	3	CIV ENG 2200*	Engineering Mechanics-Statics	3
EGR 214	Engineering Mechanics-Dynamics	3	MECH ENG 2350*	Engineering Mechanics-Dynamics	3
*The combination of CIV ENG 2200 and MECH ENG 2350 will be substituted for MECH ENG 2340. The Combination of CIV ENG 22000 and 2210 and MECH ENG 2350 will be substituted for MI ENG 3812					
GEO 101	Intro to Physical Geology	3	GEO 1110/GE 1150	Intro to Physical Geology	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	24		Group 2 Major Requirements	24
	Group 1 Core Requirements	43		Group 1 Core Requirements	38
	Total Hours	67		Total Hours*	62

*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>East Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
EGR 221, 222	C++ Program for Engineers and Lab	4	CS 1570, 1580	Intro to Programming and Lab (C++)	4
EGR 203	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics	3
EGR 213	Metallurgy for Engineers	3	MET ENG 2110	Metallurgy for Engineers	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	6		Maximum Free Electives	6
	Group 2 Major Requirements	31		Group 2 Major Requirements	31
	Group 1 Core Requirements	43		Group 1 Core Requirements	38
	Total Hours	74		Total Hours*	69

*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>East Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or ENG 104	English Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HST 101 or HST 102 or CIV 202 or PSC 102	US History to 1865 or US History 1865-1945 or European Civilization II or US Government National and State	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
GEO 101	Intro to Physical Geology	3	GEO 1110/GE 1150	Intro to Physical Geology	3
GEO 102	Intro to Physical Geology Lab	2	GEO ENG 1119	Physical and Environmental Geology Lab	1
EGR 203	Engineering Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
EGR 214	Engineering Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
MTH 242	Engineering Statistics	3	STAT 3115	Engineering Statistics	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	17		Group 2 Major Requirements	16
	Group 1 Core Requirements	43		Group 1 Core Requirements	38
	Total Hours	60		Total Hours*	54

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