

Ozarks Technical Community 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>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
MTH 140	Analytic Geometry and Calculus I	5	MATH 1214	Calculus for Engineers I	Grade of C or better is required. 4
MTH 141	Analytic Geometry and Calculus II	5	MATH 1215	Calculus for Engineers II	Grade of C or better is required. 4
MTH 240	Analytic Geometry and Calculus III	3	MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required. 4
MTH 241	Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHY 220	Physics for Engineers and Scientists I	5	PHYSICS 1135	Engineering Physics I	Grade of C or better is required. 4
PHY 222	Physics for Engineers and Scientists II	5	PHYSICS 2135	Engineering Physics II	Grade of C or better is required. 4
CHM 160, 161	General Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
EGR 100	Study and Careers in Engineering	1	FR ENG 1100	Study and Careers in Engineering	1
DDT 200	Production Design Drafting	4	MECH ENG 1720	Engineering Design with Computer Appl	3
ENG 101	Composition I	3	ENGLISH 1120	Exposition and Argumentation	3
ECO 275 or ECO 270	Principles of Economics II or Principles of Economics I	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3
Total Hours		42	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.

Aerospace Engineering Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HSI 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 or
HST 130 or	U.S. History II or		HISTORY 1310 or	American History since 1877 or
HST 102 or	Western civilization II or	3	HISTORY 1200 or	Modern Western Civilization or
PLS 101	American Government and Politics		POL SCI 1200	American Government
ENG 102 or	Composition II or		ENGLISH 1160 or	Writing and Research or
COM 105 or	Public Speaking or	3	SPMS 1185 or	Principles of Speech or
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing
CSC 140 or	C++ Programming I or		CS 1971, 1981 or	Intro to Programming Method and Lab (C++) or
CIT 145	C++ Programming II	3	CS 1570, 1580	Intro to Programming and Lab (C++)
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
MTH 230	Linear Algebra	3	MATH 3108	Linear Algebra I
				(Will satisfy the Advanced Math/Comp Sci elective requirement.)
	<i>See your advisor for course options.</i>			Literature Elective
	<i>See your advisor for course options.</i>			Ethics Elective
	<i>No free electives applied to the degree.</i>			Maximum Free Electives
	Group 2 Major Requirements	15		Group 2 Major Requirements
	Group 1 Core Requirements	42		Group 1 Core Requirements
	Total Hours	57		Total Hours*
				38
				59

*S&T advisor permission is required to transfer more than 66 credits toward the S&T Aerospace Engineering degree.

Architectural Engineering Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HST 102 or	Western civilization II		HISTORY 1200*	Modern western Civilization
HST 120 or	U.S. History I or	3	(or HISTORY 1300 or	(or American History to 1877 or
HST 130 or	U.S. History II or		HISTORY 1310)	American History since 1877)
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
ENG 102 or	Composition II or		ENGLISH 1160 or	writing and Research or
COM 105	Public Speaking	3	SPMS 1185 or	Public Speaking or
			HSS Elective	Humanities/Social Science Elective: history, economics,
				political science, sociology, psychology, philosophy, fine
				art, literature, foreign language
			PHYSICS 1505	introductory Astronomy (or other chemistry, geology,
PHY 100	Intro to Astronomy	4		biology, physics, or astronomy course that is not
				otherwise required for the degree)
				Applies to the degree as a basic science elective
	<i>No free electives applied to the degree.</i>			Maximum Free Electives
	Group 2 Major Requirements	13		Group 2 Major Requirements
	Group 1 Core Requirements	42		Group 1 Core Requirements
	Total Hours	55		Total Hours*
				12
				38
				50

*S&T advisor permission is required to transfer more than 66 credits toward the S&T Architectural Engineering degree.

Ceramic Engineering Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HST 120 or HST 130 or HST 102 or PLS 101	U.S. History I or U.S. History II or Western civilization II or American Government and Politics	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 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
CHM 242	Organic Chemistry I	5	CHEM 2210/2219	Organic Chemistry I and Lab <small>(Not a specific requirement. Will satisfy technical elective requirement.)</small>	5
CHM 170	General Chemistry II	4	CHEM 1320	General Chemistry II	3
ENG 102 or COM 105	Composition II or Public Speaking	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	3
<i>See your advisor for course options.</i>				Maximum Free Electives	0
<i>No free electives applied to the degree.</i>				Group 2 Major Requirements	20
Group 2 Major Requirements		18	Group 1 Core Requirements		38
Group 1 Core Requirements		42	Total Hours*		58
Total Hours		60			

*S&T advisor permission is required to transfer more than 60 credits toward the S&T Ceramic Engineering degree.

Chemical Engineering Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>			
ENG 102 or ENG 150	Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3	
HST 120 or HST 130 or HST 102 or PLS 101	U.S. History I or U.S. History II or Western civilization II or American Government and Politics	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	
CHM 170	General Chemistry II	4	CHEM 1320	General Chemistry II	5	
CHM 242	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I	3	
CSC 140 or CIT 145	C++ Programming I or C++ Programming II	3	CS 1971, 1981 or CS 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to Programming and Lab (C++)	3	
<i>See your advisor for course options.</i>				Humanities/Social Science Elective	3	
<i>See your advisor for course options.</i>				Humanities/Social Science Elective	3	
<i>No free electives applied to the degree.</i>				Maximum Free Electives	0	
Group 2 Major Requirements		18	Group 2 Major Requirements		23	
Group 1 Core Requirements		42	Group 1 Core Requirements		38	
Total Hours		60	Total Hours*			61

*S&T advisor permission is required to transfer more than 60 credits toward the S&T Chemical Engineering degree.

Chemical Engineering - Biochemical Engineering Emphasis Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>			
ENG 102 or ENG 150	Composition II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3	
HST 120 or HST 130 or HST 102 or PLS 101	U.S. History I or U.S. History II or Western civilization II or American Government and Politics	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	
CHM 170	General Chemistry II	4	CHEM 1320	General Chemistry II	5	
CHM 242	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I	3	
CSC 140 or CIT 145	C++ Programming I or C++ Programming II	3	CS 1971, 1981 or CS 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to Programming and Lab (C++)	3	
<i>See your advisor for course options.</i>				Humanities/Social Science Elective	3	
<i>See your advisor for course options.</i>				Humanities/Social Science Elective	3	
<i>No free electives applied to the degree.</i>				Maximum Free Electives	0	
Group 2 Major Requirements		18	Group 2 Major Requirements		23	
Group 1 Core Requirements		42	Group 1 Core Requirements		38	
Total Hours		60	Total Hours*			61

*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

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENG 102 or COM 105 or ENG 150 HST 120 or HST 130 or HST 102 or PLS 101 EGR 201	Composition II or Public Speaking or Technical Writing U.S. History I or U.S. History II or Western civilization II or American Government and Politics Engineering Statics	3 3 3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CIV ENG 2200	Writing and Research or Public Speaking or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Engineering Mechanics-Statics Humanities/Social Science Elective Maximum Free Electives
				3 3 3 0
		9		
		42		
Total Hours		51	Total Hours*	
			12 38 50	

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

Computer Engineering Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
COM 105 ENG 102 or ENG 150 HST 120 or HST 130 or HST 102 or PLS 101 CIT 145 CIS 210 MTH 230	Public Speaking Composition II or Technical Writing U.S. History I or U.S. History II or Western civilization II or American Government and Politics C++ Programming II Data Structures Linear Algebra	3 3 3 3 3 4 3	SPMS 1185 ENGLISH 1160 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CS 1570, 1580 CS 1575 MATH 3108	Public Speaking Writing and Research or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Intro to Programming and Lab (C++) Data Structures Linear Algebra (Will satisfy a required math elective.) Humanities/Social Science Elective Maximum Free Electives
				3 3 3 4 3 3 3
		19		
		42		
Total Hours		61	Total Hours*	
			25 38 63	

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

Electrical Engineering Group 2 Major Requirements

<u>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
COM 105 ENG 102 or ENG 150 HST 120 or HST 130 or HST 102 or PLS 101 CIT 145 MTH 230	Public Speaking Composition II or Technical Writing U.S. History I or U.S. History II or Western civilization II or American Government and Politics C++ Programming II Linear Algebra	3 3 3 3 3	SPMS 1185 ENGLISH 1160 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CS 1570, 1580 MATH 3108	Public Speaking Writing and Research or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Intro to Programming and Lab (C++) Linear Algebra Humanities/Social Science Elective Maximum Free Electives
				3 3 3 4 3 3
		15		
		42		
Total Hours		57	Total Hours*	
			22 38 60	

*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

Ozarks Technical Community College		Semester	Missouri S&T		
PSY 110	Intro to Psychology	3	PSYCH 1101	General Psychology	3
HS I 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 or	
HST 130 or	U.S. History II or	3	HISTORY 1310 or	American History since 1877 or	3
HST 102 or	Western civilization II or		HISTORY 1200 or	Modern Western Civilization or	
PLS 101	American Government and Politics		POL SCI 1200	American Government	
ENG 102 or	Composition II or		ENGLISH 1160 or	Writing and Research or	
COM 105 or	Public Speaking or	3	SPMS 1185 or	Principles of Speech or	3
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing	
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
<i>See your advisor for course options.</i>			<i>Humanities/Social Science Elective</i>		3
<i>See your advisor for course options.</i>			<i>Maximum Free Electives</i>		3
Group 2 Major Requirements		12	Group 2 Major Requirements		18
Group 1 Core Requirements		42	Group 1 Core Requirements		38
Total Hours		54	Total Hours*		56

*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

Ozarks Technical Community College		Semester	Missouri S&T		
ENG 102 or	Composition II or		ENGLISH 1160 or	Writing and Research or	
COM 105 or	Public Speaking or	3	SPMS 1185 or	Public Speaking or	3
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing	
HST 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 (preferred) or	
HST 130 or	U.S. History II or	3	HISTORY 1310 or	American History since 1877 (preferred) or	3
HST 102	Western civilization II		HISTORY 1200	Modern Western Civilization	
CHM 170	General Chemistry II	5	CHEM 1320	General Chemistry II	3
BIO 100	Life Science	4	BIO SCI 1113	General Biology	4
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
<i>See your advisor for course options.</i>			<i>Humanities/Social Science Elective</i>		3
<i>No free electives applied to the degree.</i>			<i>Maximum Free Electives</i>		0
Group 2 Major Requirements		18	Group 2 Major Requirements		19
Group 1 Core Requirements		42	Group 1 Core Requirements		38
Total Hours		60	Total Hours*		57

*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

Ozarks Technical Community College		Semester	Missouri S&T		
ENG 102 or	Composition II or		ENGLISH 1160 or	Writing and Research or	
COM 105 or	Public Speaking or	3	SPMS 1185 or	Public Speaking or	3
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing	
HS I 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 or	
HST 130 or	U.S. History II or	3	HISTORY 1310 or	American History since 1877 or	3
HST 102 or	Western civilization II or		HISTORY 1200 or	Modern Western Civilization or	
PLS 101	American Government and Politics		POL SCI 1200	American Government	
PHY 110	Intro to Geology		GEO 1110/GE 1119	Physical and Environmental Geology	3
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
BIO 100 or	Life Science or	4	BIO SCI 1113 or	General Biology or	
CHM 170 or	General Chemistry II or		CHEM 1320 or	General Chemistry II or	
CHM 242	Organic Chemistry		CHEM 2210	Organic Chemistry I	
<i>See your advisor for course options.</i>			<i>Humanities/Social Science Elective</i>		3
<i>See your advisor for course options.</i>			<i>Humanities/Social Science Elective</i>		3
<i>No free electives applied to the degree.</i>			<i>Maximum Free Electives</i>		0
Group 2 Major Requirements		13	Group 2 Major Requirements		18
Group 1 Core Requirements		42	Group 1 Core Requirements		38
Total Hours		55	Total Hours*		56

*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

Ozarks Technical Community College		Semester	Missouri S&T	
HSI 120 or HST 130 or HST 102 or PLS 101 ENG 102 or COM 105 or ENG 150	U.S. History I or U.S. History II or Western civilization II or American Government and Politics 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	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
CSC 140 or CIT 145 EGR 201 MTH 230	C++ Programming I or C++ Programming II Engineering Statics Linear Algebra	3 3 3 3	CS 1971, 1981 or CS 1570, 1580 CIV ENG 2200 MATH 3108	Intro to Programming Method and Lab (C++) or Intro to Programming and Lab (C++) Engineering Mechanics-Statics Linear Algebra I <small>(Will satisfy the Advanced Math/Comp Sci elective requirement.)</small>
<i>See your advisor for course options.</i>				Literature Elective
<i>No free electives applied to the degree.</i>				Humanities/Social Science Elective
				Maximum Free Electives
Group 2 Major Requirements		6	Group 2 Major Requirements	
Group 1 Core Requirements		42	Group 1 Core Requirements	
Total Hours		48	Total Hours*	
			12	
			38	
			50	

*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

Ozarks Technical Community College		Semester	Missouri S&T	
ENG 102 or COM 105 or ENG 150 HST 120 or HST 130 or HST 102 or PLS 101 EGR 201 CHM 170 CHM 242	Composition II or Public Speaking or Technical Writing U.S. History I or U.S. History II or Western civilization II or American Government and Politics Engineering Statics General Chemistry II Organic Chem I	3 3 3 3 5 5	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CIV ENG 2200 CHEM 1320 CHEM 2210	Writing and Research or Public Speaking or Technical Writing American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Engineering Mechanics-Statics General Chemistry II Organic Chemistry I <small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement</small>
<i>See your advisor for course options.</i>				Humanities/Social Science Elective
<i>See your advisor for course options.</i>				Humanities/Social Science Elective
<i>See your advisor for course options.</i>				Maximum Free Electives
Group 2 Major Requirements		19	Group 2 Major Requirements	
Group 1 Core Requirements		42	Group 1 Core Requirements	
Total Hours		61	Total Hours*	
			26	
			38	
			64	

*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>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENG 102 or	Composition II or	3	ENGLISH 1160 or	Writing and Research or
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing
HST 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 or
HST 130 or	U.S. History II or	3	HISTORY 1310 or	American History since 1877 or
HST 102 or	Western civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLS 101	American Government and Politics		POL SCI 1200	American Government
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
				Humanities/Social Science Elective
				Humanities/Social Science Elective
				Maximum Free Electives
		9		
		42		
		51		
			Total Hours*	
			53	

*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>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENG 102 or	Composition II or	3	ENGLISH 1160 or	Writing and Research or
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing
HST 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 or
HST 130 or	U.S. History II or	3	HISTORY 1310 or	American History since 1877 or
HST 102 or	Western civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLS 101	American Government and Politics		POL SCI 1200	American Government
CSC 140 or	C++ Programming I or		CS 1971, 1981 or	Intro to Programming Method and Lab (C++) or
CIT 145	C++ Programming II	3	CS 1570, 1580	Intro to Programming and Lab (C++)
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
				Humanities/Social Science Elective
				Humanities/Social Science Elective
				Maximum Free Electives
		12		
		42		
		54		
			Total Hours*	
			59	

*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>Ozarks Technical Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENG 102 or	Composition II or	3	ENGLISH 1160 or	Writing and Research or
ENG 150	Technical Writing		ENGLISH 3560	Technical Writing
HST 120 or	U.S. History I or		HISTORY 1300 or	American History to 1877 or
HST 130 or	U.S. History II or	3	HISTORY 1310 or	American History since 1877 or
HST 102 or	Western civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLS 101	American Government and Politics		POL SCI 1200	American Government
PHY 110	Intro to Geology	3	GEO 1110/GEO 1119	Physical and Environmental Geology
EGR 201	Engineering Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
				Humanities/Social Science Elective
				Humanities/Social Science Elective
				Maximum Free Electives
		6		
		42		
		48		
			Total Hours*	
			50	

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