

# Crowder 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>Crowder College</u>			<u>Semester</u>	<u>Missouri S&amp;T</u>				
MATH 150, 160	Calculus Part 1 and 2	5	MATH 1214	Calculus for Engineers I	Grade of C or better is required.	4		
MATH 201	Calculus II	5	MATH 1215	Calculus for Engineers II	Grade of C or better is required.	4		
MATH 202	Calculus III	5	MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required.	4		
MATH 210	Differential Equations	3	MATH 3304	Elementary Differential Equations		3		
PHYS 190	General Physics I	5	PHYSICS 1135	Engineering Physics I	Grade of C or better is required.	4		
PHYS 210	General Physics II	5	PHYSICS 2135	Engineering Physics II	Grade of C or better is required.	4		
CHEM 111	General Chemistry	5	CHEM 1310, 1319	General Chemistry I and Lab		5		
ENG 101	English Composition	3	ENGLISH 1120	Exposition and Argumentation		3		
ECON 202 or ECON 201	Principles of Economics II (Micro) or Principles of Economics I (Macro)	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics		3		
Total Hours			39				Total Hours	34

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

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

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

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

Engineering Major Requirements are detailed on the following pages.

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

**Humanities/Social Science (HSS) Electives:** HSS electives may include any 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](http://ugs.mst.edu). Your campus may have additional acceptable options. Consult with your advisor or email [transfer@mst.edu](mailto:transfer@mst.edu) with questions.

## Aerospace Engineering Group 2 Major Requirements

<u>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 106 or HIST 107 or HIST 102 or PLSC 103	US History I or US History II or Western Civilization II or National, State, and Local Government	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
ENGL 102 or SPCH 101 or ENGL 203	Advanced English Composition or Fundamentals of Speech or Technical Report Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
COMP 101 or COMP 111	Intro to Computer Science or Intro to Computer Science	3	CS 1971, 1981 or CS 1570, 1580	Intro to Programming Method and Lab (C++) or Intro to Programming and Lab (C++)	3
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
<i>See your advisor for course options.</i>				Literature Elective	3
<i>See your advisor for course options.</i>				Ethics Elective	3
<i>No free electives applied to the degree.</i>				Maximum Free Electives	0
Group 2 Major Requirements		12	Group 2 Major Requirements		18
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		51	Total Hours*		52

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

## Architectural Engineering Group 2 Major Requirements

<u>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
HIST 102 or HIST 106 or HIST 107	Western Civilization II or US History I or US History II	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
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGL 102 or SPCH 101	Advanced English Composition or Fundamentals of Speech	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 art, literature, foreign language	3
GEOL 115	Geology	5	GEOLOGY 1111	Intro to Physical Geology (or other chemistry, geology, biology, physics, or astronomy course that is not otherwise required for the degree) <span style="float: right;">Applies to</span>	3
<i>No free electives applied to the degree.</i>				Maximum Free Electives	0
Group 2 Major Requirements		14	Group 2 Major Requirements		12
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		53	Total Hours*		46

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

## Ceramic Engineering Group 2 Major Requirements

<u>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
CHEM 112	General Chemistry II	5	CHEM 1320	General Chemistry II
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or
SPCH 101	Fundamentals of Speech	3	SPMS 1185 or	Public Speaking or
			HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective
	<i>No free electives applied to the degree.</i>			Maximum Free Electives
	Group 2 Major Requirements	14		Group 2 Major Requirements
	Group 1 Core Requirements	39		Group 1 Core Requirements
	Total Hours	53		Total Hours*
				49

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

## Chemical Engineering Group 2 Major Requirements

<u>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or
ENGL 203	Technical Report Writing	3	ENGLISH 3560	Technical Writing
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government
CHEM 112	General Chemistry II	5	CHEM 1320	General Chemistry II
COMP 101 or	Intro to Computer Science or		CS 1971, 1981 or	Intro to Programming Method and Lab (C++) or
COMP 111	Intro to Computer Science	3	CS 1570, 1580	Intro to Programming and Lab (C++)
	<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>No free electives applied to the degree.</i>			Maximum Free Electives
	Group 2 Major Requirements	14		Group 2 Major Requirements
	Group 1 Core Requirements	39		Group 1 Core Requirements
	Total Hours	53		Total Hours*
				54

\*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

<u>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or
ENGL 203	Technical Report Writing	3	ENGLISH 3560	Technical Writing
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government
CHEM 112	General Chemistry II	5	CHEM 1320	General Chemistry II
COMP 101 or	Intro to Computer Science or		CS 1971, 1981 or	Intro to Programming Method and Lab (C++) or
COMP 111	Intro to Computer Science	3	CS 1570, 1580	Intro to Programming and Lab (C++)
	<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>No free electives applied to the degree.</i>			Maximum Free Electives
	Group 2 Major Requirements	14		Group 2 Major Requirements
	Group 1 Core Requirements	39		Group 1 Core Requirements
	Total Hours	53		Total Hours*
				54

\*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>Crowder College</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>	
ENGL 102 or SPCH 101 or ENGL 203	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	3
HIST 106 or HIST 107 or HIST 102 or PLSC 103	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3
GEOL 115	5	GEO 1110/GE 1150	3
PHYS 250	3	CIV ENG 2200	3
<i>See your advisor for course options.</i>		Engineering Mechanics-Statics	3
<i>No free electives applied to the degree.</i>		Humanities/Social Science Elective	3
		Maximum Free Electives	0
Group 2 Major Requirements		Group 2 Major Requirements	15
Group 1 Core Requirements		Group 1 Core Requirements	34
Total Hours			49

\*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>Crowder College</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>	
SPCH 101	3	SPMS 1185	3
ENGL 102 or ENGL 203	3	ENGLISH 1160 or ENGLISH 3560	3
HIST 106 or HIST 107 or HIST 102 or PLSC 103	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3
COMP 111	4	CS 1570, 1580	4
<i>See your advisor for course options.</i>		Intro to Programming and Lab (C++)	4
<i>See your advisor for course options.</i>		Humanities/Social Science Elective	3
		Maximum Free Electives	3
Group 2 Major Requirements		Group 2 Major Requirements	19
Group 1 Core Requirements		Group 1 Core Requirements	34
Total Hours			53

\*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>Crowder College</u>	<u>Semester</u>	<u>Missouri S&amp;T</u>	
SPCH 101	3	SPMS 1185	3
ENGL 102 or ENGL 203	3	ENGLISH 1160 or ENGLISH 3560	3
HIST 106 or HIST 107 or HIST 102 or PLSC 103	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3
COMP 111	4	CS 1570, 1580	4
<i>See your advisor for course options.</i>		Intro to Programming and Lab (C++)	4
<i>See your advisor for course options.</i>		Humanities/Social Science Elective	3
		Maximum Free Electives	3
Group 2 Major Requirements		Group 2 Major Requirements	19
Group 1 Core Requirements		Group 1 Core Requirements	34
Total Hours			53

\*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>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
PSYC 101	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or	
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or	3
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government	
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or	
SPCH 101 or	Fundamentals of Speech or	3	SPMS 1185 or	Principles of Speech or	3
ENGL 203	Technical Report Writing		ENGLISH 3560	Technical Writing	
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	3
		12			18
		39			34
		51			52
					Total Hours*

\*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>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or	
SPCH 101 or	Fundamentals of Speech or	3	SPMS 1185 or	Public Speaking or	3
ENGL 203	Technical Report Writing		ENGLISH 3560	Technical Writing	
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 (preferred) or	
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 (preferred) or	3
HIST 102	Western Civilization II		HISTORY 1200	Modern Western Civilization	
GEO 115	Geology	5	GEO 1110/GE 1150	Intro to Physical Geology	3
CHEM 112	General Chemistry II	5	CHEM 1320	General Chemistry II	3
BIOL 101	General Biology	5	BIO SCI 1113	General Biology	4
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		24			22
		39			34
		63			56
					Total Hours*

\*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

<u>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>		
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or	
SPCH 101 or	Fundamentals of Speech or	3	SPMS 1185 or	Public Speaking or	3
ENGL 203	Technical Report Writing		ENGLISH 3560	Technical Writing	
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or	
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or	3
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government	
GEO 115	Geology	5	GEO 1110/GE 1150	Physical and Environmental Geology	3
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
BIOL 101 or	General Biology or		BIO SCI 1113 or	General Biology or	
CHEM 112	General Chemistry II	5	CHEM 1320	General Chemistry II	
				Humanities/Social Science Elective	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		19			18
		39			34
		58			52
					Total Hours*

\*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>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or
SPCH 101 or	Fundamentals of Speech or	3	SPMS 1185 or	Principles of Speech or
ENGL 203	Technical Report Writing		ENGLISH 3560	Technical Writing
COMP 101 or	Intro to Computer Science or	3	CS 1971, 1981 or	Intro to Programming Method and Lab (C++) or
COMP 111	Intro to Computer Science		CS 1570, 1580	Intro to Programming and Lab (C++)
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
				Literature Elective
				Humanities/Social Science Elective
	<i>See your advisor for course options.</i>			Maximum Free Electives
	<i>No free electives applied to the degree.</i>			Group 2 Major Requirements
	Group 2 Major Requirements	3		Group 1 Core Requirements
	Group 1 Core Requirements	39		Total Hours*
	Total Hours	42		43

\*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>Crowder College</u>		<u>Semester</u>	<u>Missouri S&amp;T</u>	
ENGL 102 or	Advanced English Composition or		ENGLISH 1160 or	Writing and Research or
SPCH 101 or	Fundamentals of Speech or	3	SPMS 1185 or	Public Speaking or
ENGL 203	Technical Report Writing		ENGLISH 3560	Technical Writing
HIST 106 or	US History I or		HISTORY 1300 or	American History to 1877 or
HIST 107 or	US History II or	3	HISTORY 1310 or	American History since 1877 or
HIST 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or
PLSC 103	National, State, and Local Government		POL SCI 1200	American Government
PHYS 250	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics
CHEM 112	General Chemistry II	5	CHEM 1320	General Chemistry II
	<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	14		Group 2 Major Requirements
	Group 1 Core Requirements	39		Group 1 Core Requirements
	Total Hours	53		Total Hours*
				57

\*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

Crowder College		Semester	Missouri S&T		
ENGL 102 or ENGL 203	Advanced English Composition or Technical Report Writing	3	ENGLISH 1160 or ENGLISH 3560	3	
HIST 106 or HIST 107 or HIST 102 or PLSC 103	US History I or US History II or Western Civilization II or National, State, and Local Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3	
PHYS 250	Statics	3	CIV ENG 2200*	3	
GEOL 115	Geology	5	GEO 1110/GE 1150	3	
<i>See your advisor for course options.</i>				3	
<i>See your advisor for course options.</i>				3	
<i>No free electives applied to the degree.</i>				0	
Group 2 Major Requirements		14	Group 2 Major Requirements	18	
Group 1 Core Requirements		39	Group 1 Core Requirements	34	
Total Hours		53	Total Hours*		52

\*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

Crowder College		Semester	Missouri S&T		
ENGL 102 or ENGL 203	Advanced English Composition or Technical Report Writing	3	ENGLISH 1160 or ENGLISH 3560	3	
HIST 106 or HIST 107 or HIST 102 or PLSC 103	US History I or US History II or Western Civilization II or National, State, and Local Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3	
COMP 101 or COMP 111	Intro to Computer Science or Intro to Computer Science	3	CS 1971, 1981 or CS 1570, 1580	3	
PHYS 250	Statics	3	CIV ENG 2200	3	
<i>See your advisor for course options.</i>				3	
<i>See your advisor for course options.</i>				3	
<i>See your advisor for course options.</i>				6	
Group 2 Major Requirements		12	Group 2 Major Requirements	21	
Group 1 Core Requirements		39	Group 1 Core Requirements	34	
Total Hours		51	Total Hours*		55

\*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

Crowder College		Semester	Missouri S&T		
ENGL 102 or ENGL 203	Advanced English Composition or Technical Report Writing	3	ENGLISH 1160 or ENGLISH 3560	3	
HIST 106 or HIST 107 or HIST 102 or PLSC 103	US History I or US History II or Western Civilization II or National, State, and Local Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3	
GEOL 115	Geology	5	GEO 1110/GE 1150	3	
PHYS 250	Statics	3	CIV ENG 2200	3	
<i>See your advisor for course options.</i>				3	
<i>See your advisor for course options.</i>				3	
<i>No free electives applied to the degree.</i>				0	
Group 2 Major Requirements		8	Group 2 Major Requirements	12	
Group 1 Core Requirements		39	Group 1 Core Requirements	34	
Total Hours		47	Total Hours*		46

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