

Joliet Junior 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>Joliet Junior College</u>			<u>Semester</u>	<u>Missouri S&T</u>		
MATH 170	Calculus w/Analytical Geometry I	5	MATH 1214	Calculus for Engineers I	Grade of C or better is required.	4
MATH 171	Calculus w/Analytical Geometry II	4	MATH 1215	Calculus for Engineers II	Grade of C or better is required.	4
MATH 172	Calculus w/Analytical Geometry III	4	MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required.	4
MATH 220	Differential Equations	3	MATH 3304	Elementary Differential Equations		3
PHYS 201	Engineering Physics I	5	PHYSICS 1135	Engineering Physics I	Grade of C or better is required.	4
PHYS 202	Engineering Physics II	5	PHYSICS 2135	Engineering Physics II	Grade of C or better is required.	4
CHEM 101	General Chemistry	5	CHEM 1310, 1319	General Chemistry I and Lab		5
ENG 101	Rhetoric	3	ENGLISH 1120	Exposition and Argumentation		3
ECON 104 or ECON 103	Principles of Economics II-Microeconomics or Principles of Economics I-Macroeconomics	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics		3
Total Hours			37	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. 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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	American 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
ENG 102 or COMM 101	Rhetoric II or Principles of Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech
CIS 246	Advances C Using C++	4	CS 1570, 1580	Intro to Programming and Lab (C++)
<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		10	Group 2 Major Requirements	
Group 1 Core Requirements		37	Group 1 Core Requirements	
Total Hours		47	Total Hours*	
			49	

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HIST 105 or HIST 103 or HIST 104	History of Civilization or History of the US to 1865 or History of the US, 1865 to Present	3	HISTORY 1200* (or HISTORY 1300 or HISTORY 1310)	Modern Western Civilization* (or American History to 1877 or American History since 1877)
ENG 102 or COMM 101	Rhetoric II or Principles 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
PHYS 203	Engineering Physics III	3	PHYSICS 2305	Intro to Modern Physics (or other chemistry, geology, biology, physics, or astronomy course that is not otherwise required for the degree) Applies to
<i>No free electives applied to the degree.</i>			the degree as a basic science elective	
			Maximum Free Electives	
Group 2 Major Requirements		9	Group 2 Major Requirements	
Group 1 Core Requirements		37	Group 1 Core Requirements	
Total Hours		46	Total Hours*	
			43	

*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>Joliet Junior College</u>		<u>Semester</u>		<u>Missouri S&T</u>		
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	American	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
CHEM 209	Organic Chemistry I		5	CHEM 2210/2219	Organic Chemistry I and Lab (Not a specific requirement. Will satisfy technical elective requirement.)	5
CHEM 102	General Chemistry II		5	CHEM 1320	General Chemistry II	3
ENG 102 or COMM 101	Rhetoric II or Principles 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 Humanities/Social Science Elective	3
<i>See your advisor for course options.</i>						3
<i>No free electives applied to the degree.</i>						0
			16			17
			37			34
Total Hours			53			51

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

Chemical Engineering Group 2 Major Requirements

<u>Joliet Junior College</u>		<u>Semester</u>		<u>Missouri S&T</u>		
ENG 102	Rhetoric II		3	ENGLISH 1160	Writing and Research	3
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	American	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
CHEM 102	General Chemistry II		5	CHEM 1320	General Chemistry II	5
CHEM 209	Organic Chemistry I		5	CHEM 2210	Organic Chemistry I	3
CHEM 210	Organic Chemistry II		5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)	3
CIS 246	Advances C Using C++		4	CS 1570, 1580	Intro to Programming and Lab (C++)	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
			25			26
			37			34
Total Hours			62			60

*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>Joliet Junior College</u>		<u>Semester</u>		<u>Missouri S&T</u>		
ENG 102	Rhetoric II		3	ENGLISH 1160	Writing and Research	3
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	American	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
CHEM 102	General Chemistry II		5	CHEM 1320	General Chemistry II	5
CHEM 209	Organic Chemistry I		5	CHEM 2210	Organic Chemistry I	3
CHEM 210	Organic Chemistry II		5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)	3
CIS 246	Advances C Using C++		4	CS 1570, 1580	Intro to Programming and Lab (C++)	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
			25			26
			37			34
Total Hours			62			60

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENG 102 or COMM 101 HIST 103 or HIST 104 or HIST 105 or PSCI 101	Rhetoric II or Principles of Speech History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	3 3 3	ENGLISH 1160 or SPMS 1185 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	Writing and Research or Principles of Speech American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Humanities/Social Science Elective Maximum Free Electives
<i>See your advisor for course options. No free electives applied to the degree.</i>				
Group 2 Major Requirements		6	Group 2 Major Requirements	
Group 1 Core Requirements		37	Group 1 Core Requirements	
Total Hours		43	Total Hours*	
			43	

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
COMM 101 ENG 102 HIST 103 or HIST 104 or HIST 105 or PSCI 101 CIS 246 MATH 210	Principles of Speech Rhetoric II History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government Advances C Using C++ Linear Algebra	3 3 3 3 4 3	SPMS 1185 ENGLISH 1160 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CS 1570, 1580 MATH 3108	Public Speaking Writing and Research American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Intro to Programming and Lab (C++) Linear Algebra (Will satisfy a required math elective.) Humanities/Social Science Elective Maximum Free Electives
<i>See your advisor for course options. See your advisor for course options.</i>				
Group 2 Major Requirements		16	Group 2 Major Requirements	
Group 1 Core Requirements		37	Group 1 Core Requirements	
Total Hours		53	Total Hours*	
			56	

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>	
COMM 101 ENG 102 HIST 103 or HIST 104 or HIST 105 or PSCI 101 CIS 246 MATH 210	Principles of Speech Rhetoric II History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government Advances C Using C++ Linear Algebra	3 3 3 3 4 3	SPMS 1185 ENGLISH 1160 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CS 1570, 1580 MATH 3108	Public Speaking Writing and Research 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
<i>See your advisor for course options. See your advisor for course options.</i>				
Group 2 Major Requirements		16	Group 2 Major Requirements	
Group 1 Core Requirements		37	Group 1 Core Requirements	
Total Hours		53	Total Hours*	
			56	

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
PSYC 101	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National 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
ENG 102 or COMM 101	Rhetoric II or Principles of Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	3
		9			15
		37			34
Total Hours		46	Total Hours*		49

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or COMM 101	Rhetoric II or Principles of Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 103 or HIST 104 or HIST 105	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization	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
CHEM 102	General Chemistry II	5	CHEM 1320	General Chemistry II	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		11			12
		37			34
Total Hours		48	Total Hours*		46

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or COMM 101	Rhetoric II or Principles of Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National 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
CHEM 102 or CHEM 209	General Chemistry II or Organic Chemistry	5	CHEM 1320 or CHEM 2210	General Chemistry II or Organic Chemistry I	3
				Humanities/Social Science Elective	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		11			12
		37			34
Total Hours		48	Total Hours*		46

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	American 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
ENG 102 or COMM 101	Rhetoric II or Principles of Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
CIS 246	Advances C Using C++	4	CS 1570, 1580	Intro to Programming and Lab (C++)	3 4
MATH 210	Linear Algebra	3	MATH 3108	Linear Algebra I <small>(Will satisfy the Advanced Math/Comp Sci elective requirement.)</small>	3
<i>See your advisor for course options.</i>				Literature Elective	3
<i>No free electives applied to the degree.</i>				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		3			9
Group 2 Major Requirements		37	Group 2 Major Requirements		34
Group 1 Core Requirements		40	Group 1 Core Requirements		43
Total Hours			Total Hours*		

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or COMM 101	Rhetoric II or Principles of Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HIST 103 or HIST 104 or HIST 105 or PSCI 101	History of the US to 1865 or History of the US, 1865 to Present or History of Civilization or National Government	American 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
CHEM 209	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I <small>Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement</small>	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>See your advisor for course options.</i>				Maximum Free Electives	5
		11			20
Group 2 Major Requirements		37	Group 2 Major Requirements		34
Group 1 Core Requirements		48	Group 1 Core Requirements		54
Total Hours			Total Hours*		

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	Rhetoric II	3	ENGLISH 1160	Writing and Research	3
HIS1 103 or	History of the US to 1865 or		HISTORY 1300 or	American History to 1877 or	
HIST 104 or	History of the US, 1865 to Present or		HISTORY 1310 or	American History since 1877 or	
HIST 105 or	History of Civilization or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSCI 101	National Government	American	POL SCI 1200	American Government	
<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		6	Group 2 Major Requirements		12
Group 1 Core Requirements		37	Group 1 Core Requirements		34
Total Hours		43	Total Hours*		46

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	Rhetoric II	3	ENGLISH 1160	Writing and Research	3
HIS1 103 or	History of the US to 1865 or		HISTORY 1300 or	American History to 1877 or	
HIST 104 or	History of the US, 1865 to Present or		HISTORY 1310 or	American History since 1877 or	
HIST 105 or	History of Civilization or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSCI 101	National Government	American	POL SCI 1200	American Government	
<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>See your advisor for course options.</i>			Maximum Free Electives		6
CIS 246	Advances C Using C++	4	CS 1570, 1580	Intro to Programming and Lab (C++)	3
					4
Group 2 Major Requirements		10	Group 2 Major Requirements		18
Group 1 Core Requirements		37	Group 1 Core Requirements		34
Total Hours		47	Total Hours*		52

*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>Joliet Junior College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	Rhetoric II	3	ENGLISH 1160	Writing and Research	3
HIS1 103 or	History of the US to 1865 or		HISTORY 1300 or	American History to 1877 or	
HIST 104 or	History of the US, 1865 to Present or		HISTORY 1310 or	American History since 1877 or	
HIST 105 or	History of Civilization or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSCI 101	National Government	American	POL SCI 1200	American Government	
<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		0	Group 2 Major Requirements		6
Group 1 Core Requirements		37	Group 1 Core Requirements		34
Total Hours		37	Total Hours*		40

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