

Missouri Southern State University — 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>Missouri Southern State University</u>			<u>Semester</u>	<u>Missouri S&T</u>		
MATH 150	Calculus with Analytic Geometry I	5	MATH 1214	Calculus for Engineers I	Grade of C or better is required.	4
MATH 250	Calculus with Analytic Geometry II	5	MATH 1215	Calculus for Engineers II	Grade of C or better is required.	4
MATH 260	Calculus with Analytic Geometry III	5	MATH 2222	Calculus with Analytic Geometry III	Grade of C or better is required.	4
MATH 322	Differential Equations	3	MATH 3304	Elementary Differential Equations		3
PHYS 250 and PHYS 260	General Physics I and General Physics II*	5				4
	*Both PHYS 250 and 260 must be taken to receive credit for S&T PHYSICS 1135.		PHYSICS 1135	Engineering Physics I	Grade of C or better is required.	4
PHYS 290 and PHYS 291	General Physics III and Lab	5	PHYSICS 2135	Engineering Physics II	Grade of C or better is required.	4
CHEM 151	General Chemistry	5	CHEM 1310, 1319	General Chemistry I and Lab		5
ENG 101	College Composition I	3	ENGLISH 1120	Exposition and Argumentation		3
ECON 202 or ECON 201	Principles of Economics (Micro) or Principles of Economics (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. Your campus may have additional acceptable options. Consult with your advisor or email transfer@mst.edu with questions.

Ceramic Engineering Group 2 Major Requirements

<u>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HISI 110 or HIST 120 or HIST 140 or PSC 120	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local	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
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
CHEM 301	Organic Chemistry I	5	CHEM 2210/2219	Organic Chemistry I and Lab (Not a specific requirement. Will satisfy technical elective requirement.)	5
CHEM 152	General Chemistry II	5	CHEM 1320	General Chemistry II	3
ENG 102 or COMM 100	English Composition or Oral Communications	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		19	Group 2 Major Requirements		20
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		58	Total Hours*		54

*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HISI 110 or HIST 120 or HIST 140 or PSC 120	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local	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 152	General Chemistry II	5	CHEM 1320	General Chemistry II	5
CHEM 301	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I	3
CHEM 302	Organic Chemistry II	5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)	3
CIS 110 or CIS 210	Programming I or 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		24	Group 2 Major Requirements		26
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		63	Total Hours*		60

*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HISI 110 or HIST 120 or HIST 140 or PSC 120	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local	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 152	General Chemistry II	5	CHEM 1320	General Chemistry II	5
CHEM 301	Organic Chemistry I	5	CHEM 2210	Organic Chemistry I	3
CHEM 302	Organic Chemistry II	5	CHEM 2220	Organic Chemistry II (Will satisfy science elective requirement.)	3
CIS 110 or CIS 210	Programming I or 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		24	Group 2 Major Requirements		26
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		63	Total Hours*		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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or COMM 100	English Composition or Oral Communications	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HISI 110 or HIST 120 or HIST 140 or PSC 120	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local	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
GEOL 120	Intro to Geology	4	GEO 1110/GE 1150	Intro to Physical Geology	3
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	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		Group 2 Major Requirements	18
		Group 1 Core Requirements		Group 1 Core Requirements	34
Total Hours		55			Total Hours*
					52

*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COMM 100	Oral Communications	3	SPMS 1185	Public Speaking	3
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HISI 110 or HIST 120 or HIST 140 or PSC 120	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local	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
CIS 210	Programming II	3	CS 1570, 1580	Intro to Programming and Lab (C++)	4
CIS 350	Data Structures	3	CS 1575	Data Structures	3
PHYS 312 and PHYS 322	Statics and Classical Mechanics	3	CIV ENG 2200 and MECH ENG 2350	Engineering Mechanics-Statics and Engineering Mechanics-Dynamics (Both courses combined will satisfy a required engineering science elective.)	6
PHYS 372	Electronic Circuits	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
<i>See your advisor for course options.</i>				Humanities/Social Science Elective	3
<i>See your advisor for course options.</i>				Maximum Free Electives	3
		Group 2 Major Requirements		Group 2 Major Requirements	31
		Group 1 Core Requirements		Group 1 Core Requirements	34
Total Hours		60			Total Hours*
					65

*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
COMM 100	Oral Communications	3	SPMS 1185	Public Speaking	3
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HISI 110 or HIST 120 or HIST 140 or PSC 120	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local	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
CIS 210	Programming II	3	CS 1570, 1580	Intro to Programming and Lab (C++)	4
PHYS 312 and PHYS 322	Statics and Classical Mechanics	3	CIV ENG 2200 and MECH ENG 2350	Engineering Mechanics-Statics and Engineering Mechanics-Dynamics (Both courses combined will satisfy a required engineering science elective.)	6
PHYS 372	Electronic Circuits	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
<i>See your advisor for course options.</i>				Humanities/Social Science Elective	3
<i>See your advisor for course options.</i>				Maximum Free Electives	3
		Group 2 Major Requirements		Group 2 Major Requirements	28
		Group 1 Core Requirements		Group 1 Core Requirements	34
Total Hours		57			Total Hours*
					62

*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 Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
PSYC 100	General Psychology	3	PSYCH 1101	General Psychology	3
HIS1 110 or	US History 1492-1877 or		HISTORY 1300 or	American History to 1877 or	
HIST 120 or	US History 1877-present or		HISTORY 1310 or	American History since 1877 or	
HIST 140 or	Western Civilization since 1660 or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSC 120	Government: US, State, Local		POL SCI 1200	American Government	
ENG 102 or	English Composition or		ENGLISH 1160 or	Writing and Research or	
COMM 100	Oral Communications	3	SPMS 1185	Principles of Speech	3
PHYS 372	Electronic Circuits	3	EE 2800	Circuit Analysis I	3
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
PHYS 341	Thermal Physics	4	MECH 2527	Thermal Analysis	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		3
Group 2 Major Requirements		22	Group 2 Major Requirements		27
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		61	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 Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or	English Composition or		ENGLISH 1160 or	Writing and Research or	
COMM 100	Oral Communications	3	SPMS 1185	Principles of Speech	3
HIST 110 or	US History 1492-1877 or		HISTORY 1300 or	American History to 1877 (preferred) or	
HIST 120 or	US History 1877-present or		HISTORY 1310 or	American History since 1877 (preferred) or	
HIST 140	Western Civilization since 1660	3	HISTORY 1200	Modern Western Civilization	3
GEOL 120	Intro to Geology	4	GEO 1110/GE 1150	Intro to Physical Geology	3
CHEM 152	General Chemistry II	5	CHEM 1320	General Chemistry II	3
BIO 101	General Biology	4	BIO SCI 1113	General Biology	4
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	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		25	Group 2 Major Requirements		25
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		64	Total Hours*		59

*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>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102 or	English Composition or		ENGLISH 1160 or	Writing and Research or	
COMM 100	Oral Communications	3	SPMS 1185	Principles of Speech	3
HIS1 110 or	US History 1492-1877 or		HISTORY 1300 or	American History to 1877 or	
HIST 120 or	US History 1877-present or		HISTORY 1310 or	American History since 1877 or	
HIST 140 or	Western Civilization since 1660 or		HISTORY 1200 or	Modern Western Civilization or	
PSC 120	Government: US, State, Local	3	POL SCI 1200	American Government	3
GEOL 120	Intro to Geology	4	GE 1150, 11119	Physical and Environmental Geology	3
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
BIO 101 or	General Biology or		BIO SCI 1113 or	General Biology or	
CHEM 152 or	General Chemistry II or		CHEM 1320 or	General Chemistry II or	
CHEM 301	Organic Chemistry I	4	CHEM 2210	Organic Chemistry I	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		20	Group 2 Major Requirements		21
Group 1 Core Requirements		39	Group 1 Core Requirements		34
Total Hours		59	Total Hours*		55

*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 Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
HIST 110 or HIST 120 or HIST 140 or PSC 120 ENG 102 or COMM 100	US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local English Composition or Oral Communications	3 3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 ENGLISH 1160 or SPMS 1185	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Writing and Research or Principles of Speech
				3 3
CIS 110 or CIS 210 PHYS 372 PHYS 312 PHYS 341	Programming I or Programming II Electronic Circuits Statics Thermal Physics	 3 3 3 3 4	CS 1971, 1981 or CS 1570, 1580 EE 2800 CIV ENG 2200 MECH ENG 2519	Intro to Programming Method and Lab (C++) or Intro to Programming and Lab (C++) Circuit Analysis I Engineering Mechanics-Statics Thermodynamics
				 3 4 3 3 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
	Group 2 Major Requirements	10		Group 2 Major Requirements 15
	Group 1 Core Requirements	39		Group 1 Core Requirements 34
	Total Hours	49		Total Hours* 49

*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 Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>	
ENG 102 or COMM 100 HIST 110 or HIST 120 or HIST 140 or PSC 120 PHYS 312 CHEM 152	English Composition or Oral Communications US History 1492-1877 or US History 1877-present or Western Civilization since 1660 or Government: US, State, Local Statics General Chemistry II	3 3 3 5	ENGLISH 1160 or SPMS 1185 HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CIV ENG 2200 CHEM 1320 CHEM 2210 or EE 2800	Writing and Research or Principles of Speech 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 or Electrical Circuits
				3 3 3 3 3 3
	<i>See your advisor for course options.</i>			Not specifically required for the degree but will satisfy Out-of-Department Technical Elective Requirement 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
	Group 2 Major Requirements	19		Group 2 Major Requirements 26
	Group 1 Core Requirements	39		Group 1 Core Requirements 34
	Total Hours	58		Total Hours* 60

*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 Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HIS1 110 or	US History 1492-1877 or		HISTORY 1300 or	American History to 1877 or	
HIST 120 or	US History 1877-present or		HISTORY 1310 or	American History since 1877 or	
HIST 140 or	Western Civilization since 1660 or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSC 120	Government: US, State, Local		POL SCI 1200	American Government	
PHYS 312	Statics	3	CIV ENG 2200*	Engineering Mechanics-Statics	3
PHYS 322	Classical Mechanics	3	MECH ENG 2350*	Engineering Mechanics-Dynamics	3
<small>*The combination of CIV ENG 2200 and MECH ENG 2350 will be substituted for MECH ENG 2340.</small>					
GEOL 120	Intro to Geology	4	GEO 1110/GE 1150	Intro to Physical Geology	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	16		Group 2 Major Requirements	21
	Group 1 Core Requirements	39		Group 1 Core Requirements	34
	Total Hours	55		Total Hours*	55

*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 Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HIS1 110 or	US History 1492-1877 or		HISTORY 1300 or	American History to 1877 or	
HIST 120 or	US History 1877-present or		HISTORY 1310 or	American History since 1877 or	
HIST 140 or	Western Civilization since 1660 or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSC 120	Government: US, State, Local		POL SCI 1200	American Government	
CIS 110 or	Programming I or		CS 1971, 1981 or	Intro to Programming Method and Lab (C++) or	3
CIS 210	Programming II	3	CS 1570, 1580	Intro to Programming and Lab (C++)	4
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	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	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

<u>Missouri Southern State University</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENG 102	English Composition	3	ENGLISH 1160	Writing and Research	3
HIS1 110 or	US History 1492-1877 or		HISTORY 1300 or	American History to 1877 or	
HIST 120 or	US History 1877-present or		HISTORY 1310 or	American History since 1877 or	
HIST 140 or	Western Civilization since 1660 or	3	HISTORY 1200 or	Modern Western Civilization or	3
PSC 120	Government: US, State, Local		POL SCI 1200	American Government	
GEOL 120	Intro to Geology	4	GE 1150/GE 1119	Physical and Environmental Geology	3
PHYS 312	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 322	Classical Mechanics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	3
PHYS 341	Thermal Physics	4	MECH ENG 2527	Thermal Analysis	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	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 Petroleum Engineering degree.