

Spelman College — Missouri S&T General Engineering Transfer Guide Effective as of Fall 2020

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>Spelman College</u>			<u>Semester</u>	<u>Missouri S&T</u>			
MATH 231	Calculus I	4		MATH 1214	Calculus for Engineers I	4	
MATH 232	Calculus II	4		MATH 1215	Calculus for Engineers II	4	
MATH 324	Calculus III	4		MATH 2222	Calculus with Analytic Geometry III	4	
MATH 365	Differential Equations	4		MATH 3304	Elementary Differential Equations	3	
PHY 151 and PHY 241 and PHY 242	Physics I: Mechanics and Physics II: Electricity and Magnetism and Physics III: Optics and Modern Physics	12		PHYSICS 1135 and PHYSICS 2135	Engineering Physics I and Engineering Physics II	8	
CHE 111, 111L	General Chemistry I and Lab	4		CHEM 1310, 1319	General Chemistry I and Lab	5	
ERG 101	Intro to Engineering	2		FR ENG 1100	Study and Careers in Engineering and Computing	1	
ENG 103	First Year Composition	4		ENGLISH 1120	Exposition and Argumentation	3	
ECON 242 or ECON 241	Principles of Microeconomics or Principles of Macroeconomics	4		ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3	
Total Hours			42	Total Hours			35

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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201 CIS 121	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US Computer Science I	4	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CS 1971, 1981	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Intro to Programming Method and Lab (C++)	3
MAT 214	Linear Algebra and Applications	4	MATH 3108	Linear Algebra I (Will satisfy the Advanced Math/Comp Sci elective requirement.)	3
	Literature Elective	3		Literature Elective	3
	See your advisor for course options.	3		Ethics Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	18		Group 2 Major Requirements	15
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	60		Total Hours*	50

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 303* or (or HIS 211 or HIS 212)	Making of the Modern World* (or Survey of American History I or Survey of American History II) <small>*HISTORY 303 is preferred; 211 or 212 will also be accepted.</small>	4	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
HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	7		Group 2 Major Requirements	6
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	49		Total Hours*	41

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

Ceramic Engineering Group 2 Major Requirements

<u>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
CHE 231 or CHE 421 or CHE 345	Organic Chemistry I (4) or Inorganic Chemistry (3) or Physical Chemistry (3)	3-4	CHEM 2210 or CHEM 2310 or CHEM 3410	Organic Chemistry I (4) or Inorganic Chemistry I (3) or Chemical Thermodynamics I (3) (Not a specific requirement. Will satisfy the advanced chemistry elective requirement.)	3-4
CHE 112	General Chemistry II	3	CHEM 1320	General Chemistry II	3
HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	HSS Elective	Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	13		Group 2 Major Requirements	12
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	55		Total Hours*	47

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
CHE 112	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHEM 231,233L	Organic Chemistry I and Lab	5	CHEM 2210, 2219	Organic Chemistry I and Lab	5
CHE 232 or CHE 301, 301L or CHE 410 or BIO 120	Organic Chemistry II or Analytical Chemistry and Lab or Biochemical Principles or Cell Biology <small>(Will satisfy science elective requirement. Select up to 9 hours from these options.)</small>	9	CHEM 2220 or CHEM 2510 or CHEM 4610 or BIO SCI 2213	Organic Chemistry II or Analytical Chemistry or General Biochemistry or Cell Biology and Lab <small>(Will satisfy science elective requirement. Select up to 9 hours from these options.)</small>	9
CIS 121 or CIS 122 or CIS 123	Computer Science I or Computer Science II or Computer Science I: Python <i>See your advisor for course options.</i>	4 3	CS 1971, 1981 or CS 1500	Intro to Programming Method and Lab(C++) or Computational Problem Solving Humanities/Social Science Elective	3 3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	28		Group 2 Major Requirements	26
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	61

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
CHE 112	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHEM 231,233L	Organic Chemistry I and Lab	5	CHEM 2210, 2219	Organic Chemistry I and Lab	5
CHE 232 or CHE 301, 301L or CHE 410 or BIO 120	Organic Chemistry II or Analytical Chemistry and Lab or Biochemical Principles or Cell Biology <small>(Will satisfy science elective requirement. Select up to 9 hours from these options.)</small>	9	CHEM 2220 or CHEM 2510 or CHEM 4610 or BIO SCI 2213	Organic Chemistry II or Analytical Chemistry or General Biochemistry or Cell Biology and Lab <small>(Will satisfy science elective requirement. Select up to 9 hours from these options.)</small>	9
CIS 121 or CIS 122 or CIS 123	Computer Science I or Computer Science II or Computer Science I: Python <i>See your advisor for course options.</i>	4 3	CS 1971, 1981 or CS 1500	Intro to Programming Method and Lab(C++) or Computational Problem Solving Humanities/Social Science Elective	3 3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	28		Group 2 Major Requirements	26
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	70		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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
	<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	7		Group 2 Major Requirements	6
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	49		Total Hours*	41

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
MAT 234	Discrete Mathematics	4	CS 1200	Discrete Math for Computer Science	3
CIS 121 or CIS 122 or CIS 123	Computer Science I or Computer Science II or Computer Science I: Python	4	CS 1971, 1981 or CS 1500	Intro to Programming Method and Lab(C++) or Computational Problem Solving	3
CHE 231 or BIO 120	Organic Chemistry I or Cell Biology	4	CHEM 2210 or BIO SCI 2213	Organic Chemistry I (4) or Cell Biology (3) <i>Will satisfy a required engineering science elective.</i>	3
MAT 214 or MAT 233	Linear Algebra and Applications or Foundations of Mathematics	4	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics <i>(Will satisfy a required math elective.)</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		Maximum Free Electives	3
	Group 2 Major Requirements	26		Group 2 Major Requirements	21
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	68		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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
CHE 231 or BIO 120	Organic Chemistry I or Cell Biology	4	CHEM 2210 or BIO SCI 2213	Organic Chemistry I (4) or Cell Biology (3) <i>Will satisfy a required engineering science elective.</i>	3
MAT 214	Linear Algebra and Applications	4	MATH 3108	Linear Algebra	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	Group 2 Major Requirements	18		Group 2 Major Requirements	15
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	60		Total Hours*	50

*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

Engineering Management Group 2 Major Requirements					
<u>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
PSY 200	General Psychology	4	PSYCH 1101	General Psychology	3
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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 121	Computer Science I	4	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
	<i>See your advisor for course options.</i>	3		Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>	3		Maximum Free Electives	3
	Group 2 Major Requirements	18		Group 2 Major Requirements	15
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	60		Total Hours*	50

*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

Environmental Engineering Group 2 Major Requirements					
<u>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303	Survey of American History I or Survey of American History II or Making of the Modern World	4	HISTORY 1300 or HISTORY 1310 or HISTORY 1200	American History to 1877 or American History since 1877 or Modern Western Civilization	3
CHE 112	General Chemistry II	3	CHEM 1320	General Chemistry II	3
BIO 110	Biological Communities, Evolution, and Biodiversity	4	BIO SCI 1113	General Biology	4
	<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	14		Group 2 Major Requirements	13
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	56		Total Hours*	48

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

Geological Engineering Group 2 Major Requirements

Geological Engineering Group 2 Major Requirements					
<u>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
BIO 110 or CHEM 112 or CHEM 231	Biological Communities, Evolution, and Biodiversity or General Chemistry II or Organic Chemistry I	4	BIO SCI 1113 or CHEM 1320 or CHEM 2210	General Biology or General Chemistry II or Organic Chemistry I or any 3-hour course in chemistry, geochemistry, or biology. Satisfies chemistry/geochemistry elective requirement.	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	14		Group 2 Major Requirements	12
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	56		Total Hours*	47

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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 121	Computer Science I	4	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MAT 214	Linear Algebra and Applications	4	MATH 3108	Linear Algebra I (Will satisfy the Advanced Math/Comp Sci elective requirement.)	3
	Literature Elective	3		Literature Elective	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	18		Group 2 Major Requirements	15
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	60		Total Hours*	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

<u>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
CHE 112	General Chemistry II	3	CHEM 1320	General Chemistry II	3
CHE 231 or CHE 421 or CHE 345 or MAT 367	Organic Chemistry I (4) or Inorganic Chemistry (3) or Physical Chemistry (3) or Applied Mathematics (4)	3-4	CHEM 2210 or CHEM 2310 or CHEM 3410 or MATH 5325	Organic Chemistry I (4) or Chemistry I (3) or Chemical Thermodynamics I (3) or Partial Differential Equations (3)	3-4
	See your advisor for course options.	3		Inorganic Technical Elective Requirement.	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	See your advisor for course options.	5		Humanities/Social Science Elective	3
	Group 2 Major Requirements	18		Maximum Free Electives	5
	Group 1 Core Requirements	42		Group 2 Major Requirements	17
	Total Hours	60		Group 1 Core Requirements	35
				Total Hours*	52

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	See your advisor for course options.	3		Humanities/Social Science Elective	3
	No free electives applied to the degree.	0		Maximum Free Electives	0
	Group 2 Major Requirements	10		Group 2 Major Requirements	9
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	52		Total Hours*	44

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
MAT 214 or MAT 233	Linear Algebra and Applications or Foundations of Mathematics	4	MATH 3108 or MATH 3109	Linear Algebra or Foundations of Mathematics	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	20		Group 2 Major Requirements	18
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	62		Total Hours*	53

*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>Spelman College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIS 211 or HIS 212 or HIS 303 or PSC 201	Survey of American History I or Survey of American History II or Making of the Modern World or National Government in the US	4	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
	<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	10		Group 2 Major Requirements	9
	Group 1 Core Requirements	42		Group 1 Core Requirements	35
	Total Hours	52		Total Hours*	44

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