

Lewis & Clark Community College — Missouri S&T

General Engineering

Transfer Guide Effective as of Fall 2024

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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
MATH 171	Calculus and Analytical Geometry I	5	MATH 1214	Calculus I Grade of C or better is required.	4
MATH 172	Calculus and Analytical Geometry II	5	MATH 1215	Calculus II Grade of C or better is required.	4
MATH 271	Calculus and Analytical Geometry III	4	MATH 2222	Calculus III Grade of C or better is required.	4
MATH 272	Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHYS 141	General Physics I	5	PHYSICS 1135	Engineering Physics I Grade of C or better is required.	4
PHYS 142	General Physics II	5	PHYSICS 2135	Engineering Physics II Grade of C or better is required.	4
CHEM 141	General Chemistry I	5	CHEM 1310, 1319	General Chemistry I and Lab	5
ENGR 101	Engineering Orientation	1	FR ENG 1100	Study and Careers in Engineering and Computing	1
ENGL 131	First Year-English I	3	ENGLISH 1120	Exposition and Argumentation	3
ECON 152 or	Principles of Microeconomics or	3	ECON 1100 or	Principles of Microeconomics or	3
ECON 151	Principles of Macroeconomics	3	ECON 1200	Principles of Macroeconomics	3
Total Hours		39	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
Biomedical Engineering/Biomufacturing or Biomaterials
Ceramic Engineering
Chemical Engineering and 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 art, English and technical communication, etymology, foreign language, music, philosophy, speech and media studies, or theatre. Your campus may have additional acceptable options. Consult with your advisor or email transfer@mst.edu with questions. See Missouri S&T online catalog at <https://catalog.mst.edu/undergraduate/degreeprogramsandcourses/> for more information.

Aerospace Engineering Group 2 Major Requirements

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
ENGL 132 or SPCH 131 or ENGL 137	First-Year English II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHYS 210	Engineering Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics - Dynamics	3	AERO ENG 2360	Dynamics	3
PHYS 246	Thermodynamics	3	MECH ENG 2519	Thermodynamics	3
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
MATH 274	Linear Algebra	3	MATH 3108	Linear Algebra I <small>Will satisfy the Advanced Math/Comp Sci elective requirement.</small>	3
	Literature Elective	3		Literature Elective	3
Ethics	Ethics Elective <small>any engineering, business, bio, social ethics approved by advisor</small>	3	Ethics	Ethics Elective <small>any engineering, business, bio, social ethics approved by advisor</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	33		Group 2 Major Requirements	33
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	72		Total Hours*	68

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 132 (or HIST 231 or HIST 232)	Western Civilization II (or American Republic: Beginnings-1877 or American Nation: 1877-Present)	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 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
ADCG 133	Intro to Architecture	3	ART 3203	Architectural Design I	3
PHSC 145	Intro Geology & Physical Geography	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENG 132, ENG 137, or SPCH 131.	3	Humanities or Social Science or Communication	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language or one communication course from this list: ENGLISH 1160, 1600, 3560 or SPMS 1185.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	21		Group 2 Major Requirements	20
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	60		Total Hours*	55

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

Biomedical Engineering-Biomanufacturing Group 2 Major Requirements

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SPCH 131	Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENGL 137	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 142	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.</small>	3
CHEM 261, 262	Organic Chemistry I and Lab	5	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHEM 263, 264 or BIOL 130 or BIOL 162	Organic Chemistry II and Lab (5) or Fundamentals of Biological Science (4) or Human Inheritance (3)	3	CHEM 2220, 2229 or BIO SCI 1113, 1219 or BIO SCI 2223	Organic Chemistry II and Lab or General Biology and Lab or General Genetics <small>Applies to degree as Track Elective.</small>	4
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)* <small>Will be substituted for CS 1500.</small>	3
PHYS 246	Thermodynamics	3	MECH ENG 2519*	Thermodynamics* <small>*The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&T course) will be substituted for CHEM ENG 2110 by the biomedical engineering department. Students must complete both courses to receive credit.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	29
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	64

*S&T advisor permission is required to transfer more than 68 credit hours toward the degree.

Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SPCH 131	Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENGL 137	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 142	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.</small>	3
CHEM 261, 262	Organic Chemistry I and Lab	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*CHEM 2219 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
CHEM 263, 264	Organic Chemistry II and Lab	5	CHEM 2220, 2229*	Organic Chemistry II and Lab* <small>CHEM 2229 Lab applies to the degree as a Track Elective (non-engineering).</small>	4
BIOL 130	Fundamentals of Biological Science	4	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)* <small>Will be substituted for CS 1500.</small>	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 210	Engineering Circuit Analysis	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. Applies to the degree as a Track Elective (Engineering).	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	37		Group 2 Major Requirements	33
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	76		Total Hours*	68

*S&T advisor permission is required to transfer more than 65 credits toward the S&T Biomedical Engineering degree.

Ceramic Engineering Group 2 Major Requirements

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 261	Organic Chemistry I	3	CHEM 2210	Organic Chemistry I (3) <small>Will satisfy the advanced chemistry elective requirement.</small>	3
CHEM 142	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.</small>	3
PHYS 244	Intro to Modern Physics	3	PHYS 2305	Intro to Modern Physics	3
ENGL 132 or SPCH 131 or HSS Elective	First-Year English II or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Principles of Speech or Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	29		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	68		Total Hours*	62

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

Chemical Engineering or Chemical Engineering - Biochemical Engineering Emphasis Group 2 Major Requirements

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SPCH 131	Public Speaking	3	SP&MS 1185	Principles of Speech	3
ENGL 137	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CHEM 142	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.</small>	3
CHEM 261, 262	Organic Chemistry I and Lab	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*The lab will apply to the degree as 1 of the 9 required science elective credits (below)</small>	4
CHEM 263	Organic Chemistry II	3	CHEM 2220	Organic Chemistry II <small>Will apply to the degree as 3 of the 9 required science elective credits (above).</small>	3
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)* <small>Will be substituted for CS 1500.</small>	3
PHYS 246	Thermodynamics	3	MECH ENG 2519*	Thermodynamics* <small>*The combination of MECH ENG 2519 AND CHEM ENG 4000 (an independent study, online S&T course) will be substituted for CHEM ENG 2110 by the chemical engineering department. Students must complete both courses to receive credit.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	31		Group 2 Major Requirements	28
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	63

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

Civil Engineering Group 2 Major Requirements

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 132 or SPCH 131 or ENGL 137	First-Year English II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
PHSC 145	Intro Geology & Physical Geography	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	21		Group 2 Major Requirements	20
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	60		Total Hours*	55

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SPCH 131	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENGL 132 or ENGL 137	First-Year English II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CIS 235	C++ Programming	3	CS 1500	Computational Problem Solving	3
PHYS 241 or PHYS 242 or PHYS 246 or PHYS 244 or CHEM 261	Applied Mechanics-Statics or Applied Mechanics-Dynamics or Thermodynamics or Intro to Modern Physics or Organic Chemistry I	3	CIV ENG 2200 or MECH ENG 2350 or MECH ENG 2519 or PHYSICS 2305 or CHEM 2210	Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (2) or Thermodynamics (3) or Intro to Modern Physics (3) or Organic Chemistry I (4) <small>Satisfies a required engineering/science elective.</small>	3
PHYS 210	Engineering Circuit Analysis	3	EE 2100**	Circuits I <small>**A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.</small>	3
MATH 274	Linear Algebra	3	MATH 3108	Linear Algebra <small>Will satisfy a required math elective.</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	27		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	66		Total Hours*	62

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SPCH 131	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENGL 132 or ENGL 137	First-Year English II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
CIS 235	C++ Programming	3	CS 1500	Computational Problem Solving	3
PHYS 241 and PHYS 242 <small>BOTH of the courses above or ONE of the courses below.</small>	Applied Mechanics-Statics (3) and Applied Mechanics-Dynamics (3) <small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small>	3	CIV ENG 2200 and MECH ENG 2350 <small>BOTH of the courses above or ONE of the courses below.</small>	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (2) <small>Both courses above combined or any one of the following courses will satisfy a required engineering science elective.</small>	3
OR PHYS 246 or PHYS 244 or CHEM 261	OR Thermodynamics (3) or Intro to Modern Physics (3) Organic Chemistry I (4)	3	OR MECH ENG 2519 or PHYSICS 2311 or CHEM 2210	OR Thermodynamics (3) or Modern Physics I (3) or Organic Chemistry I (3)	3
PHYS 210	Engineering Circuit Analysis	3	EE 2100**	Circuits I <small>**A passing grade on the Missouri S&T EE Advancement Exam I is required to receive credit for EE 2100.</small>	3
MATH 274	Linear Algebra	3	MATH 3108	Linear Algebra	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	27		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	66		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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
PSYC 131	General Psychology	3	PSYCH 1101	General Psychology	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
SPCH 131	Public Speaking	3	SPMS 1185	Principles of Speech	3
ENGL 132 or ENGL 137	First-Year English II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing	3
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHYS 210	Engineering Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 245	Mechanics of Solids	3	MECH ENG 2519	Thermodynamics	3
PHYS 246	Thermodynamics	3	CIV ENG 2210	*Will be substituted for MECH ENG 2527. Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	3		Maximum Free Electives	0
	Group 2 Major Requirements	36		Group 2 Major Requirements	32
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	75		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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 132 or SPCH 131 or ENGL 137	First-Year English II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 231 or HIST 232 or HIST 132	American Republic: Beginnings-1877 or American Nation: 1877-Present or Western Civilization II	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
PHSC 145	Intro Geology & Physical Geography	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 142	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.</small>	3
BIOL 130 or BIOL 131	Fundamentals of Biological Science or Biology: A Contemporary Approach	4	BIO SCI 1113, 1219* or BIO SCI 1113	General Biology (3) and Lab* (1) or General Biology (3) <small>*Bio Sci 1219 is not an S&T degree requirement, will transfer as general elective credit.</small>	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	30		Group 2 Major Requirements	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	69		Total Hours*	61

*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

<u>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 137	Technical Writing	3	ENGLISH 3560	Technical Writing	3
HIST 132 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	
HIST 231 or	American Republic: Beginnings-1877 or	3	HISTORY 1300 or	American History to 1877 or	3
HIST 232 or	American Nation: 1877-Present or		HISTORY 1310 or	American History since 1877 or	
POL SCI 131	American Government		POL SCI 1200	American Government	
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHSC 145	Intro Geology & Physical Geography	3	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	27		Group 2 Major Requirements	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	66		Total Hours*	61

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HIST 132 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	
HIST 231 or	American Republic: Beginnings-1877 or	3	HISTORY 1300 or	American History to 1877 or	3
HIST 232 or	American Nation: 1877-Present or		HISTORY 1310 or	American History since 1877 or	
POL SCI 131	American Government		POL SCI 1200	American Government	
ENGL 132 or	First-Year English II or		ENGLISH 1160 or	Writing and Research or	
SPCH 131 or	Public Speaking or	3	SPMS 1185 or	Principles of Speech or	3
ENGL 137	Technical Writing		ENGLISH 3560	Technical Writing	
CIS 235	C++ Programming	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
PHYS 210	Engineering Circuit Analysis	3	EE 2800	Electrical Circuits	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics - Dynamics	3	MECH ENG 2360	Dynamics	3
PHYS 246	Thermodynamics	3	MECH ENG 2519	Thermodynamics	3
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
MATH 274	Linear Algebra	3	MATH 3108	Linear Algebra I	3
	Literature Elective	3		Will satisfy the Advanced Math/Statistics elective requirement.	
				Literature Elective	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	33		Group 2 Major Requirements	33
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	72		Total Hours*	68

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 132 or SPCH 131 or ENGL 137	First-Year English II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	Writing and Research or Principles of Speech or Technical Writing	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 142	General Chemistry II	5	CHEM 1320, 1510*	General Chemistry II (3) and Qualitative Analysis (2) <small>*CHEM 1510 is not an S&T degree requirement. Will transfer as general credit.</small>	3
CHEM 261 or PHYS 210 or PHYS 244	Organic Chemistry or Engineering Circuit Analysis or Intro to Modern Physics	3	CHEM 2210 or EE 2800 or PHYSICS 2305	Organic Chemistry I (3) or Electrical Circuits (3) or Intro to Modern Physics (3) <small>Not specifically required for the degree but will satisfy out-of-department technical elective requirement</small>	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Electives	Maximum Free Electives	5	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	31		Group 2 Major Requirements	27
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	70		Total Hours*	62

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 132 or ENGL 137	First-Year English II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	Writing and Research or Technical Writing or	3
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	Modern Western Civilization or American History to 1877 or American History since 1877 or American Government	3
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
PHYS 246	Thermodynamics	3	MECH ENG 2519	Thermodynamics <small>*Will be substituted for MECH ENG 2527.</small>	3
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	Mechanics of Materials	3
PHSC 145	Intro Geology & Physical Geography	3	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	27		Group 2 Major Requirements	26
	Group 1 Core Requirements	39		Group 1 Core Requirements	35
	Total Hours	66		Total Hours*	61

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 132 or SPCH 131 or ENGL 137	First-Year English II or Public Speaking or Technical Writing	3	ENGLISH 1160 or SPMS 1185 or ENGLISH 3560	3	
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	3	
CIS 235	C++ Programming	3	CS 1971, 1981	3	
MATH 274	Linear Algebra	3	MATH 3108	3	
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	3	
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	3	
PHYS 210	Engineering Circuit Analysis	3	EE 2800	3	
PHYS 246	Thermodynamics	3	MECH ENG 2519	3	
PHYS 244	Intro to Modern Physics	3	PHYSICS 2305	3	
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	3	
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	3	
Electives	Maximum Free Electives	6	Electives	6	
	Group 2 Major Requirements	39		39	
	Group 1 Core Requirements	39		35	
	Total Hours	78		Total Hours*	74

*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>Lewis & Clark Community College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGL 132 or ENGL 137	First-Year English II or Technical Writing	3	ENGLISH 1160 or ENGLISH 3560	3	
HIST 132 or HIST 231 or HIST 232 or POL SCI 131	Western Civilization II or American Republic: Beginnings-1877 or American Nation: 1877-Present or American Government	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200	3	
PHSC 145	Intro Geology & Physical Geography	3	GEOLOGY 1110 (GEO ENG 1150)	3	
PHYS 241	Applied Mechanics-Statics	3	CIV ENG 2200	3	
PHYS 242	Applied Mechanics-Dynamics	3	MECH ENG 2350	2	
PHYS 245	Mechanics of Solids	3	CIV ENG 2210	3	
PHYS 246	Thermodynamics	3	MECH ENG 2519	3	
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	3	
Humanities or Social Science	Any history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language.	3	Humanities or Social Science	3	
	<i>No free electives applied to the degree.</i>	0		0	
	Group 2 Major Requirements	27		26	
	Group 1 Core Requirements	39		35	
	Total Hours	66		Total Hours*	61

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