

Illinois Central 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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
MATH 222	Calculus and Analytical Geometry I	5	MATH 1214	Calculus I	4
MATH 223	Calculus and Analytical Geometry II	4	MATH 1215	Calculus II	4
MATH 224	Calculus and Analytical Geometry III	4	MATH 2222	Calculus III	4
MATH 250	Differential Equations	3	MATH 3304	Elementary Differential Equations	3
PHYS 211 and PHYS 212 and PHYS 213*	Engineering Physics: Mechanics (4) and Engineering Physics: Electricity/Magnetism (4) and Engineering Physics: Thermodynamics (2) <small>All three courses are required to receive full transfer credit.</small>	10	PHYSICS 1135 and PHYSICS 2135	Engineering Physics I and Engineering Physics II	8
CHEM 130	General Chemistry	4	CHEM 1310, 1319	General Chemistry I and Lab	5
ENGL 110	Composition I	3	ENGLISH 1120	Exposition and Argumentation	3
ECON 111 or ECON 110	Principles of Microeconomics or Principles of Macroeconomics	3	ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3
Total Hours					36
					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
Biomedical Engineering/Biomaterials 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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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 111 or COMM 110	Composition II or Communication: Process and Practice	3	ENGLISH 1160 or SPMS 11850	Writing and Research or Principles of Speech	3
ENGR 230 or CMPSC 125	Programming Engineering Applications or Computer Science I: Programming in C++	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
ENGR 240	Engineering Circuit Analysis	4	EE 2800	Electrical Circuits	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MATH 230	Linear Algebra	3	MATH 3108	Linear Algebra I <small>Will satisfy the Advanced Math/Comp Sci elective requirement.</small>	3
Literature	Literature Elective	3	Literature	Literature Elective	3
Ethics	Ethics Elective <small>Engineering, business, bio, social or other ethics approved by advisor.</small>	3	Ethics	Ethics Elective <small>Engineering, business, bio, social or other ethics approved by advisor.</small>	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	32		Group 2 Major Requirements	31
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	68		Total Hours*	65

*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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
HIST 118* (or HIST 201 or HIST 202)	Modern Western Civilization* (or American History to 1877 or American History Since 1877)	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
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ARCTK 114	Surveying	2	CIV ENG 2401	Fundamentals of Surveying	3
EASC 116	Intro to Geology	4	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: ENGL 111, ENGL 201, or COMM 110.	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	25		Group 2 Major Requirements	24
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	61		Total Hours*	58

*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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110	Intro to Engineering	1	FR ENG 1100	Study and Careers in Engineering and Computing	1
COMM 110	Communication: Process and Practice	3	SP&MS 1185	Principles of Speech	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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 132	General Chemistry	4	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 220	Organic Chemistry	5	CHEM 2210, 2219	Organic Chemistry I and Lab	4
CHEM 230 or BIOL 111 or BIOL 150	Organic Chemistry (4) or Concepts in Biology (4) or Genetics (3)	4	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
BIOL 140	Human Anatomy and Physiology	4	BIO SCI 3333, 3339	Anatomy and Physiology I and Lab	4
CMPSC 212 or CMPSC 235 or ENGR 230* or CMPSC 125*	CSII: Advanced programming in C++ or CS III: Advanced Programming in JAVA or Programming Engineering Applications or CS I: Programming in C++	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Will be substituted for CS 1500.</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	30		Group 2 Major Requirements	28
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	66		Total Hours*	62

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

Biomedical Engineering-Biomaterials Group 2 Major Requirements

<u>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110	Intro to Engineering	1	FR ENG 1100	Study and Careers in Engineering and Computing	1
COMM 110	Communication: Process and Practice	3	SP&MS 1185	Principles of Speech	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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 132	General Chemistry	4	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 220	Organic Chemistry	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 230	Organic Chemistry	4	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 111	Concepts in Biology	4	BIO SCI 1113*, 1219*	General General Biology* and Lab* <small>*Applies to degree as Track Elective (Non-engineering).</small>	4
BIOL 140	Human Anatomy and Physiology	4	BIO SCI 3333, 3339	Human Anatomy and Physiology I and Lab	4
CMPSC 212 or CMPSC 235 or ENGR 230* or CMPSC 125*	CSII: Advanced programming in C++ or CS III: Advanced Programming in JAVA or Programming Engineering Applications or CS I: Programming in C++	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Will be substituted for CS 1500.</small>	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives	0
	Group 2 Major Requirements	34		Group 2 Major Requirements	32
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	70		Total Hours*	66

*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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 220	Organic Chemistry	5	CHEM 2210, 2219*	Organic Chemistry I (3) and Lab* (1) <small>CHEM 2210 will satisfy the advanced chemistry elective requirement. *CHEM 2219 is not an S&T degree requirement, will transfer as general elective credit.</small>	3
CHEM 132	General Chemistry	4	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
ENGL 111 or COMM 110 or HSS Elective	Composition II or Communication: Process and Practice or Any 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	31		Group 2 Major Requirements	28
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	67		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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
COMM 110	Communication: Process and Practice	3	SP&MS 1185	Principles of Speech	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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 132	General Chemistry	4	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 220	Organic Chemistry	5	CHEM 2210, 2219*	Organic Chemistry I and Lab* <small>*The lab will apply to the degree as 1 of the 9 science elective credits (below).</small>	4
CHEM 230 or BIOL 210	Organic Chemistry or Microbiology	4	CHEM 2220 or BIO SCI 3313	Organic Chemistry II (3) or Microbiology (4) <small>Will partially satisfy science elective requirement. Select up to 9 hours from these options or CHEM 2219 Organic Chemistry Lab.</small>	8
CMPSC 212 or CMPSC 235 or ENGR 230* or CMPSC 125*	CSII: Advanced programming in C++ or CS III: Advanced Programming in JAVA or Programming Engineering Applications or CS I: Programming in C++	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Will be substituted for CS 1500.</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	29		Group 2 Major Requirements	31
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	65		Total Hours*	65

*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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
ENGL 111 or COMM 110	Composition II or Communication: Process and Practice	3	ENGLISH 1160 or SPMS 11850	Writing and Research or Principles of Speech	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
EASC 116	Intro to Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ARCTK 114	Surveying	2	CIV ENG 2401	Fundamentals of Surveying	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	28		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	64		Total Hours*	61

*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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110	Intro to Engineering	1	FR ENG 1100	Study and Careers in Engineering	1
COMM 110	Communication: Process and Practice	3	SPMS 1185	Principles of Speech	3
ENGL 111	Composition II	3	ENGLISH 1160	Writing and Research	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
CMPSC 212 or CMPSC 235 or ENGR 230* or CMPSC 125*	CSII: Advanced programming in C++ or CS III: Advanced Programming in JAVA or Programming Engineering Applications or CS I: Programming in C++	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Will be substituted for CS 1500.</small>	3
ENGR 251 and ENGR 252 or PHYS 214 or CHEM 220 or BIOL 150	Statics (3) or Dynamics (3) or Engineering Physics: Modern Physics (2) or Organic Chemistry (5) or Genetics (3)	3	CIV ENG 2200 or MECH ENG 2350 or PHYSICS 2311 or CHEM 2210 or BIO SCI 2223	Engineering Mechanics-Statics (3) or Engineering Mechanics-Dynamics (2) or Modern Physics I (3) Organic Chemistry I (3) or General Genetics (3) <small>Satisfies a required engineering/science elective.</small>	3
ENGR 240	Engineering Circuit Analysis	4	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 230	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	29		Group 2 Major Requirements	28
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	65		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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
COMM 110	Communication: Process and Practice	3	SPMS 1185	Principles of Speech	3
ENGL 111	Composition II	3	ENGLISH 1160	Writing and Research	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
CMPSC 212 or CMPSC 235 or ENGR 230* or CMPSC 125*	CSII: Advanced programming in C++ or CS III: Advanced Programming in JAVA or Programming Engineering Applications or CS I: Programming in C++	3	CS 1500 or CS 1971,1981*	Computational Problem Solving or Intro to Programming Methodology and Lab* (C++) <small>*Will be substituted for CS 1500.</small>	3
ENGR 251 and ENGR 252 BOTH of the courses above or ONE of the courses below. OR PHYS 214 or CHEM 220 or BIOL 150	Statics (3) and Dynamics (3) Both courses above combined or any one of the following courses will satisfy a required engineering science elective. OR Engineering Physics: Modern Physics (2) or Organic Chemistry (5) or Genetics (3)	3	CIV ENG 2200 and MECH ENG 2350 BOTH of the courses above or ONE of the courses below. OR PHYSICS 2311 or CHEM 2210 or BIO SCI 2213	Engineering Mechanics-Statics (3) and Engineering Mechanics-Dynamics (2) Both courses above combined or any one of the following courses will satisfy a required engineering science elective. OR Modern Physics I (3) Organic Chemistry I (3) or General Genetics (3)	3
ENGR 240	Engineering Circuit Analysis	4	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 230	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	32		Group 2 Major Requirements	31
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	68		Total Hours*	65

*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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
PSY 110	Intro to Psychology	3	PSYCH 1101	General Psychology	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
COMM 110	Communication: Process and Practice	3	SPMS 1185	Principles of Speech	3
ENGL 111	Composition II	3	ENGLISH 1160	Writing and Research	3
ENGR 230 or CMPSC 125	Programming Engineering Applications or Computer Science I: Programming in C++	3	CS 1971, 1981 or CS 1972, 1982 or CS 1570, 1580	Intro to Programming Method and Lab (C++) (3) or Intro to MATLAB Programming and Lab (3) or Intro to Programming and Lab (C++) (4)	3
ENGR 240	Engineering Circuit Analysis	4	EE 2800	Electrical Circuits	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	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>	3	Electives	Maximum Free Electives	0
	Group 2 Major Requirements	38		Group 2 Major Requirements	33
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	74		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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
ENGL 111 or COMM 110	Composition II or Communication: Process and Practice	3	ENGLISH 1160 or SPMS 11850	Writing and Research or Principles of Speech	3
HIST 118 or HIST 201 or HIST 202	Modern Western Civilization or American History to 1877 or American History Since 1877	3	HISTORY 1200 or HISTORY 1300 or HISTORY 1310	Modern Western Civilization or American History to 1877 or American History since 1877	3
EASC 116	Intro to Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
CHEM 132	General Chemistry	4	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 111	Concepts in Biology	4	BIO SCI 1113, 1219*	General Biology (3) and Lab* (1) <small>*BIO SCI 1219 is not an S&T degree requirement, will transfer as general elective credit.</small>	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	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	34		Group 2 Major Requirements	30
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	70		Total Hours*	64

*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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
CMPSC 212 or CMPSC 235 or ENGR 230 or CMPSC 125	CSII: Advanced programming in C++ or CS III: Advanced Programming in JAVA or Programming Engineering Applications or CS I: Programming in C++	3	CS 1500 or CS 1971,1981	Computational Problem Solving or Intro to Programming Methodology (C++) and Lab	3
EASC 116	Intro to Geology	4	GEO ENG 1150 (GEOLOGY 1110)	Physical and Environmental Geology	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	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	29		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	65		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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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 111 or COMM 110	Composition II or Communication: Process and Practice	3	ENGLISH 1160 or SPMS 11850	Writing and Research or Principles of Speech	3
ENGR 230 or CMPSC 125	Programming Engineering Applications or Computer Science I: Programming in C++	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
ENGR 240	Engineering Circuit Analysis	4	EE 2800	Electrical Circuits	3
ENGR 251	Statics	3	MECH ENG 2360	Dynamics	3
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
MATH 230	Linear Algebra	3	MATH 3108	Linear Algebra I <small>Will satisfy the Advanced Math/Statistics elective requirement.</small>	3
Literature	Literature Elective	3	Literature	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	32		Group 2 Major Requirements	31
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	68		Total Hours*	65

*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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
ENGL 111 or COMM 110	Composition II or Communication: Process and Practice	3	ENGLISH 1160 or SPMS 11850	Writing and Research or Principles of Speech	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
CHEM 132	General Chemistry	4	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 220 or ENGR 240 or PHYS 214	Organic Chemistry (5) or Engineering Circuit Analysis (4) or Engineering Physics: Modern Physics (2)	3	CHEM 2210 or EE 2800 or PHYSICS 2311	Organic Chemistry I or Electrical Circuits or Modern Physics I <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	3	Electives	Maximum Free Electives	3
	Group 2 Major Requirements	32		Group 2 Major Requirements	31
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	68		Total Hours*	65

*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

Illinois Central College		Semester	Missouri S&T		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
ENGL 111 or ENGL 201	Composition II or Technical Communications	3	ENGLISH 1160 or ENGLISH 1600	Writing and Research or Intro to Technical Communications	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
EASC 116	Intro to Geology	4	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	29		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	65		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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
ENGL 111 or COMM 110	Composition II or Communication: Process and Practice	3	ENGLISH 1160 or SPMS 11850	Writing and Research or Principles of Speech	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
ENGR 230 or CMPSC 125	Programming Engineering Applications or Computer Science I: Programming in C++	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
MATH 230	Linear Algebra	3	MATH 3108	Linear Algebra	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 253	Mechanics of Materials	3	CIV ENG 2210	Mechanics of Materials	3
ENGR 240	Engineering Circuit Analysis	4	EE 2800	Electrical Circuits	3
PHYS 214	Engineering Physics: Modern Physics	3	PHYSICS 2311	Modern Physics	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	6	Electives	Maximum Free Electives	6
	Group 2 Major Requirements	41		Group 2 Major Requirements	40
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	77		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>Illinois Central College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
ENGR 110 and ENGR 113*	Intro to Engineering (1) and Engineering Graphics (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4	FR ENG 1100 and MECH ENG 1720*	Study and Careers in Engineering (1) and Design with Computer Application (3) <small>*The combination of ENGR 110 and 113 is equivalent to the combination of FR Eng 1100 and MECH ENG 1720.</small>	4
ENGL 111 or ENGL 201	Composition II or Technical Communications	3	ENGLISH 1160 or ENGLISH 1600	Writing and Research or Intro to Technical Communications	3
HIST 118 or HIST 201 or HIST 202 or POLSC 115	Modern Western Civilization or American History to 1877 or American History Since 1877 or American National 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
EASC 116	Intro to Geology	4	GEOLOGY 1110 (GEO ENG 1150)	Physical and Environmental Geology	3
ENGR 251	Statics	3	CIV ENG 2200	Engineering Mechanics-Statics	3
ENGR 252	Dynamics	3	MECH ENG 2350	Engineering Mechanics-Dynamics	2
ENGR 253	Mechanics of Materials	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	29		Group 2 Major Requirements	27
	Group 1 Core Requirements	36		Group 1 Core Requirements	34
	Total Hours	65		Total Hours*	61

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