

North Central Missouri 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.

North Central Missouri College			Semester	Missouri S&T		
MT 150 and MT 250	Geometry and Calculus I and Geometry and Calculus II	10		MATH 1214 and MATH 1215	Calculus for Engineers I and Calculus for Engineers II <small>Grade of C or better is required.</small>	8
MT 260	Geometry and Calculus III	5		MATH 2222	Calculus with Analytic Geometry III <small>Grade of C or better is required.</small>	4
PS 210	General Physics I	5		PHYSICS 1135	Engineering Physics I <small>Grade of C or better is required.</small>	4
PS 212	General Physics II	5		PHYSICS 2135	Engineering Physics II <small>Grade of C or better is required.</small>	4
CH 110	General Chemistry I	5		CHEM 1310, 1319	General Chemistry I and Lab	5
EN 101	English I	3		ENGLISH 1120	Exposition and Argumentation	3
EC 252 or EC 253	Microeconomics or Macroeconomics	3		ECON 1100 or ECON 1200	Principles of Microeconomics or Principles of Macroeconomics	3
Total Hours			36			Total Hours 31

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>North Central Missouri College</u>	<u>Semester</u>		<u>Missouri S&T</u>
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government
EN 102 or SP 175	English II or Speech Communications	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech
IT 243	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)
	Literature Elective	3		Literature Elective
	<i>See your advisor for course options.</i>			Ethics Elective
	<i>No free electives applied to the degree.</i>			Maximum Free Electives
	Group 2 Major Requirements	12		Group 2 Major Requirements
	Group 1 Core Requirements	36		Group 1 Core Requirements
	Total Hours	48		Total Hours*
				46

*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>North Central Missouri College</u>	<u>Semester</u>		<u>Missouri S&T</u>
HI 103 (or HI 104 or HI 102)	American History to 1877 (or American History since 1877 or Western Civilization Since 1700)	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>
EN 102 or SP 175 or HSS Elective	English II or Speech Communications 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 Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine art, literature, foreign language
	<i>No free electives applied to the degree.</i>	0		Maximum Free Electives
	Group 2 Major Requirements	6		Group 2 Major Requirements
	Group 1 Core Requirements	36		Group 1 Core Requirements
	Total Hours	42		Total Hours*
				37

*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>North Central Missouri College</u>	<u>Semester</u>	<u>Missouri S&T</u>	
HI 103 or HI 104 or HI 102 or PL 216	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3
CH 112	5	CHEM 1320	3
EN 102 or SP 175 or HSS Elective	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	3
	3		3
	0		0
	14		12
	36		31
Total Hours	50	Total Hours*	43

*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

EN 102	3	ENGLISH 1160	3
HI 103 or HI 104 or HI 102 or PL 216	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	3
CH 112	5	CHEM 1320	3
BI 243	4	BIO SCI 3313, 3319	5
IT 243	3	CS 1971, 1981	3
SP 175	3	SP&MS 1185	3
	3		3
	0		0
	24		23
	36		31
Total Hours	60	Total Hours*	54

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102	English II	3	ENGLISH 1160	Writing and Research	3
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CH 112	General Chemistry II	5	CHEM 1320	General Chemistry II	3
BI 243	Microbiology	4	BIO SCI 3313, 3319	Microbiology and Lab <i>Will satisfy science elective requirement.</i>	5
IT 243	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
SP 175	Speech Communications	3	SP&MS 1185	Principles of Speech	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	24		Group 2 Major Requirements	23
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	60		Total Hours*	54

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102 or SP 175	English II or Speech Communications	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
	<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	9		Group 2 Major Requirements	9
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	45		Total Hours*	40

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SP 175	Speech Communications	3	SPMS 1185	Public Speaking	3
EN 102	English II	3	ENGLISH 1160	Writing and Research	3
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 or	3
HI 102 or	Western Civilization Since 1700 or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
IT 243	Programming I	3	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	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	54		Total Hours*	49

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
SP 175	Speech Communications	3	SPMS 1185	Public Speaking	3
EN 102	English II	3	ENGLISH 1160	Writing and Research	3
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 or	3
HI 102 or	Western Civilization Since 1700 or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
	<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	15		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	51		Total Hours*	46

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
PY 121	General Psychology	3	PSYCH 1101	General Psychology	3
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 or	3
HI 102 or	Western Civilization Since 1700 or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
EN 102 or	English II or	3	ENGLISH 1160 or	Writing and Research or	3
SP 175	Speech Communications		SPMS 1185	Principles of Speech	
IT 243	Programming I	3	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	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	54		Total Hours*	49

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

Environmental Engineering Group 2 Major Requirements

Environmental Engineering Group 2 Major Requirements					
<u>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102 or	English II or	3	ENGLISH 1160 or	Writing and Research or	3
SP 175	Speech Communications		SPMS 1185	Principles of Speech	
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 or	3
HI 102	Western Civilization Since 1700		HISTORY 1200	Modern Western Civilization	
CH 112	General Chemistry II	5	CHEM 1320	General Chemistry II	3
BI 100	General Biology	5	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	19		Group 2 Major Requirements	16
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	55		Total Hours*	47

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102 or SP 175	English II or Speech Communications	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
BI 100 or CH 112	General Biology or General Chemistry II	5	BIO SCI 1113 or CHEM 1320	General Biology or General Chemistry II <small>or any 3-hour course in chemistry, geochemistry, or biology. Satisfies chemistry/geochemistry elective requirement.</small>	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	17		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	53		Total Hours*	46

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

Mechanical Engineering Group 2 Major Requirements

<u>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
EN 102 or SP 175	English II or Speech Communications	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
IT 243	Programming I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
	Literature Elective	3		Literature 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	15		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	51		Total Hours*	46

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102 or SP 175	English II or Speech Communications	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
CH 112	General Chemistry II	5	CHEM 1320	General Chemistry II	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>	5		Maximum Free Electives	5
	Group 2 Major Requirements	22		Group 2 Major Requirements	20
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	58		Total Hours*	51

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102	English II	3	ENGLISH 1160	Writing and Research	3
HI 103 or HI 104 or HI 102 or PL 216	American History to 1877 or American History since 1877 or Western Civilization Since 1700 or National Government	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government	3
	<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	12		Group 2 Major Requirements	12
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	48		Total Hours*	43

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102	English II	3	ENGLISH 1160	Writing and Research	3
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 or	3
HI 102 or	Western Civilization Since 1700 or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
	<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	18		Group 2 Major Requirements	18
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	54		Total Hours*	49

*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>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
EN 102	English II	3	ENGLISH 1160	Writing and Research	3
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 or	3
HI 102 or	Western Civilization Since 1700 or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
	<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	12		Group 2 Major Requirements	12
	Group 1 Core Requirements	36		Group 1 Core Requirements	31
	Total Hours	48		Total Hours*	43

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