

North Central Missouri College — Missouri S&T

General Engineering Transfer Guide

Effective as of Fall 2017

Complete Group 1 - Core Requirements and Group 2 - Major Requirements for major of choice.

Group 1 - Core Requirements: All Majors Take All Courses

Engineering students take all Group 1 - Core Requirements and Group 2 - Major Requirements for major of choice. Math prerequisites: While they are not part of Missouri S&T engineering degree requirements, algebra and trigonometry skills are critical to success in calculus. To prepare for entry into calculus, students should follow math placement testing and advising recommendations at their college.

<u>North Central Missouri College</u>		<u>Semester</u>	<u>Missouri S&T</u>		
MT 150 and MT 250**	Analytical Geometry and Calculus I and Analytical Geometry and Calculus II	10	MATH 1214 and MATH 1215	Calculus for Engineers I and II Grade of C or better is required.	4
MT 260	Analytical Geometry and Calculus III	5	MATH 2222	Calculus with Analytic Geometry III Grade of C or better is required.	4
PS 210	General Physics I	5	PHYSICS 1135	Engineering Physics I Grade of C or better is required.	4
PS 212	General Physics II	5	PHYSICS 2135	Engineering Physics II Grade of C or better is required.	4
CH 110	General Chemistry I and Lab	5	CHEM 1310, 1319	General Chemistry I and Lab	5
EN 101	English Composition 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 27

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 II 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 EN 175	English Composition II or Speech	3	ENGLISH 1160 or SPMS 1185	Writing and Research or Principles of Speech	3
IT 243	Programming in C++ I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	3
	<i>See your advisor for course options.</i>			Literature Elective	3
	<i>See your advisor for course options.</i>			Ethics Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	9		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	45		Total Hours*	42

*S&T advisor permission is required to transfer more than 66 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 102 or HI 103 or HI 104	Western Civilization II 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
				<small>*HISTORY 1200 is preferred; 1300 or 1310 will also be accepted.</small>	
EN 102 or EN 175	English Composition II or Speech	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	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	6		Group 2 Major Requirements	6
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	42		Total Hours*	33

*S&T advisor permission is required to transfer more than 66 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 CH 112	American History to 1877 or American History since 1877 or Western Civilization II or National Government General Chemistry II	3 5	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 3
EN 102 or EN 175	English Composition II or Speech	3	ENGLISH 1160 or SPMS 1185 or HSS Elective	Writing and Research or Public Speaking or Humanities/Social Science Elective: history, economics, political science, sociology, psychology, philosophy, fine Humanities/Social Science Elective	3 3
	<i>See your advisor for course options.</i>				
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	11		Group 2 Major Requirements	12
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	47		Total Hours*	39

*S&T advisor permission is required to transfer more than 66 credits toward the S&T Ceramic Engineering degree.

Chemical Engineering Group 2 Major Requirements

	<u>North Central Missouri College</u>	<u>Semester</u>		<u>Missouri S&T</u>	
EN 102	English Composition II	3	ENGLISH 1160	Writing and Research	3
HI 103 or HI 104 or HI 102 or PL 216 CH 112	American History to 1877 or American History since 1877 or Western Civilization II or National Government General Chemistry II	3 5	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 3
IT 243	Programming in C++ I	3	CHEM 1320 CS 1971, 1981	General Chemistry II Intro to Programming Method and Lab (C++)	5 3
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	14		Group 2 Major Requirements	20
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	50		Total Hours*	47

*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 Composition II	3	ENGLISH 1160	Writing and Research	3
HI 103 or HI 104 or HI 102 or PL 216 CH 112	American History to 1877 or American History since 1877 or Western Civilization II or National Government General Chemistry II	3 5	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 3
IT 243	Programming in C++ I	3	CHEM 1320 CS 1971, 1981	General Chemistry II Intro to Programming Method and Lab (C++)	5 3
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	14		Group 2 Major Requirements	20
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	50		Total Hours*	47

*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 EN 175	English Composition II or Speech 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 II 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>		Humanities/Social Science Elective 3
<i>No free electives applied to the degree.</i>		Maximum Free Electives 0
Group 2 Major Requirements 6		Group 2 Major Requirements 9
Group 1 Core Requirements 36		Group 1 Core Requirements 27
Total Hours 42		Total Hours* 36

*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 3	SPMS 1185 Public Speaking 3
EN 102	English Composition 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 II 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>		Humanities/Social Science Elective 3
<i>See your advisor for course options.</i>		Maximum Free Electives 3
Group 2 Major Requirements 9		Group 2 Major Requirements 15
Group 1 Core Requirements 36		Group 1 Core Requirements 27
Total Hours 45		Total Hours* 42

*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 3	SPMS 1185 Public Speaking 3
EN 102	English Composition 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 II 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>		Humanities/Social Science Elective 3
<i>See your advisor for course options.</i>		Maximum Free Electives 3
Group 2 Major Requirements 9		Group 2 Major Requirements 15
Group 1 Core Requirements 36		Group 1 Core Requirements 27
Total Hours 45		Total Hours* 42

*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

North Central Missouri College		Semester	Missouri S&T		
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 II or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
EN 102 or	English Composition II or	3	ENGLISH 1160 or	Writing and Research or	3
EN 175	Speech		SPMS 1185	Principles of Speech	
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>			Maximum Free Electives	3
	Group 2 Major Requirements	9		Group 2 Major Requirements	15
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	45		Total Hours*	42

*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

North Central Missouri College		Semester	Missouri S&T		
EN 102 or	English Composition II or	3	ENGLISH 1160 or	Writing and Research or	3
EN 175	Speech		SPMS 1185	Principles of Speech	
HI 103 or	American History to 1877 or		HISTORY 1300 or	American History to 1877 (preferred) or	
HI 104 or	American History since 1877 or	3	HISTORY 1310 or	American History since 1877 (preferred) or	3
HI 102	Western Civilization II		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>			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	16		Group 2 Major Requirements	16
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	52		Total Hours*	43

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

Geological Engineering Group 2 Major Requirements

North Central Missouri College		Semester	Missouri S&T		
EN 102 or	English Composition II or	3	ENGLISH 1160 or	Writing and Research or	3
EN 175	Speech		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 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	
PL 216	National Government		POL SCI 1200	American Government	
BI 100 or	General Biology or	5	BIO SCI 1113 or	General Biology or	
CH 112	General Chemistry II		CHEM 1320	General Chemistry II	
	<i>See your advisor for course options.</i>			<i>or any 3-hour course in chemistrv, neochemistrv, or biologv</i>	
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	11		Group 2 Major Requirements	12
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	47		Total Hours*	39

*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 EN 102 or EN 175	American History to 1877 or American History since 1877 or Western Civilization II or National Government English Composition II or Speech	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 ENGLISH 1160 or SPMS 1185	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government Writing and Research or Principles of Speech	3
					3
IT 243	Programming in C++ I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	4
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>No free electives applied to the degree.</i>			Maximum Free Electives	0
	Group 2 Major Requirements	0		Group 2 Major Requirements	3
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	36		Total Hours*	30

*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 EN 175	English Composition II or Speech	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 CH 112	American History to 1877 or American History since 1877 or Western Civilization II or National Government General Chemistry II	3	HISTORY 1300 or HISTORY 1310 or HISTORY 1200 or POL SCI 1200 CHEM 1320	American History to 1877 or American History since 1877 or Modern Western Civilization or American Government General Chemistry II	3
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>			Humanities/Social Science Elective	3
	<i>See your advisor for course options.</i>			Maximum Free Electives	5
	Group 2 Major Requirements	11		Group 2 Major Requirements	20
	Group 1 Core Requirements	36		Group 1 Core Requirements	27
	Total Hours	47		Total Hours*	47

*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 Composition 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	
HI 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	3
PL 216	National Government		POL SCI 1200	American Government	
				Humanities/Social Science Elective	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		6			12
Group 2 Major Requirements		36	Group 2 Major Requirements		27
Group 1 Core Requirements		42	Group 1 Core Requirements		39
Total Hours			Total Hours*		

*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 Composition 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	
HI 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	3
PL 216	National Government		POL SCI 1200	American Government	
					3
					3
IT 243	Programming in C++ I	3	CS 1971, 1981	Intro to Programming Method and Lab (C++)	4
				Humanities/Social Science Elective	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	6
		9			18
Group 2 Major Requirements		36	Group 2 Major Requirements		27
Group 1 Core Requirements		45	Group 1 Core Requirements		45
Total Hours			Total Hours*		

*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 Composition 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	
HI 102 or	Western Civilization II or		HISTORY 1200 or	Modern Western Civilization or	3
PL 216	National Government		POL SCI 1200	American Government	
				Humanities/Social Science Elective	3
				Humanities/Social Science Elective	3
				Maximum Free Electives	0
		0			6
Group 2 Major Requirements		36	Group 2 Major Requirements		27
Group 1 Core Requirements		36	Group 1 Core Requirements		33
Total Hours			Total Hours*		

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