



Year One – Montgomery College

Fall Semester		Cr	Spring Semester		Cr
CHEM131 Principles of Chemistry I		4	CHEM132 Principles of Chemistry II		4
ENES100 Intro to Engineering Design		3	ENGL102 or ENGL103, English Foundation		3
ENGL101 Introduction to College Writing *		3	MATH182 Calculus II		4
MATH181 Calculus		4	ENES102 Statics		3
Arts Distribution		3	PHYS161 Mechanics and Heat		3
Total Credits		14-17	Total Credits		17

Year Two – Montgomery College

Fall Semester		Cr	Spring Semester		Cr
CHEM203 Organic Chemistry I		5	Humanities Distribution, language recomb. ††		3
MATH280 Multivariable Calculus		4	MATH282 Differential Equations		3
HLTH100 Principles of Healthier Living		1	CHEM204 Organic Chemistry II		5
PHYS262 Electricity and Magnetism		4	Behavioral and Social Sciences Distribution‡		3
Behavioral and Social Science s Distribution ‡		3	ENES240 Scientific Engineering Computation		3
Total Credits		17	Total Credits		17

Apply to graduate from Montgomery College with an Associate of Science in General Engineering

Students must enroll in and successfully complete ENCH 215 - Chemical Engineering Analysis(3 credits) and an Advanced Science Elective during the summer (see UMBC advisor) in order to begin the following academic year at junior standing. Please note that the gateway requirements must also be successfully completed.

* If needed for EN102, if not no substitution required.

‡ Select from two different disciplines, one course must also meet MC's Global & Cultural requirement

††All UMBC students are required to complete language at 201 level, students should plan to complete language pre-requisites unless exempt, see exceptions here: www.umbc.edu/ml/gfrs.html

Students are admitted to the Chemical Engineering program only when they pass the following Gateway courses with at least two B's and two C's: MATH 152 (MATH 182), and ENES 101 (ENES 100) and CHEM 102 (CHEM 132), and ENCH 215 (@UMBC) . Students must also pass ENES 240 and CHEM 131 with a grade of C or better.

Upon enrollment, UMBC will determine the transferability of any courses not taken at MC. Students should be prepared to provide syllabi, course descriptions, exams and homework as requested.

Year Three – UMBC

Fall Semester		Cr	Spring Semester		Cr
ENCH 225 Chem Eng Prob Solv & Exp Design		4	CHEM 303 Physical Chemistry of Biochem		3
ENCH 300 Chemical Process Thermodynamics		3	ENCH 427 Transport Processes II		3
ENCH 425 Transport Processes I		3	ENCH 440 Chemical Engineering Kinetics		3
ENCH 310 Environ Chemistry & Biology		3	ENCH 442 Chemical Process Control & Safety		3
Language 201††		4	AH GEP Elective		3
Total Credits		17	Physical Education Elective Ω		0
			Total Credits		15

Year Four - UMBC

Fall Semester		Cr	Spring Semester		Cr
ENCH 437L Chemical Engineering Laboratory		3	ENCH 412 Environ Physicochemical Processes		3
ENCH 444 Process Eng Economics & Design I		3	ENCH 446 Process Eng Economics & Design II		4
ENCH 445 Separation Processes		3	ENCH XXX Engineering Elective		3
ENCH 414 Environmental Biological Processes		3	ENCH XXX Engineering Elective		3
Culture GEP Elective		3	Physical Education Elective Ω		0
Total Credits		15	Total Credits		13

Ω Two activity courses are required prior to graduation (unless 30 or older, exempted based on a qualified physical disability or a military veteran).

MC A.S. in General Engineering to UMBC B.S. in Chemical Engineering, Environmental Track

Total Credits: 65-68, Catalog Edition 13-14

Name:	Date:	ID#	
Foundation Courses	COURSE	HRS	GRADE
English 101*	ENGL101*	(3)	
English Foundation	ENGL102 or ENGL109	3	
Math Foundation	MATH181	4	
Health Foundation (HLHF)	HLTH100	1	

Distribution Courses	COURSE	HRS	GRADE
Arts Distribution (ARTD)		3	
Humanities Distribution (HUMD), language recommended ++		3	
Behavioral / Social Science Distribution (BSSD)‡		3	
Behavioral / Social Science Distribution (BSSD)‡		3	
Natural Sciences Distribution with Lab (NSLD)	PHYS262	4	
Natural Sciences Distribution with Lab (NSLD)	CHEM131	4	

Curriculum Requirements	COURSE	HRS	GRADE
Mechanics and Heat	PHYS161	3	
Introduction to Engineering Design	ENES100	3	
Calculus II	MATH182	4	
Multivariable Calculus	MATH280	4	
Differential Equations	MATH282	3	
EE or ES ELECTIVE- Scientific and Engineering Computation	ENES240	3	
EE, ES or Science ELECTIVE- Statics	ENES102	3	
EE, ES or Science ELECTIVE- Organic Chemistry I	CHEM203	5	
EE, ES or Science ELECTIVE- Organic Chemistry II	CHEM204	5	
ELECTIVE- Principles of Chemistry II	CHEM132	4	

Global & Cultural Perspectives Requirement: ‡	Total Credits:
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* If needed for EN102, if not no substitution required.

‡ Select from two different disciplines, one course must also meet MC's Global & Cultural requirement

†† All UMBC students are required to complete language at 201 level, students should plan to complete language prerequisites unless exempt, see exceptions here: www.umbc.edu/ml/gfrs.html

COMPETITIVE ADMISSION: Students are admitted to the Chemical Engineering program only when they pass the following Gateway courses with at least two B's and two C's: MATH 152 (MATH 182), and ENES 101 (ENES 100) and CHEM 102 (CHEM 132), and ENCH 215 (@UMBC) . Students must also pass ENES 240 and CHEM 131 with a grade of C or better.

Upon enrollment, UMBC will determine the transferability of any courses not taken at MC. Students should be prepared to provide syllabi, course descriptions, exams and homework as requested.

PROGRAM ARTICULATION AGREEMENT

The following details a recommended course of study for students earning the Associate of Science degree in General Engineering at MC transferring to UMBC in pursuit of the Bachelor of Science degree in Chemical Engineering. Where noted, course equivalencies, general education and major applicability are indicated.

<u>Montgomery College Present Course Number</u> (Course Number as of fall 2014)	<u>Montgomery Course Title</u>	<u>Montgomery College Credits</u>	<u>UMBC Equivalency</u>	<u>UMBC General Education Requirement</u>	<u>Notes</u>
General Requirements					
EN101 (ENGL101)	Introduction to College Writing	3	LLE		If needed as pre-req for EN102, otherwise not required
EN102/109 (ENGL102/103)	Critical Reading/Writing and Research or Critical Reading/Writing and Research at Work	3	ENGL 100	EN	
CH101 (CHEM131)	Principles of Chemistry I	4	CHEM 101	SL	Students must take both CH101 and 102 to receive CHEM101 and CHEM102+L credit
PH262 (PHYS262)	Electricity and Magnetism	4	PHYS 122	SL	
MA181 (MATH181)	Calculus	4	MATH 151	M	
BSSD	Behavioral and Social Sciences Distribution	3	SS	SS ¹	
BSSD	Behavioral and Social Sciences Distribution	3	SS	SS ¹	
HUMD	Humanities Distribution	3	AH or C	AH ¹	If student completes 100 level language course this will satisfy one C instead of AH
HE 100 or any HE (HLTH100 or any HLTH)	Health Foundation	1	SS	SS ¹	HE100 Principles of Healthier Living Recommended
ARTD	Arts Distribution	3	AH	AH ¹	
Total General Requirements		28-31			

Program Requirements					
CH102 (CH132)	Principles of Chemistry II	4	CHEM 102 +L		Students must take both CH101 and 102 to receive CHEM101 and CHEM102+L credit
ES100 (ENES100) and ES240 (ENES240)	Intro to Engineering Design and Scientific and Engineering Computation	6	ENES 101		Must take both ES 100 and ES 240 to receive credit for ENES101
MA182 (MATH182)	Calculus II	4	MATH 152		
MA280 (MATH280)	Multivariable Calculus	4	MATH 251		
MA282 (MATH282)	Differential Equations	3	MATH 225		
ES102 (ENES102)	Statics	3	ENME 110		
PH161 (PHYS161)	Mechanics and Heat	3	PHYS 121		
CH203 (CHEM203)	Organic Chemistry I	5	CHEM351+L		
CH204 (CHEM204)	Organic Chemistry II	5	CHEM352+L		
Total Program Requirements		37			
		65-68			
Total Number of Credits Required for <u>Chemical Engineering</u> degree		128			
Maximum Number of Transfer Credits Applied Towards <u>Chemical Engineering</u> degree		65			

¹ These courses satisfy the general categories as indicated. To view specific course equivalency, consult ARTSYS (artsys.usmd.edu).

COMPETITIVE ADMISSION: Students are admitted to the Chemical Engineering program only when they pass the following Gateway courses with at least two B's and two C's: MATH 152 (MATH 182), and ENES 101 (ENES 100) and CHEM 102 (CHEM 132), and ENCH 215 (@UMBC). Students must also pass ENES 240 and CHEM 131 with a grade of C or better. Students are only permitted two attempts in courses for their major; a withdrawal is considered an attempt.

Legend

AH	Arts/Humanities
C	Culture
EN	English Composition
L	Language
LL E	Lower Level Elective
M	Mathematics
PE	Physical Education
S	Science
SL	Science (plus lab)
SS	Social Sciences