

Technical Electives

2019-20 Academic Year

For catalog years 201808 through 202005

B.S. in Chemical Engineering



Michigan Tech
Chemical Engineering

Technical electives must **total to 16 credits**. Additional credits may be used towards free electives.

Plan ahead. Some electives are offered once every other year and most have prerequisites.

3-4 credits of Organic Chemistry II or substitute

CH 2420	Organic Chemistry II	3
BL 2100	Principles of Biochemistry	3
CM 4740	Hydrometallurgy/Pyrometallurgy	4

At least 5 credits of Core Engineering Electives

CM 1000	Intro to Chemical Engineering	1	CM 5200	Advanced CM Thermodynamics	3
CM 2200	Intro Minerals and Materials	3	CM 5300	Advanced Transport Phenomena	3
CM 3450	Computer-Aided Problem Solving	3	CM 5400	Advanced Reactive Systems Analysis	3
CM 3825	Sampling, Stats, and Instrumentation	2	EE 3010	Circuits and Instrumentation	3
CM 3830	Mineral Processing and Extraction Lab	1	ENG 2120	Statics-Strength of Materials	4
CM/ENT 3979	Alternative Energy Tech & Processes	1	GE 4610	Formation Eval and Petroleum Engg	3
CM 4125	Bioprocess Engineering Laboratory	1	MEEM 2110	Statics	3
CM 4505	Particle Technology	3			
CM 4510	Interfacial Engineering	3			
CM 4650	Polymer Rheology	3			
CM 4655	Polymer Rheology Laboratory	1			
CM 4710	Biochemical Processes	3			
CM/MSE 4740	Hydrometallurgy/Pyrometallurgy	4			
CM 4770	Analytical Microdevice Technologies	3			
CM 4780	Biomanufacturing and Biosafety	3			
CM 5100	Applied Mathematics for CM	3			

Undergraduate Research Courses (repeatable)

No more than 6 credits from the following:

CM 4000	Chemical Engineering Research	1-3
CM 4020	UG Research in Mineral Proc Engg	1-3
CM 4040	UG Research in Biological Engg	1-3
CM 4060	UG Research in Polymer Engg	1-3
CM 4080	UG Research in Biofuels Engg	1-3

Additional Technical Electives to get to 16 credits

BE 2110	Statistical Methods for Biomed Engg	3	CH 2212	Quantitative Analysis	5
BE 2400	Cellular and Molecular Biology	3	CH 2420	Organic Chemistry II	3
BE 4300	Polymeric Biomaterials	3	CH 2421	Organic Chemistry Lab II	2
BL 1010	Gen Bio I: Intro to Organismal Biology	4	CH 3520	Physical Chemistry II – Mol Structure	3
or BL 1020	Gen Bio II: Intro to Cellular Biology	4	CH 3521	Physical Chemistry Lab II	2
or BL 1040	Principles of Biology	4	CH 4110	Pharm Chem: Drug Action	3
BL 2010	Anatomy & Physiology I	3	CH 4120	Pharm Chem: Drug Design	3
BL 2011	Anatomy & Physiology I Lab	1	CH 4140	Intro to Pharmaceutical Analysis	3
BL 2020	Anatomy & Physiology II	3	CH 4212	Instrumental Analysis	5
BL 2021	Anatomy & Physiology II Lab	1	CH 4222	Bioanalytical Chemistry	5
BL 2100	Principles of Biochemistry	3	CH 4310	Inorganic Chemistry I	3
BL 2200	Genetics	3	CH 4311	Inorganic Chemistry Lab	2
BL 2210	Genetics Laboratory	1	CH 4320	Inorganic Chemistry II	3
BL 3210	General Microbiology	4	CH 4412	Spectroscopy of Organic Chem.	3
BL 3310	Environmental Microbiology	3	CH 4430	Intermediate Organic Chemistry	3
BL 3640	General Immunology	3	CH 4710	Biomolecular Chemistry I	3
BL 4010	Biochemistry I	3	CH 4720	Biomolecular Chemistry II	3
BL 4020	Biochemistry II	3	CM 1000	Intro to Chemical Engineering	1
BL 4030	Molecular Biology	3	CM 2200	Intro Minerals and Materials	3
BL 4380	Cardiopulmonary Physiology	3	CM 3450	Computer-Aided Problem Solv in ChE	3
BL 4820	Biochem Lab Techniques I	2	CM 3825	Sampling, Stats, and Instrumentation	2
BL 4840	Molecular Biology Techniques	3	CM 3830	Mineral Processing and Extraction Lab	1
CEE 3502	Envir Monitoring and Meas Analysis	3	CM/ENT 3979	Alternative Energy Tech & Processes	1
CEE 3503	Environmental Engineering	3	CM 3XXE	CM Elective (<i>transfer credit only</i>)	var
CEE 4501	Envir Eng Chemical Processes	4	CM 4125	Bioprocess Engineering Laboratory	1

