Bachelor of Science – Chemistry Requirements (min. 73 credits)

Name_____ **Date of Review** _____ **Proposed Grad Sem/Yr**_____

Chemistry (50 credits)	Pre/Co-Requisites	Credits	Semester Offered	Semester Taken	Grade
CHEM 101- Principles of Chemistry I*	MATH 106, MATH 150, MATH 151, or MATH 155 with a grade of 'C' or better or score of 4 or 5 on the Math Placement Test.	4	FSZ		
CHEM 102 - Principles of Chemistry II*	CHEM 101	4	FSZ		
CHEM 102L - Intro Chemistry Lab I*	CHEM 102 (pre/co)	2	FSZ		
CHEM 300 - Analytical Chemistry*	CHEM 102; CHEM 102L	4	FSZ		
CHEM 301- Physical Chemistry I*	CHEM 102; MATH 152; PHYS 122 (pre/co)	4	F		
CHEM 302 - Physical Chemistry II*	CHEM 301	3	S		
CHEM 311L - Advanced Laboratory I*	CHEM 102L; CHEM 301 (pre/co)	3	F		
CHEM 312L - Advanced Laboratory II	CHEM 300; CHEM 311L; ENGL 100; CHEM 302 (pre/co)	3	S		
CHEM 351 - Organic Chemistry I*	CHEM 102	3	FSZ		
CHEM 351L – Organic Chemistry Lab I*	CHEM 102L; CHEM 351 (pre/co)	2	FSZ		
CHEM 352 – Organic Chemistry II*	CHEM 102; CHEM 351	3	SZ		
CHEM 352L – Organic Chemistry Lab II*	CHEM 102L; CHEM 351L; CHEM 352 (pre/co)	2	SZ		
CHEM 405 - Inorganic Chemistry*	CHEM 352	3	S		
CHEM 405L – Adv. Inorganic Chem Lab	CHEM 300; CHEM 352L; CHEM 405	3	F		
CHEM 437 – Comprehensive Biochem. I orCHEM 455 – Intro. Biomedicinal Chem. orCHEM 470- Toxicological Chemistry	CHEM 352	4 3 3	F S F		
CHEM 461 – Adv. Instrumental Analysis	CHEM 300; CHEM 311L	4	S		
Mathematics (12 credits)					
MATH 151– Calculus & Analytical Geom I*	MATH 150 with a grade of 'C' or better or score of 5 on the Math Placement Test.	4	FSZ		
MATH 152 - Calculus & Analytic Geom II*	MATH 151	4	FSZ		
MATH 251- Multivariable Calculus*	MATH 152	4	FSZ		
Physics (8 credits)					
PHYS 121 – Introductory Physics I*	MATH 151 (pre/co)	4	FSZ		
PHYS 122 – Introductory Physics II*	PHYS 121; MATH 152 (pre/co)	4	FSZ		
Chemistry Elective – See List Below (3 credits) **					

Electives List **:

CHEM 401- Chemical & Statistical Thermodynamics
CHEM 406- Bioinorganic Chemistry
CHEM 420 - Computer Apps. In Chemistry
CHEM 431 – Chemistry of Proteins
CHEM 432 – Advanced Biochemistry
CHEM 433 – Biochemistry of Nucleic Acids
[1]CHEM 437- Comprehensive Biochem I
CHEM 437L – Biochemistry Laboratory
CHEM 438 - Comprehensive Biochem II
CHEM 443- Molec. Spectroscopy & Biomacromolecules
CHEM 444 – Molecular Modeling
CHEM 450 - Chem of Heterocyclic Compounds
CHEM 451 - Mechanisms of Organic Reactions
CHEM 452 – Physical Organic Chemistry
CHEM 453 - Organic Chemistry of Nucleic Acids
[1]CHEM 455 - Introduction to Biomedicinal Chem
CHEM 457 - Total Synthesis of Natural Products
CHEM 465 – Mass Spec at the Chem-Biochem Interface
CHEM 467 - Advanced Analytical Methods
[1]CHEM 470 – Toxicological Chemistry
CHEM 472 - Enzyme Reaction Mechanisms
CHEM 490 - Special Topics
CHEM 499 - Undergraduate Research (total of 3 credits are required)

[1] If not used to fulfill part of the required courses above

F = Fall, S = Spring, Z = Summer. Courses marked with a "Z" have been taught in the Summer in recent years; there is no guarantee that they will be offered ever Summer.
***** These courses must be completed with a grade of C or better. An overall C average must be maintained in required major courses.
****** Other courses may be approved for inclusion in the B.S. major program provided they are first approved by the certifying agency, the American Chemical Society. Students should consult with their faculty advisors in choosing electives coursework, and when elective credit within the major is desired for courses not listed. See UMBC course catalog for prerequisites and availability**. Upcoming elective offerings can be found on the Department of Chemistry and Biochemistry website here:** https://chemistry.umbc.edu/next-semesters-elective-list/