LMU
School of Mathematics & Sciences
LINCOLN MEMORIAL UNIVERSITY

Four-Year Plan
Chemistry (BS) Teacher Licensure (6-12) (CHEME.BS)

The following is a suggested four-year plan of study for freshmen entering LMU during the 2017-2018 academic year. This plan should be used in conjunction with the University catalog and in consultation with the faculty advisor. Transfer students should contact their advisor if they have questions regarding transfer credit. Courses listed on the four-year plan may be taken during other semesters, based on availability and course placement. This plan meets LMU's general education (Liberal Arts Common Core) requirements, major requirements and 300/400 level course requirements. *Lincoln Memorial University reserves the right to adjust at any time its Initial Teacher Licensure Undergraduate Program requirements to comply with changes mandated by the State Board of Education.*

Note: In order to graduate in four years (eight regular semesters) the student must average passing 16/17 hours per semester. Courses with * must have a grade of

First Year

Fall

ENGL 101 Composition 1	3
CHEM 111 General Chemistry I*	4
BIOL 111 General Biology I*	4
MATH 150 Caclulus I*	4
UACT 100 Strategies for College Success	2
LNCN 100 Lincoln's Life and Legacy	1
TOTAL	**18**

Spring

CHEM 112 General Chemistry II & Lab*	4
Behavioral/Social Science Requirment	3
ENGL 102 Composition 2	3
MATH 250 Calculus II*	4
History Sequence Requirement (121 or 131)	3
TOTAL	**17**

Second Year

Fall

PHYS 211 General Physics I & Lab*	4
CHEM 221 Organic Chemistry I & Lab*	4
Fine Arts Requirement	3
ENGL 240, 250, or 260	3
COMM 200 Fund of Speech Comm.	3
TOTAL	**17**

Spring

PHYS 212 General Physics II & Lab*	4
CHEM 222 Organic Chemistry II & Lab*	4
Fine Arts, Humanities, or Ethics	3
PSYC 221 Child & Adolescent Development*	3
History Sequence Req. Part II (122 or 132)	3
TOTAL	**17**

Third Year

Fall

CHEM 331 Quantitative & Instrumental Analy.*	4
CHEM 397 Junior Science Seminar*	1
EDUC 210 Instructional Technology*	2
BIOL 441 Biochemistry I*	4
PSYC 370 Educational Psychology*	3
EDUC 290 The Teaching Profession*	3
TOTAL	**17**

Spring

CHEM 310 Math. Methods in Chemistry*	3
CHEM 332 Quant. & Instrumental Analy. II*	4
CHEM 460 Inorganic Chemistry*	3
STEM 460 Meth. of Sec. Math & Nat. Sci. Educ.*	3
SPED 270 Teaching Exception Learners*	2
EDUC 390 Diversity in Today's Classroom*	2
LNCN 300 American Citizenship	1
TOTAL	**18**

Fourth Year

Fall

CHEM 451 Physical Chemistry I	4
CHEM 497 Senior Science Seminar	1
SPED 320 K-12 Differential Learners	3
EDUC 370 Measurment & Evaluation	3
EDUC 480 Pre-Clinical Experience	2
EDUC 360 Secondary Instructional Methods	2
TOTAL	**15**

Spring

EDUC 497 Enhanced Clinical Practice	9
EDUC 497F Seminar	3
TOTAL	**12**

Praxis II Requirements
5624- PLT
5235- Biology Content Knowldege

TOTAL 131

Please note: All Students in teacher licensure programs are required to apply for admission to the teacher licensure program while enrolled in EDUC 290, The Teaching Profession. Students will begin taking Praxis II exams near the end of the Junior year. Formal Admission is required prior to enrolling in EDUC 480, Pre-Clinical Experience. All Praxis II requirements and program criteria must be met prior to registration for EDUC 497, Enhanced Clinical Practice and Seminar. Revised 3/2017

CHEM 111 General Chemistry I & Lab (4 cr hrs)
Study of atoms and molecules. Emphasis on the bonding, chemistry, and thermodynamics of relatively simple substances. Prerequisite for CHEM 111 is (1) Math ACT of 21 or higher or (2) successful (C- or better) grade in MATH 105. FALL

CHEM 112 General Chemistry II & Lab (4 cr hrs)
Study of atoms and molecules. Emphasis on the bonding, chemistry, and thermodynamics of relatively simple substances. SPRING

CHEM 221 Organic Chemistry I & Lab (4 cr hrs)
Study of the compounds of carbon. The common organic functional groups with emphasis on structure, properties reactions, synthesis, and mechanism. Co-requisite: CHEM 221 lab, 1 credit hour. FALL

CHEM 222 Organic Chemistry II & Lab
Study of the compounds of carbon. The common organic functional groups with emphasis on structure, properties reactions, synthesis, and mechanism. Co-requisite: CHEM 222 lab, 1 credit hour. SPRING
ENGl 101 Composition 1
CHEM 331 Quantitative & Instrumental Analy. (2 cr hrs)
Basic theory and practice of quantitative and instrumental chemical analysis and chemical equilibrium.
Laboratory work covering gravimet ENGL102 Composition 2
CHEM 331 is successful completion of CHEM 221 with a grade of C- or better. FALL ALTERNATE YEARS

CHEM 397 Junior Science Seminar (1 cr hr)
The student plans a science topic inquiry, either through original or library research. Requires a progress report or literature review paper and oral presentation of findings. SPRING and FALL.

CHEM 310 Math. Methods in Chemistry (4 cr hrs)
A course designed to give the student sufficient background in mathematical methods required for completion of the analytical, physical, and inorganic chemistry sequences. Course discussion will include review of transcendental functions, differential and integral calculus, numerical methods, linear algebra, differential equations, and functions of several variables. FALL

CHEM 332 Quant. & Instrumental Analy. II
Basic theory and practice of quantitative and instrumental chemical analysis and chemical equilibrium. Laboratory work covering gravimetric, instrumental, and volumetric analyses. Prerequisite for enrollment in CHEM 332 is successful completion of CHEM 331 with a grade of C- or better. SPRING ALTERNATE YEARS

ENGL 240, 250, or 260
Use the periodic table to show variation of physical and chemical properties of the elements. Elements studied as families. Properties such as acid-base, redox, and coordination compounds are related to the position of the element in the periodic table. Prerequisite: CHEM 111, 112 with labs. Highly recommended: CHEM 310, 451-452. SPRING.

CHEM 451 Physical Chemistry I & Lab (4 cr hrs)
Energy relationships in chemical reactions; elementary quantum mechanics of chemical systems; elementary chemical kinetics. FALL

CHEM 497 Senior Science Seminar (1 cr hr)
Methods of literature search and sources of information in the sciences. Requires a research paper on a topic in chemical science. Prerequisite: completion of all 300 level program requirements. SPRING and FALL.

STEM 460 Meth. of Sec. Math & Nat. Sci. Educ.
This course will address focused aspects of the STEM disciplines for effective secondary classroom and laboratory instruction. Topics will include contemporary state and national math and natural science learning standards, lab safety, learning experiences, and writing real-world problems and application exercises. The literature of STEM instruction and the use of demonstrations are the focus of the projects. A portion of instructional time will be in science lab settings. Prerequisites: MATH150 and both general education natural science courses.