MAJOR MAP FOR BACHELOR OF SCIENCE IN CHEMISTRY CONCENTRATION IN CHEMISTRY (CHEMBS-CHES) 2015-16 THROUGH 2023-24 CATALOG YEARS

Last Updated: February 2, 2024

CHEMBA-CHES Degree Snapshot

University Perspectives (0-1 hr)
_____ **UNIV 1001**, University Perspectives or exemption

State Core English Composition (0-6 hrs)
_____ **ENGL 1013**, Composition 1 or exemption
_____ **ENGL 1023**, Composition 2 or exemption

State Core US History or Government (3 hrs)
_____ **US HIST/PLSC** _____

State Core Mathematics (0 hrs)
Requirement met with courses in major.

State Core Natural Sciences w/ labs (0 hrs)
Requirement met with courses in major.

State Core Social Sciences (9 hrs)
_____ **Social Science** _____
_____ **Social Science** _____
_____ **Social Science** _____

State Core Fine Arts (3 hrs)
_____ **Fine Art** _____

State Core Humanities (3 hrs)
_____ **Humanities** _____

Mathematics (12-19 hrs)
_____ MATH 1203**,** College Algebra (or math placement directly in to next math)
_____ MATH 1284, Precalculus or MATH 1213, Plane Trigonometry (or math placement directly in to next math)
_____ **MATH 2554c,** Calculus I (**Required)**
_____ **MATH 2564c,** Calculus II (**Required)**
_____ **MATH 2574c,** Calculus III (**Required)**

Physics (8 hrs)
_____ **PHYS 2054,** University Physics I
_____ **PHYS 2074,** University Physics II

General Chemistry (8 hrs)
_____ **CHEM 1203/1201L,** Chemistry for Majors I **OR CHEM 1103/1101L,** University Chemistry I
_____ **CHEM 1223/1221L,** Chemistry for Majors II **OR CHEM 1123/1121L,** University Chemistry II

Analytical Chemistry (4 hrs)
_____ **CHEM 2263/2261L,** Analytical Chemistry

Physical Chemistry (10 hrs)
_____ **CHEM 3504,** Physical Chemistry I **AND**
_____ **CHEM 3514/3512L,** Physical Chemistry II

Organic Chemistry (10 hrs)
_____ **CHEM 3703/3702L,** Organic Chemistry for Majors
_____ **CHEM 3713/3712L,** Organic Chemistry for Majors **II**

Inorganic Chemistry (3 hrs)
_____ **CHEM 4123, Advanced Inorganic Chemistry**

Instrumental Analysis (4 hrs)
_____ **CHEM 4213/4211L,** Instrumental Analysis

Experimental Methods (3 hrs)
_____ **CHEM 4723,** Experimental Methods in Organic Chemistry

Chemistry Electives (3 hrs)
_____ **CHEM 3000+** _____

General Electives (20-34 hrs)

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Graduation Plan

Use the following additional resources, in addition to this major map, to complete your graduation plan (Catalog, and your Degree Audit in UAconnect). Many students have more than one major, minor, or pre-professional goal that has additional required classes. This tool allows you to combine all your educational goals in to one plan.

High School credit	List all Advanced Placement, International Baccalaureate, Dual or Concurrent credit

Year	Fall	Spring	Summer	Total
Year 1				Total 1st year credit hours (aim for 30):
Year 2				Total 2nd year credit hours (aim for 60):
Year 3				Total 3rd year credit hours (aim for 90):
Year 4				Total 4th year credit hours (Must be at least 120):

Graduation Checklist (does your plan include the following):

- ☐ Do you have at least a 2.0 GPA (this will be something you track each semester)
- ☐ All state minimum core requirements
- ☐ All Major(s)/Minor(s) requirements
- ☐ Writing requirement complete
- ☐ Have At least 50% of each major/minor taken from UofA
- ☐ 24 hours of 3000+ classes exclusively from Fulbright College of Arts and Sciences classes
- ☐ 30 hours of 3000+ classes exclusively from the University of Arkansas. This can include courses taken for the 24-hour rule.
- ☐ 40 hours of upper-level classes. (3000+ or 2000+ with a pre-requisite. Can include transfer credit.) This can include courses taken for the 24-hour and 30-hour rules.
- ☐ 120 total eligible credit hours (see below for a list of ineligible classes)

COURSES THAT DO NOT COUNT TOWARDS THE 120 HOURS REQUIRED FOR GRADUATION

- ENGL 0002
- MATH 0001L, MATH 0002L, MATH 0003, and MATH 0131L
- Duplicated/Repeated courses (i.e.: if the same course is taken more than once, the hours will only count once for graduation)

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Department Information:

Faculty who have exception/substitution authority: Colin Heyes

Transfer Coursework Restriction: At least 50% of a student's Arts and Sciences (ARSC) major or minor must be taken at the University of Arkansas.
Note about course sequencing: The Chemistry majors are pre-requisite heavy programs that are highly sequenced. Some essential classes are offered only once per year. It's highly recommended that students work with advisors to create a multi-semester graduation plan early in their degree.

GPA (Grade Point Average): Every student must have at least a 2.00 cumulative grade point average to be eligible to graduate from the University of Arkansas.

Please visit https://catalog.uark.edu/undergraduatecatalog for an extensive list of core, major, graduation, and pre-requisite requirements. To read more about individual classes, visit the courses of instruction page for course descriptions.

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Degree Requirement Breakdown by Category

The following information is designed to help you navigate your experience in your degree and answer common questions that may come up for each requirement.

Category	Degree Requirements	Curriculum Notes
UNIVERSITY PERSPECTIVES **0-1 hr**	• **UNIV 1001**, University Perspectives	Or equivalent from another University of Arkansas college. (AFLS 1023H, ARSC 1201, GNEG 1111, HIST 1003(H), HIST 1003(H), PLSC 1003, BUSI/WCOB 1111) **Note**: students who transfer to the University of Arkansas with at least 24 credit hours will have this requirement waived.
STATE CORE COMPOSITION **0-6 hrs**	• **ENGL 1013,** Composition 1 or SAT/ACT exemption • **ENGL 1023**, Composition 2 or SAT/ACT exemption	See Catalog for information about placement and/or exemption.
STATE CORE US HISTORY or GOVERNMENT **3 hrs**	**Choose 1: *** • HIST 2003, History of the American People to 1877 • HIST 2013, History of the American People 1877 to Present • PLSC 2003, American National Government	*Some courses may appear as options in multiple areas of the State Core. You can only count each course 1 time in the State Core and will need unique courses in each of the content areas below.
STATE CORE MATHEMATICS **0 hrs**	Met with requirements in major.	Based on ACT/SAT or other math placement scores, students may need to enroll in additional remediation related courses. See catalog or math placement website for additional information.
STATE CORE NATURAL SCIENCES CORE **9 hrs**	Met with requirements in major	
STATE CORE SOCIAL SCIENCES **9 hrs**	**Choose 3: *** • AGEC 1103, Principles of Agriculture Microeconomics • AGEC 2103, Principles of Agriculture Macroeconomics • ANTH 1023, Intro to Cultural Anthropology • COMM 1023, Communication in a Diverse World • ECON 2013, Principles of Macroeconomics • ECON 2023, Principles of Microeconomics • ECON 2143, Basic Economics: Theory and Practice • EDST 2003, Introduction to Educational Studies • GEOS 1123, Human Geography • GEOS 2003, World Regional Geography • HDFS 1403, Life Span Development • HDFS 2413, Family Relations • HDFS 2603, Rural Families & Communities • HIST 1113, Institutions and Ideas of World Civilizations I • HIST 1123, Institutions and Ideas of World Civilizations II • HIST 2003, History of the American People to 1877 • HIST 2013, History of the American People 1877 to Present • HIST 2093, Animals in World History • HUMN 1114H, Honors Roots of Culture to 500 C.E. (Honors only) • HUMN 2114H, Honors Birth of Modern Culture, 1600-1900 (honors only) • INST/PLSC 2813, Intro to International Relations & Global Studies	Students must take classes from at least two departments in the Social Sciences category. *Some courses may appear as options in multiple areas of the State Core. You can only count each course 1 time in the State Core and will need unique courses in each of the content areas below.

	• PLSC 2003, American National Government • PLSC 2013, Intro to Comparative Politics • PLSC 2203, State and Local Government • PSYC 2003, General Psychology • RESM 2853, Leisure and Society • SOCI 2013, General Sociology • SOCI 2033, Social Problems • STEM 2003, The Art of STEM Communication	
STATE CORE FINE ARTS **3 hrs**	**Choose 1:** • ARCH 1003, Architecture Lecture • ARHS 1003, Art Lecture • COMM 1003, Film Lecture • DANC 1003, Movement and Dance • ENGL 2023, Creative Writing 1 • HUMN 2114H, Honors Birth of Modern Culture 1600-1900 (honors only) • LARC 1003, The American Landscape • MLIT 1003, Experiencing Music • MLIT 1013, Music and Society (music majors only) • MLIT 1333, Popular Music • THTR 1003, Theatre Appreciation • THTR 1013, Musical Theatre Appreciation • THTR 1683, Acting I • THTR 1883, Acting 1 for Theatre majors	Classes taken in this category may not overlap in any other core category
STATE CORE HUMANITIES **3 hrs**	**Choose 1: *** • AAST 2023, The African American Experience • ANTH 1033, Introduction to Archeology • ARCH 1013, Diversity and Design • CLST 1003, Introduction to Classical Studies: Greece • CLST 1013, Introduction to Classical Studies: Rome • COMM 1233, Media, Community and Citizenship • DANC 1003, Dance Appreciation • DASC 2133, Data Privacy & Ethics • ENGL 1213, Introduction to Literature • ENGL 2023, Creative Writing I • GNST 2003, Introduction to Gender Studies • HIST 1113, Institutions and Ideas of World Civilizations I • HIST 1123, Institutions and Ideas of World Civilizations II • HIST 2003, History of the American People to 1877 • HIST 2013, History of the American People 1877 to Present • HUMN 1124H*, Honors Equilibrium of Cultures 500-1600 (Honors only) • HUMN 2213, Introduction to World Religions • LALS 2013, Introduction to Latin American and Latino Studies • MRST 2013, Introduction to Medieval and Renaissance Studies • MUSY 2003, Music in World Cultures • PHIL 2003, Introduction to Philosophy • PHIL 2103, Introduction to Ethics • PHIL 2203, Logic • PHIL 2303, Human Nature and the Meaning of Life • PHIL 3103, Ethics and the Professions	*Some courses may appear as options in multiple areas of the State Core. You can only count each course 1 time in the State Core and will need unique courses in each of the content areas below.

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	• THTR 1003, Theatre Appreciation • THTR 1013, Musical Theatre Appreciation • WLIT 1113, World Literature: Beginnings to 1650 CE • WLIT 1123, World Literature: 1650 CE to Present • Any Intermediate level foreign language numbered at the 2000 level	
MATHEMATICS **12-19 hrs**	• **MATH 1203,** College Algebra (or math placement directly in to next math) • **MATH 1284,** Precalculus **or MATH 1213,** Plane Trigonometry (only required if taking MATH 2554) • **MATH 2554c,** Calculus I (pre-req: MATH 1284c, 1213, or math placement)* • **MATH 2564c,** Calculus II (pre-req: MATH 2554c) • **MATH 2574c,** Calculus III (Pre-req: MATH 2564c)	**Students need to earn a C or higher in MATH classes to use them as pre-requisites for other classes.** Students should start on their math sequence as early as possible, since many of these classes will be pre-requisites for future CHEM classes. Based on ACT/SAT or other math placement scores, students may need to enroll in additional remediation related courses. See catalog or math placement website for additional information. *MATH 2445, Calculus I with review, can also count here.
PHYSICS **8 hrs**	• **PHYS 2054,** University Physics I (pre-req: MATH 2554c) • **PHYS 2074,** University Physics II (pre-req: MATH 2564c)	These Physics II will be a pre-requisite to some future CHEM courses.
GENERAL CHEMISTRY **8 hrs**	**Choose 1 sequence:** • **CHEM 1203/1201L,** Chemistry for Majors I (Fall only. pre-req: MATH 1203 or higher or see course description for math placement) • **CHEM 1223/1221L,** Chemistry for Majors II (Spring only. Co- or pre-req: MATH 1284c or higher. Pre-req: CHEM 1203/1201L or CHEM 1103/1101L) • **Or** • **CHEM 1103/1101L,** University Chemistry I (pre-req: MATH 1203 or see course description for math placement) • **CHEM 1123/1121L,** University Chemistry II (pre-req: CHEM 1103 and MATH 1203 or see course description for math placement)	Students cannot receive degree credit for both CHEM 1203 and 1103 or CHEM 1223 and CHEM 1123. If a student changes to this major after having taken CHEM 1113, Chemistry for Engineers I and CHEM 1133/1131L, Chemistry for Engineers II, they can count those courses in this category, with substitution, if they also take CHEM 1101L or CHEM 1121L.
ANALYTICAL CHEMISTRY **4 hrs**	• **CHEM 2263/2261L**, Analytical Chemistry (pre-req: CHEM 1123 or 1223 and MATH 1203 or see course description for math placement)	While not a required co-requisite in the course descriptions, chemistry majors should take the lecture and the lab in the same semester. This class will be a pre-requisite to future physical chemistry classes.
PHYSICAL CHEMISTRY **10 hrs**	• **CHEM 3504,** Physical Chemistry I (Fall only. Co- or pre-req: MATH 2564c. Pre-req: CHEM 2263 and PHYS 2074) • **CHEM 3514/3512L,** Physical Chemistry II (Spring only. Pre-req: CHEM 3504)	Students cannot receive credit for both Elements of Physical Chemistry and Physical Chemistry I & 2.
ORGANIC CHEMISTRY **10 hrs**	• **CHEM 3703/3702L,** Organic Chemistry for Majors I (Fall only. Pre-req: CHEM 1123 or 1223) • **CHEM 3713/3712L,** Organic Chemistry for Majors II (Spring only. Pre-req: CHEM 3703)	Honors students may also automatically count CHEM 3603H/3602M and CHEM 3613H/3612M. The catalog also lists CHEM 3703 and 3713 as equivalent to CHEM 3603 and 3613. So, while the department prefers students to take CHEM 3703 3713, students who took CHEM 3603/3601L and 3613/3611L may count those courses for this requirement.

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		However, students will need to make up the missing 2 hours of labs by doing 1 of the following things: • Join a research lab and take at least 2 hrs of CHEM 400V (if students do this here, they may not also count these hours below). • Take an additional CHEM 3000+ class that is not already required • Retake the labs, but this time the major's versions (CHEM 3702L and 3712L) • Take two semesters of CHEM 4011H (honors students only)
INORGANIC CHEMISTRY **3 hrs**	• **CHEM 4123,** Advanced Inorganic Chemistry (Fall only. Pre-req: CHEM 3453 or 3514)	
INSTRUMENTAL ANALYSIS **4 hrs**	**Choose 1 option:** • **CHEM 4213/4211L,** Instrumental Analysis (Pre-req: CHEM 2263 and CHEM 3613 or 3713)	
EXPERIMENTAL METHODS **3 hrs**	• **CHEM 4723,** Experimental Methods in Organic Chemistry (Fall only. Pre-req: CHEM 3613 or 3713)	
ADDITIONAL CHEMISTRY **3 hrs**	**Take one additional Advanced (3000+) CHEM lecture course.**	This program meets the minimum requirements for certification by the American Chemical Society if CHEM 3813 (or CHEM 4813H/CHEM 4843H or CHEM 5813/) is included in this category. CHEM 399T or 499T transfer courses can count in this category as long as students still meet the 50% rule. Not all 99T classes pull into the degree audit automatically, so students may need to request classes be moved into the minor by their academic advisor.
GENERAL ELECTIVES **20-34 hrs**	Hours will vary depending on math placement, language placement, choice within chemistry major, and whether a student is exempt from ENGL 1013 and 1023.	Some general electives may need to be upper level to meet college and university residency requirements. See Graduation Checklist on page 2 for more information.
WRITING REQUIREMENT	The college writing requirement may be satisfied in one of two ways: • Completion of CHEM 3451L or CHEM 3512L • Successful honors thesis defense	
HONORS	**Minimum Requirements for Honors:** • Maintain cumulative grade point average of 3.5 in all coursework. • Complete a minimum of 12 hours of honors courses from the UofA **(which includes CHEM 4011H taken once in Junior year and once in Senior year)** • Complete and defend Honors Thesis See Catalog for full description of requirements.	**Honors Thesis Timeline:** Honors students should consistently check the honors thesis timeline to stay on track to complete your honors thesis. **College Honors:** Students who also are following the College Honors Core for Bachelor of **Science** programs need to also complete those additional requirements: • 2023-24 catalog requirements • 2022-23 and older catalog requirements