

# MAJOR MAP FOR BACHELOR OF SCIENCE IN CHEMISTRY CONCENTRATION IN CHEMISTRY (CHEMBS-CHES) 2015-16 THROUGH 2024-25 CATALOG YEARS

Name: \_\_\_\_\_ ID Number: \_\_\_\_\_ Date: \_\_\_\_\_ Anticipated Graduation Semester: \_\_\_\_\_  
CHEMBA-CHES Degree Snapshot

## University Perspectives (0-1 hr)

\_\_\_\_\_ UNIV 10051, University Perspectives or exemption

## State Core English Composition (0-6 hrs)

\_\_\_\_\_ ENGL 10103, Composition 1 or exemption

\_\_\_\_\_ ENGL 10203, 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 11003, College Algebra (or [math placement](#) directly in to next math)

\_\_\_\_\_ MATH 13004, Precalculus or MATH 12003, Plane Trigonometry (or [math placement](#) directly in to next math)

\_\_\_\_\_ MATH 24004, Calculus I (Required)

\_\_\_\_\_ MATH 25004, Calculus II (Required)

\_\_\_\_\_ MATH 26004, Calculus III (Required)

## Physics (8 hrs)

\_\_\_\_\_ PHYS 20304, University Physics I

\_\_\_\_\_ PHYS 20404, University Physics II

## General Chemistry (8 hrs)

\_\_\_\_\_ CHEM 12073/12071, Chemistry for Majors I OR CHEM 14103/14101, University Chemistry I

\_\_\_\_\_ CHEM 12283/12281, Chemistry for Majors II OR CHEM 14203/14201, University Chemistry II

## Analytical Chemistry (4 hrs)

\_\_\_\_\_ CHEM 22673/22671, Analytical Chemistry

## Physical Chemistry (10 hrs)

\_\_\_\_\_ CHEM 35004, Physical Chemistry I AND

\_\_\_\_\_ CHEM 35204/35102, Physical Chemistry II

## Organic Chemistry (10 hrs)

\_\_\_\_\_ CHEM 37073/37072, Organic Chemistry for Majors I

\_\_\_\_\_ CHEM 37203/37201, Organic Chemistry for Majors II

## Inorganic Chemistry (3 hrs)

\_\_\_\_\_ CHEM 41203, Advanced Inorganic Chemistry

## Instrumental Analysis (4 hrs)

\_\_\_\_\_ CHEM 42203/42101, Instrumental Analysis

## Experimental Methods (3 hrs)

\_\_\_\_\_ CHEM 47203, Experimental Methods in Organic Chemistry

## Chemistry Electives (3 hrs)

\_\_\_\_\_ CHEM 30000+ \_\_\_\_\_

## General Electives (20-34 hrs)

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**Advising Notes**

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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.

<b>High School credit</b>	<b>List all Advanced Placement, International Baccalaureate, Dual or Concurrent credit</b>			
<b>Year</b>	<b>Fall</b>	<b>Spring</b>	<b>Summer</b>	<b>Total</b>
Year 1				<b>Total 1<sup>st</sup> year credit hours (aim for 30):</b>
Year 2				<b>Total 2<sup>nd</sup> year credit hours (aim for 60):</b>
Year 3				<b>Total 3<sup>rd</sup> year credit hours (aim for 90):</b>
Year 4				<b>Total 4<sup>th</sup> year credit hours (Must be at least 120):</b>

**Last Updated:** June 24, 2024

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### Graduation Checklist (does your plan include the following):

- 2.0 minimum overall UofA GPA (Courses taken at other colleges or universities are not factored into this GPA)
- All state minimum core requirements
- All Major(s)/Minor(s) requirements
- [Writing requirement](#) complete
- At least 50% of each major/minor taken from UofA
- 24 hours of 30000+ classes exclusively from Fulbright College of Arts and Sciences classes
- 30 hours of 30000+ classes exclusively from the University of Arkansas. This can include courses taken for the 24-hour rule.
- 40 hours of upper-level classes. (30000+ or 20000+ 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)

### **Program Information:**

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.

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
<a href="#">UNIVERSITY PERSPECTIVES</a>  0-1 hr	<ul style="list-style-type: none"> <li>UNIV 10051, University Perspectives (or UNIV 100H1)</li> </ul>	Or equivalent from another University of Arkansas college. (AFLS 102H3, ARSC 12001, GNEG 11101, GNEG 111H1, HIST 1003(H), HIST 10001, HIST 100H1, PLSC 10003, PLSC 100H3, BUSI/WCOB 11101, WCOB/BUSI 111H1)  <b>Note:</b> students who transfer to the University of Arkansas with at least 24 credit hours will have this requirement waived.
<a href="#">STATE CORE COMPOSITION</a>  0-6 hrs	<ul style="list-style-type: none"> <li>ENGL 10103, Composition 1 or SAT/ACT exemption (or ENGL 101H3)</li> <li>ENGL 10203, Composition 2 or SAT/ACT exemption (or ENGL 102H3)</li> </ul>	See <a href="#">Catalog</a> for information about placement and/or exemption.
<a href="#">STATE CORE US HISTORY or GOVERNMENT</a>  3 hrs	<b>Choose 1: *</b> <ul style="list-style-type: none"> <li>HIST 20003, History of the American People to 1877</li> <li>HIST 20103, History of the American People 1877 to Present</li> <li>PLSC 20003, American National Government (or PLSC 200H3)</li> </ul>	*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.
<a href="#">STATE CORE MATHEMATICS</a>  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 <a href="#">catalog</a> or <a href="#">math placement</a> website for additional information.
<a href="#">STATE CORE NATURAL SCIENCES CORE</a>  9 hrs	Met with requirements in major	
<a href="#">STATE CORE SOCIAL SCIENCES</a>  9 hrs	<b>Choose 2:</b> (each class will have a required lecture and lab component): <ul style="list-style-type: none"> <li>ANTH 10143/ANTH 10141, Intro to Biological Anthropology (or ANTH 101H3/101H1)</li> <li>ASTR 20003/20001, Survey of the Universe (or ASTR 200H3/200H1)</li> <li>BIOL 10004, Biological Principles</li> <li>BIOL 10103/10101, Principles of Biology (or BIOL 154H3/154H1)</li> <li>BIOL 10104, Biology for Majors</li> <li>BIOL 10303/10301, Plant Biology</li> <li>BIOL 10503/10501, Principles of Zoology</li> <li>BIOL 24003/24001, Human Anatomy</li> <li>BIOL 24103/24101, Human Physiology</li> <li>CHEM 10003/10001, Chemistry in the Modern World</li> <li>CHEM 12103/12101, Fundamentals of Chemistry</li> <li>CHEM 12073/12071, Chemistry for Majors I</li> <li>CHEM 12283/12281, Chemistry for Majors II</li> <li>CHEM 14103/14101; University Chemistry I</li> <li>CHEM 14203/14201, University Chemistry II (or CHEM 142H3/142H1)</li> </ul>	Some classes will have pre-requisites

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	<ul style="list-style-type: none"> <li>• ENSC 10003/10001, Environmental Science (or ENSC 100H3/100H1)</li> <li>• ENTO 10203/10201, Insects, Science, and Society</li> <li>• GEOL 11103/11101, Physical Geology (or GEOL 111H3/111H1)</li> <li>• GEOL 11203/11201, Earth Science</li> <li>• GEOS 11504, Introduction to Geology for Science Majors</li> <li>• PHYS 10243/10241, Physics and Human Affairs (or PHYS 102H3/102H1)</li> <li>• PHYS 10304, Physics for Elementary Education Majors</li> <li>• PHYS 10404, Physics for Architects I</li> <li>• PHYS 10504, Physics for Architects II</li> <li>• PHYS 20103/20101, College Physics I</li> <li>• PHYS 20203/20201, College Physics II</li> <li>• PHYS 20304, University Physics I (or PHYS 203H4)</li> <li>• PHYS 20404, University Physics II (or PHYS 204H4)</li> </ul>	
<p><b>STATE CORE FINE ARTS</b></p> <p><b>3 hrs</b></p>	<p><b>Choose 1: *</b></p> <ul style="list-style-type: none"> <li>• ARCH 10003, Architecture Lecture (or ARCH 100H3)</li> <li>• ARHS 10003, Art Lecture (or ARHS 100H3)</li> <li>• COMM 10003, Film Lecture (or COMM 100H3)</li> <li>• DANC 10003, Movement and Dance</li> <li>• ENGL 20103, Creative Writing 1</li> <li>• HUMN 211H4, Honors Birth of Modern Culture 1600-1900 (honors only)</li> <li>• LARC 10003, The American Landscape (or LARC 100H3)</li> <li>• MLIT 10003, Experiencing Music (or MLIT 100H3)</li> <li>• MLIT 10103, Music and Society (music majors only. Or MLIT 101H3)</li> <li>• MLIT 13303, Popular Music</li> <li>• THTR 10003, Theatre Appreciation (or THTR 100H3)</li> <li>• THTR 10103, Musical Theatre Appreciation (or THTR 101H3)</li> <li>• THTR 16803, Acting I</li> <li>• THTR 18803, Acting 1 for Theatre majors</li> </ul>	<p>*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.</p>
<p><b>STATE CORE HUMANITIES</b></p> <p><b>3 hrs</b></p>	<p><b>Choose 1: *</b></p> <ul style="list-style-type: none"> <li>• AAST 20203, The African American Experience</li> <li>• ANTH 10303, Introduction to Archeology</li> <li>• ARCH 10103, Diversity and Design (or ARCH 101H3)</li> <li>• CLST 10003, Introduction to Classical Studies: Greece (or CLST 100H3)</li> <li>• CLST 10103, Introduction to Classical Studies: Rome (or CLST 101H3)</li> <li>• COMM 12303, Media, Community and Citizenship (or COMM 123H3)</li> <li>• DANC 10003, Dance Appreciation</li> <li>• DASC 21303, Data Privacy &amp; Ethics</li> <li>• ENGL 11103, World Literature: Beginnings to 1650 CE (or ENGL 111H3)</li> <li>• ENGL 11203, World Literature: 1650 CE to Present (or ENGL 112H3)</li> </ul>	<p>*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.</p>

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	<ul style="list-style-type: none"> <li>ENGL 12103, Introduction to Literature (or ENGL 121H3)</li> <li>ENGL 20103, Creative Writing I</li> <li>GNST 20003, Introduction to Gender Studies (or GNST 200H3)</li> <li>HIST 11193, Institutions and Ideas of World Civilizations I (or HIST 111H3)</li> <li>HIST 11293, Institutions and Ideas of World Civilizations II (or HIST 112H3)</li> <li>HIST 20003, History of the American People to 1877</li> <li>HIST 20103, History of the American People 1877 to Present</li> <li>HUMN 112H4, Honors Equilibrium of Cultures 500-1600 (Honors only)</li> <li>HUMN 22103, Introduction to World Religions</li> <li>LALS 20103, Introduction to Latin American and Latino Studies</li> <li>MRST 20103, Introduction to Medieval and Renaissance Studies</li> <li>MUSY 20003, Music in World Cultures (or MUSY 200H3)</li> <li>PHIL 20003, Introduction to Philosophy (or PHIL 200H3)</li> <li>PHIL 21003, Introduction to Ethics</li> <li>PHIL 22003, Logic</li> <li>PHIL 23003, Human Nature and the Meaning of Life</li> <li>PHIL 31003, Ethics and the Professions</li> <li>THTR 10003, Theatre Appreciation (or THTR 100H3)</li> <li>THTR 10103, Musical Theatre Appreciation (or THTR 101H3)</li> <li>Any Intermediate level foreign language numbered at the 20000 level</li> </ul>	
<p><b>MATHEMATICS</b></p> <p>12-19 hrs</p>	<ul style="list-style-type: none"> <li><b>MATH 11003</b>, College Algebra (or <a href="#">math placement</a> directly in to next math)</li> <li><b>MATH 13004</b>, Precalculus or <b>MATH 12003</b>, Plane Trigonometry Algebra (or <a href="#">math placement</a> directly in to next math)</li> <li><b>MATH 24004</b>, Calculus I (pre-req: MATH 13004, 12003, or <a href="#">math placement</a>)*</li> <li><b>MATH 25004</b>, Calculus II (pre-req: MATH 24004)</li> <li><b>MATH 26004</b>, Calculus III (Pre-req: MATH 25004)</li> </ul>	<p><b>Students need to earn a C or higher in MATH classes to use them as pre-requisites for other classes.</b></p> <p>Students should start on their math sequence as early as possible, since many of these classes will be pre-requisites for future CHEM classes.</p> <p>Based on ACT/SAT or other math placement scores, students may need to enroll in additional remediation related courses. See <a href="#">catalog</a> or <a href="#">math placement</a> website for additional information.</p> <p>*MATH 24005, Calculus I with review, can also count here.</p>
<p><b>PHYSICS</b></p> <p>8 hrs</p>	<ul style="list-style-type: none"> <li><b>PHYS 20304</b>, University Physics I (pre-req: MATH 24004)</li> <li><b>PHYS 20404</b>, University Physics II (pre-req: MATH 25004)</li> </ul>	<p>These Physics II will be a pre-requisite to some future CHEM courses.</p>
<p><b>GENERAL CHEMISTRY</b></p>	<p><b>Choose 1 sequence:</b></p>	<p>Students cannot receive degree credit for both CHEM 12073 and 14103 or CHEM 12283 and CHEM 14203.</p>

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8 hrs	<ul style="list-style-type: none"> <li>• <b>CHEM 12073/12071</b>, Chemistry for Majors I (Fall only. pre-req: MATH 11003 or higher or see <a href="#">course description</a> for math placement)</li> <li>• <b>CHEM 12283/12281</b>, Chemistry for Majors II (Spring only. Co- or pre-req: MATH 13004 or higher. Pre-req: CHEM 12073/12071 or CHEM 14103/14101)</li> <li>• Or</li> <li>• <b>CHEM 14103/14101</b>, University Chemistry I (pre-req: MATH 1103 or see <a href="#">course description</a> for math placement)</li> <li>• <b>CHEM 14203/14201</b>, University Chemistry II (pre-req: CHEM 14103 and MATH 11003 or see <a href="#">course description</a> for math placement)</li> </ul>	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 14101 or CHEM 14201. (CHEM 1113, 1133, and 1131L are no longer taught, but the above policy applies to students who may have taken them previously)
<a href="#">ANALYTICAL CHEMISTRY</a>  4 hrs	<ul style="list-style-type: none"> <li>• <b>CHEM 22673/22671</b>, Analytical Chemistry (pre-req: CHEM 14203 or 12283 and MATH 11003 or see <a href="#">course description</a> for math placement)</li> </ul>	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.
<a href="#">PHYSICAL CHEMISTRY</a>  10 hrs	<ul style="list-style-type: none"> <li>• <b>CHEM 35004</b>, Physical Chemistry I (Fall only. Co- or pre-req: MATH 2564c. Pre-req: CHEM 22673 and PHYS 20404)</li> <li>• <b>CHEM 35204/35102</b>, Physical Chemistry II (Spring only. Pre-req: CHEM 35004)</li> </ul>	Students cannot receive credit for both Elements of Physical Chemistry and Physical Chemistry I & 2.
<a href="#">ORGANIC CHEMISTRY</a>  10 hrs	<ul style="list-style-type: none"> <li>• <b>CHEM 37073/37072</b>, Organic Chemistry for Majors I (Fall only. Pre-req: CHEM 14203 or 12283)</li> <li>• <b>CHEM 37203/37202</b>, Organic Chemistry for Majors II (Spring only. Pre-req: CHEM 37073)</li> <li>•</li> </ul>	Honors students may also automatically count CHEM 360H3/360H2 and CHEM 362H3/362H2.  The catalog also lists CHEM 37073 and 37203 as equivalent to CHEM 36053 and 36203. So, while the department prefers students to take CHEM 37073 and 37203, students who took CHEM 36053/36051 and 36203/36201 may count those courses for this requirement. However, students will need to make up the missing 2 hours of labs by doing 1 of the following things: <ul style="list-style-type: none"> <li>• Join a research lab and take at least 2 hrs of CHEM 4000V (if students do this here, they may not also count these hours below).</li> <li>• Take an additional CHEM 30000+ class that is not already required</li> <li>• Retake the labs, but this time the major's versions (CHEM 37072 and 37202)</li> <li>• Take two semesters of CHEM 401H1 (honors students only)</li> </ul>
<a href="#">INORGANIC CHEMISTRY</a>  3 hrs	<ul style="list-style-type: none"> <li>• <b>CHEM 41203</b>, Advanced Inorganic Chemistry (Fall only. Pre-req: CHEM 34603 or 35203)</li> </ul>	
<a href="#">INSTRUMENTAL ANALYSIS</a>  4 hrs	<p>Choose 1 option:</p> <ul style="list-style-type: none"> <li>• <b>CHEM 42203/42101</b>, Instrumental Analysis (Pre-req: CHEM 22673 and lab and CHEM 36203 and lab or 37203 and lab)</li> </ul>	
<a href="#">EXPERIMENTAL METHODS</a>  3 hrs	<ul style="list-style-type: none"> <li>• <b>CHEM 4723</b>, Experimental Methods in Organic Chemistry (Fall only. Pre-req: CHEM 36203 or 37203)</li> </ul>	
<a href="#">ADDITIONAL CHEMISTRY</a>  3 hrs	Take one additional Advanced (30000+) CHEM lecture course.	This program meets the minimum requirements for certification by the American Chemical Society if CHEM 38103 (or CHEM 481H3/CHEM 484H3 or CHEM 58103/58403) is included in this category.

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		CHEM 3999T or 4999T transfer courses can count in this category as long as students still meet the 50% rule. Not all 999T classes pull into the degree audit automatically, so students may need to request classes be moved into the minor by their academic advisor.
<a href="#"><u>GENERAL ELECTIVES</u></a>  20-34 hrs	Hours will vary depending on math placement, language placement, choice within chemistry major, and whether a student is exempt from ENGL 10103 and 10203.	Some general electives may need to be upper level to meet college and university residency requirements. See Graduation Checklist on page 3 for more information.
<a href="#"><u>WRITING REQUIREMENT</u></a>	The college writing requirement may be satisfied in one of two ways: <ul style="list-style-type: none"> <li>• Completion of CHEM 34601 or CHEM 35102</li> <li>• Successful honors thesis defense</li> </ul>	
<a href="#"><u>HONORS</u></a>	<p><b>Minimum Requirements for Honors:</b></p> <ul style="list-style-type: none"> <li>• Maintain cumulative grade point average of 3.5 in all coursework.</li> <li>• Complete a minimum of 12 hours of honors courses from the UofA (<b>which includes CHEM 401H1 taken once in Junior year and once in Senior year</b>)</li> <li>• Complete and defend Honors Thesis</li> </ul> <p>See <a href="#">Catalog</a> for full description of requirements.</p>	<p><b>Honors Thesis Timeline:</b> Honors students should consistently check the <a href="#">honors thesis timeline</a> to stay on track to complete your honors thesis.</p> <p><b>College Honors:</b> Students who also are following the College Honors Plan need to complete additional requirements. Those can be found on the advising website (consult with an academic advisor if you have questions about your catalog year): <a href="#">Academic Planning Resources</a></p>