

Abilene Approval Chart for Curriculum Changes

A = Approve I = Information Item R = Respond In Writing

Course Number: _____ **or Degree Plan(s):** CHMR

The Department of Chemistry has proposed a Research Track for the B.S. in Chemistry Degree as part of the ELDP. Please see the [Full New Track proposal](#) link or the following pages for more information.

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost
	Campus-Level Academic Review¹						
	Change to a Course Include signatures from all chairs/program directors for cross-listed courses. ¹						
1.	Title (description unchanged)	A	A	A	I	I	I
2.	Description (not affecting content)	A	A	A	I	I	I
3.	Course term(s)	A	I	A	I	I	I
4.	Content (change of course outcomes)	A	A	A	I	I	A
5.	Number of credit hours	A	A	A	A	A	A
6.	Course number within the hundred	A	A	I	I	I	I
7.	Course number beyond the hundred	A	A	A	A	A	A
8.	Prerequisites	A	A	A	I	I	I
9.	Course restriction (e.g., majors only, junior standing)	A	A	A	A	A	A
10.	Level change (U to G or G to U)	A	A	A	A	A	A
11.	Cross list course	A	A	A	A	A	A
12.	Department of record	A	A	A	A	A	A
13.	Open or close a course	A	A	A	A	A	A
	Change to a Degree Plan						
14.	Educational Program — Revise	A	A	A	A	A	A
15.	Educational Program — Adopt/revise admission requirements	A	A	A	A	A	A
16.	GPA — Revise program-required GPA	A	A	A	A	A	A
17.	Minor — Revise	A	A	A	A	A	A

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost	Campus Faculty	Senior VPAA	President
	Full Review									
	Change to Catalog Information (for Campus)									
18.	General requirements for Bachelor's and Associate Degrees	-	-	-	-	A	A	A	A	I
19.	Policies governing academic probation and suspension	-	-	-	-	A	A	A	A	I
20.	Requirements for graduating with honors	-	-	-	-	A	A	A	A	I
	Change to a Degree Plan									
21.	Educational Program — Add or Discontinue ^{2 3}	A	A	A	A	A	A	A	A	I
22.	Educational Program — Discontinue (Provost-proposed)	R	-	R	A	A	A	A	A	I
23.	Minor — Add or Discontinue	A	A	A	A	A	A	-	A	I
24.	Minor — Discontinue (Provost-proposed)	R	-	R	A	A	A	-	A	I
25.	Degree — Add or Discontinue	A	A	A	A	A	A	A	A	I
26.	Degree — Discontinue (Provost-proposed)	R	-	R	A	A	A	A	A	I

	Change to General Education Requirements for Undergraduates (System)	.	1	2	3	4	5	6	7	8
27.	Change course outcomes of an included course	A	A	A	A	A	A	-	A	I
28.	Add or drop a required course from the General Education Requirements	A	-	A	-	A	A	A	A	I
29.	Add or drop a course from a menu within the General Education Requirements	A	-	A	-	A	A	-	A	I
30.	Comprehensive revision of General Education Requirements	-	-	-	-	A	A	A	A	I

Notes

² Any change to a cross-listed course requires the signature of both department chairs or program directors overseeing the course to ensure that the courses stay in sync. This includes courses taught at other campuses (e.g. BIBL 101 and BIBO 101).

³ For undergraduate majors, a minimum of 30 hours is required. These programs must have a minimum of 6 elective hours, unless the requirements of external accrediting bodies make it impossible. Master's programs must include a minimum of 30 hours, and doctoral programs must include a minimum of 30 hours beyond the master's.

⁴ When a department/school or dean proposes closing a program, approval routing follows the typical process beginning with the department/school. An administrative proposal by the provost or senior vice president for academic affairs would follow the "provost-proposed" routing on the chart.

Department/School(s)



11/1/23

Chair Signature

Date

Chair/Program Director Signature

Date

College Academic Council(s)



1/2/2024

Chair Signature

Date

Chair Signature

Date

Dean(s)



1/2/2024

Signature

Date

Signature

Date

Teacher Education Council

Signature

Date

**Campus Academic Council:
Abilene Undergraduate or Abilene Graduate**

Signature

Date

Provost

Signature

Date

University General Education Council

Signature

Date

University Faculty

Abilene Faculty Senate Chair signature

Date

Dallas Faculty Council Chair signature

Date

Senior Vice President for Academic Affairs

Signature

Date

President

Signature

Date

Abilene New Track or Minor Application Instructions

Use this template to propose a new track of an existing degree program or a non-degree plan, which includes a minor. For a new educational program — undergraduate major, graduate degree, or certificate — use the [New Program Application](#).

Process Overview

Step 1: Develop and Refine Proposal

The applicant completes the proposal and submits it to the vice provost, who requests any revisions necessary to create an accurate, complete picture of the track or minor and ensure that it aligns with institutional policies and processes so that it will be ready to implement upon approval. After the vice provost is satisfied with revisions, the vice provost sends the proposal for review to:

1. the library dean's designee for library resources review
2. the SACSCOC liaison for substantive change review

Step 2: Curriculum Approval Process

After all reviews are complete, the vice provost will return the full proposal to the applicant, who will begin the process outlined on the campus approval chart to add a new track or minor. This includes approval by the department/school, college academic council, dean, Teacher Education Council if it's a teaching certification program, campus academic council, and provost for a new track, with the addition of the senior vice president for academic affairs for a new minor.

New Track or Minor Application

1. Program Identification
 - A. Title of track or minor:
B.S. Chemistry (ACS Research)
 - B. Identify as track or minor:
Track
 - C. Home department or school (and associated degree program, if track):
Department of Chemistry and Biochemistry, Degree program, Chemistry
 - D. Developer(s) and credentials:
Kathleen Lee, Ph.D. Organic Chemistry, Brad Rix, Ph.D. Polymer Chemistry, and Autumn Sutherlin, Ph.D. Biochemistry, Chair
 - E. Where program will be offered and delivery method:
This program will be offered face-to-face on the Abilene campus
 - F. Proposed date of implementation:
Fall 2024

2. Program Details

1. Description. Summarize this course of study in 50 to 200 words.

This track is our departmental ELDP.

C&BC has a long history of involving undergraduates in the ongoing research projects of its faculty members. In recent years, a growing percentage of students within the C&BC Department can claim participation in undergraduate research at ACU. These students enroll in Introduction to Research (CHEM 393), a 0-3 credit hour, upper-level chemistry course to allow for that research experience to be reflected in transcripts. However, CHEM 393 is listed as an elective course in every one of the degrees offered by the department, not as a requirement due to the limited number of available research positions with our faculty compared with the number of students within the department.

The C&BC Department seeks to create a new track for the B.S. Chemistry degree, one that emphasizes undergraduate research and introduces some flexibility in upper-level chemistry courses based on a student's interests. This new Research Track for the B.S. Chemistry degree will include 3 credit hours of CHEM 393 as an experiential learning requirement for all students enrolled in this degree plan. The new track will still abide by specifications for an American Chemical Society Certified Degree. These specifications were recently revised such that students may tailor their upper-level coursework to their interests. Thus, a student may enroll in courses that emphasize synthesis or analysis or courses that lean toward biological or materials chemistry.

2. Market need. What students will be drawn to this program? What types of careers will they pursue after graduation? What is the job market/outlook like in this area?

Every year prospective students express an interest in chemical or biochemical research. This track will give them a clear path to follow for this interest. After graduation, students will be prepared to work as research technicians in chemical, biochemical, analytical, and other labs. Many students will follow this path as an excellent launching pad for graduate schools. Graduate programs in chemistry require research experience and this degree is designed to give students that experience.

3. Estimate total enrollment for each of the first five years.

The projected enrollment is 2-3 new students each of the next 5 years. By year 4 and 5, I would anticipate up to 10 total majors at a time.

3. Rationale and Need for Program

1. Mission fit. How does the course of study fit with the university's mission to educate students for Christian service and leadership throughout the world? How does the course of study fit with the university's current strategic plan or emphases?

A degree in chemistry with an emphasis in research helps prepare future researchers to tackle emerging scientific questions. It will also support the strategic plan as it is creating a degree track with new required experiential learning..

2. Disciplinary benchmarking. Use the benchmark schools that you named in 2.A.3 to respond, plus any other programs you have reviewed. How does this program curriculum compare to other programs in your discipline? Which Texas universities already offer this program? You may also note other peer institutions that offer the program.

2.A.3 does not exist in this document, but the schools we looked at include Angelo State University, Baylor University, Harding University, Pepperdine University, Texas A&M, Texas State, Texas Tech, Trinity University, University of Houston, University of Texas, UNT, UTA, UTD, UTEP, UTRGV,

There are currently none of the universities that we looked at have a specific research track. We will be unique among the chemistry departments in Texas, as far as we can tell.

3. Make a case for why we should maintain all existing tracks in this major (if a track) or note which ones will be closed.

Our current single track is a standard Chemistry degree which is offered at most universities. It should still be offered. The new tracks offer a chance to expand options for students and aid in recruiting through offering programs that may attract additional students.

4. Curriculum

1. Degree plan. List the major requirements as they would appear in the catalog. For undergraduate degree plans, include 74 credit hours of major requirements and electives, and mark which courses are the capstone and writing-intensive courses. Minors are 18 hours with at least 6 hours of upper-division courses.

Major Requirements

Chemistry

CHEM 133 - General Chemistry I Credit Hours: 3 *

CHEM 131 - General Chemistry Laboratory I Credit Hours: 1

CHEM 132 - General Chemistry Laboratory II Credit Hours: 1
CHEM 134 - General Chemistry II Credit Hours: 3 *
CHEM 221 - Organic Chemistry Laboratory I Credit Hours: 1
CHEM 223 - Organic Chemistry I Credit Hours: 3
CHEM 322 - Organic Chemistry Laboratory II Credit Hours: 1
CHEM 324 - Organic Chemistry II Credit Hours: 3
CHEM 356 - Analytical Chemistry II Credit Hours: 4
CHEM 423 - Chemistry and Biochemistry Seminar Credit Hours: 3 (capstone and writing-intensive course)
CHEM 441 - Inorganic Chemistry Laboratory Credit Hours: 1
CHEM 443 - Inorganic Chemistry Credit Hours: 3
CHEM 453 - Biochemistry I: Foundations of Biochemistry Credit Hours: 3

*Hours may also fulfill general education requirements and are not included in total major hours

Mathematics

MATH 185 - Calculus I Credit Hours: 3 *

*Hours may also fulfill general education requirements and are not included in total major hours

Total: 24 Credit Hours

Supplement for Major

ACS Research Chemistry (CHMR)

CHEM 355 - Analytical Chemistry I Credit Hours: 4
CHEM 393 - Introduction to Research Credit Hours: 3

CHEM 333 - Physical Chemistry I Credit Hours: 4

or

CHEM 334 - Physical Chemistry II Credit Hours: 4

Mathematics

MATH 186 - Calculus II Credit Hours: 3

Choose 3 hours from:

MATH 286 - Calculus III Credit Hours: 3

MATH 325 - Linear Algebra Credit Hours: 3

MATH 361 - Ordinary Differential Equations Credit Hours: 4

MATH 377 - Statistical Methods I Credit Hours: 3

Physics

PHYS 220 - Engineering Physics I Credit Hours: 3

PHYS 221 - Engineering Physics I Laboratory Credit Hours: 1

PHYS 222 - Engineering Physics II Credit Hours: 3

PHYS 223 - Engineering Physics II Laboratory Credit Hours: 1

Choose 9 hours not previously taken from:

CHEM 333 - Physical Chemistry I Credit Hours: 4

CHEM 334 - Physical Chemistry II Credit Hours: 4

CHEM 375 - Molecular Modeling & Computational Chemistry Credit Hours: 3

CHEM 430 - Medicinal Chemistry Credit Hours: 3

CHEM 454 - Biochemistry II: Gene Expression Credit Hours: 3

CHEM 456 - Biochemistry III: Metabolism Credit Hours: 2

CHEM 463 - Biochemistry Laboratory I Credit Hours: 1

CHEM 483 - Polymer Chemistry Credit Hours: 4

Total: 34 Credit Hours

Electives

Minimum - 16 Credit Hours

Total Major Hours: 74

- B. Course coordination. Attach a memo or email of support from the department chair of each department outside the home department that will provide a course for the track or minor.

[Biology Email of Support](#)

[Engineering and Physics Email of Support](#)

[Mathematics Letter of Support](#)

- C. Courses. Create a table with one row for every course, existing and new, included in the track or minor requirements. Create five columns that provide the following information:

1. Rotation and frequency (e.g., fall odd years)
2. Whether the course is required or on a menu
3. Which track(s, existing and new) the course serves, if applicable
4. Current faculty credentialed to teach (everyone who is eligible to teach the course, not just who *will* teach the course)

Course	Rotation/ Frequency	Required (R) or Menu (M)	Tracks Served*	Credentialed Faculty
Chem 133	Fall, Spring	R	Gen Ed Course About 50 tracks and minors	All C&BC faculty
Chem 131	Fall, Spring	R	Gen Ed Course About 50 tracks and minors	All C&BC faculty
Chem 134	Spring, Summer	R	Gen Ed Course, About 35 tracks and minors	All C&BC faculty
Chem 132	Spring, Summer	R	Gen Ed Course, About 35 tracks and minors	All C&BC faculty

Chem 221	Fall	R	About 20 tracks and minors	All C&BC faculty
Chem 223	Fall	R	About 20 tracks and minors	All C&BC faculty
Chem 322	Spring	R	About 20 tracks and minors	All C&BC faculty
Chem 324	Spring	R	About 20 tracks and minors	All C&BC faculty
Chem 356	Spring	R	CHEM and BCH Tracks	All C&BC faculty
Chem 375	Fall, even	M	CHEM and BCH Tracks	All C&BC faculty
Chem 423	Fall, Spring	R	BCH Tracks	All C&BC faculty
Chem 443	Spring, even	R	CHEM and BCHC	All C&BC faculty
Chem 441	Spring, even	R	CHEM and BCHC	All C&BC faculty
Chem 453	Fall	R	CHEM and BCH tracks	All C&BC faculty
Chem 456	Spring	M	BCH tracks	All C&BC faculty
Chem 430	Fall, odd	M	CHEM and BCH Tracks	All C&BC faculty
Chem 334	Spring, odd	M	CHEM and BCHC	All C&BC faculty
Chem 333	Fall, even	M	CHEM and BCHC	All C&BC faculty
Chem 355	Fall	R	CHEM and BCH tracks	All C&BC faculty
Chem 393	Fall, Spring, Summer	R	CHEM and BCH tracks	All C&BC faculty
Chem 454	Spring	M	CHEM and BCH tracks	All C&BC faculty
Chem 463	Fall	M	BCH tracks	All C&BC faculty
Chem 483	Fall, on demand	M	CHEM and BCH tracks	All C&BC faculty
Math 185	Fall, Spring	R	Gen Ed course, Many, many tracks	All Math Faculty
Math186	Fall, Spring	R	About 50 tracks and minors	All Math Faculty
Math 286	Fall, Spring	M	About 20 tracks and minors	All Math Faculty
MATH 325	Spring	M	Many CS, ENGR, MATH, and PHYS tracks	
Math 377	Fall	M	About 40 tracks and minors	All Math Faculty

MATH 361	Fall, Spring	M	In many ENGR, MATH, and PHYS tracks	John Ehrke
Phys 220/221	Fall, Spring	M	Gen Ed Course About 25 Tracks and Minors	All E&P Faculty
Phys 222/223	Fall, Spring	M	Gen Ed Course About 25 Tracks and Minors	All E&P Faculty

*Many of the courses serve so many tracks that I just estimated based on the catalog list about 5 programs per page. So I multiplied the number of pages by 5.

D. New courses. For each new course included in the program requirements, list the following information. The vice provost will insert a curriculum approval schedule to set deadlines for introducing each new course.

1. Proposed subject code and course number: CHEM 430
2. Course title and description: Medicinal Chemistry

Introduction to design and development of small molecule drug candidates. Focuses on structure-activity relationship, types of drug targets, pharmacokinetics and pharmacodynamics, and optimization of lead drug candidates. Special attention will be paid to synthesis and synthetic strategies. Prerequisite: a grade of "C" or better in CHEM 324.

3. Existing tracks/programs in which the courses will also be used, if applicable: This will be required in the new CHMM track and will be a selection in this track as well as the existing CHEM track, the BCHC track and BCHS track.

5. Required Institutional Support

A. Faculty requirements and availability.

1. Describe the new track or minor's impact on faculty workload. Your narrative should provide supporting evidence that the number of full-time faculty members will be adequate to support the program.

All of the required courses in the track are already offered at least annually or biannually. Some of the courses in the menu are offered on a three year rotation. This would not impact a student's ability to graduate. Because all of the courses are already offered, it should not impact faculty workload. Tenured and tenure-track faculty have research students working in their labs anyway, so the students required to take the research course should be able to be incorporated into these labs. Currently, almost if not all of the students who are interested in a research career are or have participated in research.

2. If program delivery requires a faculty hire, provide an expected salary range and forecast potential faculty availability.

No additional faculty should need to be hired.

3. If the plan includes part-time instructors, include total cost per year for adjunct pay.

No additional part-time instructors should need to be hired.

- B. Impact on existing programs. Identify any existing programs/majors from which the new program would draw students and estimate enrollment effects on existing programs in the home department or other departments.

The biggest impact may be on the one chemistry track we have as chemistry majors choose to specialize. Since it is part of the same degree, but that has no real impact on the classes that are being offered. So while the major growth will likely be from new students, it does provide a good path for students we are already serving to find a major that better fits their career goals.

- C. Staff requirements. Indicate need for new staff (providing expected salary range and forecast suitable applicant availability) and evaluate effect on existing loads of current staff who will serve the program.

There should be no new staff requirements. While this may attract a few more students, the increase will fit within the workload of our lab manager and departmental coordinator.

- D. Library resources. Identify discipline-specific library resources necessary to serve the requirements of the program. These may be existing holdings and services and new ones.

1. Describe how faculty and students will access information electronically and on site, and explain how they will receive instruction about how to do this.

The needs will be the same as our current chemistry and biochemistry majors and faculty. The American Chemical Society requirements are below. ACU already meets these requirements.

- Immediate access to a minimum of 14 peer reviewed journals in the chemical sciences.
 - At least 3 of general focus
 - At least one in each area ABIOP
 - At least one chemical education
- Access is available to multiple technical databases including structure-based searching.

Students are instructed about the use of resources in several classes, especially in our seminar course and upper level labs. In addition, students who are participating in research in the Summer are given seminars on use of databases that are particularly useful to chemists and biochemists. Research students receive one-on-one instruction from their research mentors.

2. Describe requirements to support students in their access to and use of learning resources.

I am not sure how this is different from the previous question. Outside of journal articles and some databases, many of the student learning resources are located in the department.

- E. Physical resources. Identify needs for classroom, lab, and office space and impacts on existing space use. List necessary equipment. Provide costs for any construction or equipment.

Because this is a rearrangement of courses already taught at ACU there should be no impact on physical resources.

- F. Scholarships. Will the unit provide any unique scholarships to students in the program?

There are currently no plans to offer unique scholarships. The department currently awards over \$50,000 in scholarships to students annually.

- G. Recruiting. To whom should the degree be marketed? What additional recruiting beyond general recruiting to the university will be needed, and what costs will we incur?

I do not believe this will add an extra recruiting burden. In discussions with admissions, I believe that this will help attract students that are interested in Chemistry. Because this is a unique track, it can help us pull some prospective students from our competitors.

- H. Additional cost to deliver track or minor. Total expenses from sections A to H. Clarify which expenses are one-time and which are ongoing.

There should be no additional cost to deliver this track.

Stop here and submit to the vice provost. Section 6 is not required for all applications, and you will only need to complete it if requested by the SACSCOC liaison.

6. Additional Information Required if Requested

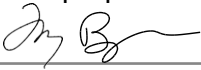
1. Employment demand and career possibilities.
 1. Identify jobs that graduates would be qualified to pursue.
 2. Use official databases to establish the job market for graduates of the program. Use the U.S. Bureau of Labor Statistics and Texas Workforce Commission; other sources that may be helpful are authorities on regional labor markets (e.g., metropolitan Chambers of Commerce) and current industry reports.
 3. Use the [crosswalk document provided by IPEDS](#) to take your previously identified CIP code and find the associated occupations in the [Standard Occupational Classification](#) system provided by the Bureau of Labor Statistics. Use the associated SOC number to find entry-level and mean

wages in that field in Texas from the Texas Workforce Commission ([Texas Wages](#) — Wages by Workforce Development Area).

2. Student support services. Describe specific programs, services, and activities that will support students enrolled in the program. Some examples of academic support services are teaching and resource centers, tutoring, academic advising, counseling, disability services, diversity and inclusion offices, teaching laboratories, career services, testing centers, student life, and information technology.
3. Describe financial resources available to support the new program, including a budget for the first year of the program; projected revenues, expenditures, and cash flow; amount of resources going to external institutions or organizations contracted to provide support services for the program; the operational, management, and physical resources available for the change.
4. Provide contingency plans in the event required resources do not materialize.

Approvals

The proposal aligns with institutional policies and processes, and the campus is prepared to support the proposed track or minor as presented.

 10-31-23

Vice Provost Date

The library has sufficient resources to support the track or minor, or the comments below outline additional acquisitions required and their associated costs.

 10/30/2023

Associate Dean of the Library Date
Comments, if needed:

This proposal does not require additional review for institutional accreditation purposes, or I have worked with the faculty to gather the information necessary to notify SACSCOC or gain its approval.

 10/31/2023

SACSCOC Liaison Date

When all signatures are complete, attach an Approval Chart for Curriculum Changes, conduct the department faculty vote to approve the new track or minor, and continue the approval process as specified by the approval chart.

Chemistry Track Support

Jennifer Huddleston <jrh11a@acu.edu>

Thu, Sep 14, 2023 at 10:06 AM

To: Autumn Sutherlin <als03c@acu.edu>

Autumn,

BIOL 121-124 are "Introductory Biology" not "Intro to Biology."

BIOL 484 Developmental Biology is in the catalog and we are starting to teach it again now that we have Andrew Holowiecki. This might be a good course for medicinal chemistry. You might also want to add BIOL 492 Physiology. This is a general eukaryotic physiology course that can serve as a good foundation for understanding physiological interactions.

I support the inclusion of the biology courses in your proposed Medicinal Chemistry track.

Dr. Jennifer R. Huddleston

Associate Professor
Department Chair
Department of Biology
Abilene Christian University
202 Halbert-Walling Research Center
ACU Box 27868
Abilene, Texas 79699-7868
office: 325-674-2010
fax: 325-674-2009
jennifer.huddleston@acu.edu
Book an appointment

[Quoted text hidden]

Chemistry Track Support

Tim Head <tlh07b@acu.edu>

Fri, Sep 29, 2023 at 10:30 AM

To: Autumn Sutherlin <als03c@acu.edu>

Autumn,

Thank you for informing us of these changes. The Engineering and Physics Department has the capacity currently to support these changes. Due to the increased number of students expected in engineering programs that may begin next year, an additional increase in students could spur the need for additional physics faculty in the future, but I don't see any immediate issues from our department.

Thanks,

Tim

On Tue, Sep 12, 2023 at 9:52 AM Autumn Sutherlin <als03c@acu.edu> wrote:

[Quoted text hidden]

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Timothy L. Head, Ph. D.
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To: Autumn Sutherlin, Chair of Chemistry and Biochemistry

From: John Ehrke, Chair of Mathematics

Re: Memo of Support for New Chemistry Track

I have reviewed the proposals for new tracks in the Chemistry and Biochemistry Department. The mathematics department, as a member of the Onstead College of Science and Engineering is fully in support of these new programs as they show great promise to further college goals related to recruiting, retention, and academic excellence. The Chemistry – Research Track and Chemistry – Medicinal Chem Track both will have minimal impact on our enrollments, so we will be able to provide adequate support.

The department looks forward to working with the Department of Chemistry and Biochemistry, the Onstead College of Science and Engineering, and the University as we move forward on this plan.

Blessings,

John Ehrke

Dr. John Ehrke
Chair of Mathematics