

Abilene Approval Chart for Curriculum Changes

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

Course Number: _____ or Degree Plan(s): **Bachelor of Science in Biomedical Sciences (BMS)**

	Campus-Level Academic Review ¹	Chair	Dept.	College	Faculty	Student
	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
2.	Description (not affecting content)	A	A	A	I	I
3.	Course term(s)	A	I	A	I	I
4.	Content (change of course outcomes)	A	A	A	I	A
5.	Number of credit hours	A	A	A	A	A
6.	Course number within the hundred	A	A	I	I	I
7.	Course number beyond the hundred	A	A	A	A	A
8.	Prerequisites	A	A	A	I	I
9.	Course restriction (e.g., majors only, junior standing)	A	A	A	A	A
10.	Level change (U to G or G to U)	A	A	A	A	A
11.	Cross list course	A	A	A	A	A
12.	Department of record	A	A	A	A	A
13.	Open or close a course	A	A	A	A	A
	Change to a Degree Plan					
14.	Educational Program — Revise	A	A	A	A	A
15.	Educational Program — Adopt/revise admission requirements	A	A	A	A	A
16.	GPA — Revise program-required GPA	A	A	A	A	A
17.	Minor — Revise	A	A	A	A	A

		V	I	R	E	V	I	D	O	S
	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)	.	II	III	IV	V	VI	VII	VIII	S
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

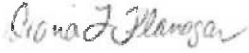
Notes

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)

Chair Signature	Date
	4/1/25

Chair/Program Director Signature	Date
	4/8/2025

College Academic Council(s)

Chair Signature	Date
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Chair Signature	Date
	4/8/2025

Dean(s)

Signature	Date
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Signature	Date
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Teacher Education Council

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

Signature	Date
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Provost

Signature	Date
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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

Bachelor of Science in Biomedical Sciences (BMSC)

Step 2: Full Proposal Information

3. Program Information

- A. Program description. This 50- to 200-word explanation will be included in the catalog with degree plan.

The Bachelor of Science (B.S.) Biomedical Sciences degree program is an interdepartmental program shared by the Departments of Biology, Chemistry and Biochemistry, and the Center for Pre-Health Professions. Integrated into the degree program are required and recommended courses for various health professions career pathways. This degree's focus is in areas essential to the science of human health and will prepare students for graduate programs in biomedical research, health professions schools, and professional careers in the healthcare industry.

In addition to the B.S. Biomedical Sciences degree which prepares students for graduate research programs, specific tracks have been designed that outline the commonly required and recommended courses for admission to health professions schools: Pre-Medical, Pre-Dental, Pre-PA, Pre-Pharmacy, Pre-Vet, and Pre-Optometry. Individual health professions schools (in-state and out-of-state) may require or recommend additional courses, and prerequisites may change at any time. It is highly recommended that pre-health students meet with their pre-health faculty advisor and visit health professions school websites that they are interested in to ensure all requirements are met. Competitive applicants to health professions programs will have GPAs that significantly exceed the minimum GPA requirement to earn an ACU undergraduate degree.

- B. Program mission statement. It should define what students will be equipped to do upon completion of the program.

The mission of the Bachelor of Science in Biomedical Sciences program is to provide students with a comprehensive background in biology, chemistry, and biochemistry, preparing them for successful careers in healthcare, research, and related fields.

- C. Student learning outcomes. Define the competencies for graduates of your program. They should be specific and measurable. You should have a minimum of three and no more than seven.

1. Students will demonstrate an understanding of the fundamental concepts in biology and chemistry.
2. Students will be able to analyze experimental data and interpret results.

3. Students will be able to apply core scientific principles to human health and disease.
4. Students will be able to identify societal and ethical issues in biomedical sciences.

D. Admission requirements. Describe prerequisites, which may include items such as application to the major, test scores, GPA, courses, skills, academic standing, etc.

Before being admitted to the B.S. in Biomedical Sciences, a student must satisfy the requirements listed in the *ACT/SAT Placement Information* section of the ACU catalog.

E. Enrollment estimate based on Lightcast market analysis.

The estimated enrollments based on [Lightcast market analysis](#) is 20 students. (included in proposal)

F. CIP code. Identify the 6-digit [CIP code](#) for the program. This is the system by which the government classifies all postsecondary educational programs. The program may have only one CIP code.

The CIP code is 26.0102 Biomedical Sciences, General

G. SOC code. 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. The program may have only one SOC code.

There are three SOC codes associated with the CIP code 26.0102 in the IPEDS crosswalk document: 19-1042 (Medical Scientists except Epidemiologists), 19-4021 (Biological Technicians), and 25-1042 (Biological Science Teachers, Postsecondary). To comply with the requirements to choose one SOC code, 19-1042 (Medical Scientists except Epidemiologists) seems to be the best fit for the occupations listed in the Lightcast Market Analysis.

Please see the attached [Market Analysis Report](#). (included in proposal)

4. Rationale and Need for Program

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

ACU has a long history of preparing students for graduate school and graduate health professions programs. The B.S. in Biomedical Sciences adds an option for science

students who wish to pursue a more human health-focused degree. Integrated into this degree program is an emphasis on biomedical ethics which requires students to explore controversial topics and reconcile them with their Christian faith. As an extension of the didactic requirements, students are encouraged to participate in service as an option for experiential learning through participation in pre-health mission trips and other missional activities. Collectively, the degree requirements support ACU's mission to educate students for Christian service and leadership throughout the world.

As part of the current strategic plan, ACU is exploring the feasibility of adding a Health Sciences Center which will provide advanced medical training. Development of an undergraduate biomedical sciences program fits within this initiative. Adding this degree program enhances ACU's current academic offerings, further aligns Onstead College of Science and Engineering with the strategic plan initiatives, and provides high-impact curriculum that appeals to prospective students.

B. Employment demand and career possibilities.

1. Identify jobs that graduates would be qualified to pursue.

Upon completion of the B.S. in Biomedical Sciences, graduates will be qualified to pursue jobs in the following fields: Clinical Research Associates, Medical Technologists/Laboratory Technicians, Research Assistant, Medical Assistant, Microbiology Technologist, Clinical Laboratory Scientists, Biotechnology Product Development Technician.

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.

According to the Lightcast Analysis performed by the Provost's Office, "jobs related to this program are expected to grow nearly 32% in the next decade compared to 21% for the nation. However, students earn less at these jobs in Texas (median \$55,700) than nationally (median \$65,200)." According to MIT's [Living Wage Calculator](#) for Texas, the median wage (\$55,700) represents a living wage for 2 adults both working with two children or one adult with no children. A large percentage of students who choose to pursue the B.S. Biomedical Sciences degree will immediately continue their education after completing their undergraduate degree. The table below shows the projected percentage change for employment in Texas and statewide mean wages for several of the occupations that the B.S. Biomedical Sciences Tracks are designed to help students pursue.

3. Using the SOC code chosen in 3.G., find entry-level and mean wages in that field in Texas from the Texas Workforce Commission ([Texas Wages](https://texaswages.com) — Wages by Workforce Development Area).

Texas Wages & Employment 2022-2032 Projections
<https://texaswages.com/Projections>

Occupation	Percent Change	Statewide Mean Wages
SOC 19-1042		\$86, 281
Entry-Level Jobs from Lightcast Market Analysis		
Clinical Laboratory Technologist/Technicians	+17.2	\$57,075
Medical Assistants	+25.2	\$38,869
Biological Technicians	+15.8	\$49,919
Medical Health Service Managers	+40.00	\$120,202
B.S. Biomedical Sciences Career Tracks		
Family Medicine	+15.2	\$214,719
PA	+37.8	\$134,777
Dentist, General	+17.2	\$220,000
Optometrist	+18.1	\$152,000
Pharmacist	+16.9	\$133,603

- C. Prospective student interest. Share any data from your discipline that shows student demand for the program. Is the program likely to draw students who are already at ACU, or will it draw new students to the university? Whom should we recruit, and with whom will we compete for students?

	Submitted Applications	CPHP concentration	% of submitted apps	Total Enrolled	CPHP Enrolled	% of enrolled
F22	11,872	1,933	16.2%	897	172	19.1%
F23	11,145	2,163	19.4%	862	153	17.7%
F24	11,912	2,363	19.8%	906	172	19.0%
F25	10,750	2,456	22.8%			

From Rachel Goodman, Executive Director of Rising Scholars: *Students are looking for words like "medical/medicine/health" when looking at majors and this will help them see that we have something to offer! Prospective students are interested in Pre-Dental/Pre-Med/etc and are seeking that out. The more programs we can offer and market for, the more students we can attract. Additionally, if we can show that we have a major designated for medical preparation we can potentially enroll more students. This will take students away from the current majors offered, but will also benefit the university long term by enrolling more CPHP students.*

From correspondence with Tamara Long, Vice President for Enrollment and Student Engagement, ACU loses Texas pre-med students to Texas A&M, Baylor, Texas Tech, University of Texas, and University of Texas-San Antonio.

In addition to prospective students, current first-year and second-year pre-health students may be interested in switching to the new degree program options. It is difficult to anticipate how many students will change their major in response to the addition of these degrees to the catalog.

- D. Disciplinary benchmarking. Use the benchmark schools that the vice provost named in Step 1. The Lightcast market analysis will tell you about their enrollment, and you should review their curriculum and co-curricular offerings online. You may add any other programs you find relevant. How does this program curriculum compare to other programs in your discipline? What market opportunities do you see based on the market analysis?

Benchmark School Comparisons (included in proposal)

The proposed biomedical science program aligns with the other schools. Prospective Texas students looking for biomedical sciences degrees will find them at Texas A&M, UT-RGV, Sam Houston State, and a few smaller NFP private universities. Finding an exact match to what we are proposing, a STEM-focused *interdepartmental* degree, is difficult as many of the identified benchmark schools also have medical schools on their

campuses, and most of the degree programs are housed in a single department. During the Fall 2024 semester, UT-Dallas School of Natural Sciences announced the creation of a B.S. in Biomedical Sciences to allow students more flexibility to tailor their degrees toward their professional career paths. From conversations with colleagues at this year's Texas Association for Advisors of Health Professions (TAAHP) Conference, TCU's Director of the Pre-Health Professions Institute and Professor of Biology is currently developing an undergraduate biomedical sciences degree program for their Department of Biology. With other universities creating biomedical sciences degrees for students interested in pre-health professions, the establishment of the B.S. in Biomedical Sciences degree will help ACU remain competitive in the market for prospective students who are seeking out these degrees.

5. Curriculum

- A. 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. A master's degree must have a minimum of 30 credit hours. A doctoral degree must have a minimum of 30 hours beyond the master's degree.

To develop the different categories for the degree program and tracks, all Texas health professions schools' websites for each career path were reviewed for prerequisites and recommended courses.

The Biomedical Sciences Major Requirements category consists of a core group of classes that are consistently applied across the degree program and all tracks.

The Advanced Biomedical Sciences Elective menu represents a selection of highly recommended courses that ACU currently offers from the analysis of Texas health professions schools' websites. The benchmark institutions' requirements for their biomedical sciences degree programs were also considered.

Efforts were made to develop a degree program with tracks in which students could change their career interest and switch between the different tracks easily. The B.S. Biomedical Sciences General is designed for students who may initially start as a pre-health major but decide at some point to pursue graduate biomedical research programs. The courses that are listed as part of the career-specific tracks are either prerequisites or needed for adequate preparation for required admissions tests.

BS: Biomedical Sciences (BMSC)

General Education Requirements

Please see the [General Education](#) section of this catalog.

Major Requirements

Biomedical Sciences

[BIOL 121 - Introductory Biology I](#) Credit Hours: 3 *
[BIOL 122 - Introductory Biology I Laboratory](#) Credit Hours: 1
[BIOL 123 - Introductory Biology II](#) Credit Hours: 3
[BIOL 124 - Introductory Biology II Laboratory](#) Credit Hours: 1
[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
[PHP 201 - Introduction to Health Professions Seminar](#) Credit Hours: 1
[PHP 301 - Health Professions Application Seminar](#) Credit Hours: 1
[BIBP 352 - Biomedical Ethics](#) Credit Hours: 3 *
[BIOL 497 - Seminar in Biology](#) Credit Hours: 3 (capstone and writing-intensive course)
OR
[CHEM 423 - Chemistry and Biochemistry Seminar](#) Credit Hours 3 (capstone and writing-intensive course)

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

Total: 18 Credit Hours

General Biomedical Sciences (BMSC)

[BIOL 312 - Cell Biology](#) Credit Hours: 3
[BIOL 351 - Genetics](#) Credit Hours: 3
BIOL 352 - Genetics Laboratory Credit Hours: 1

[BIOL 492 - Physiology](#) 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 453 - Biochemistry I: Foundations of Biochemistry](#) Credit Hours: 3
[CHEM 456 - Biochemistry III: Metabolism](#) Credit Hours: 2

Total: 23 Credit Hours

Advanced Biomedical Sciences Electives

Choose a minimum of 6 hours from the following courses:

[BIOL 355 - Microbiology](#) Credit Hours: 3
[BIOL 357 - Microbiology Laboratory](#) Credit Hours: 1
BIOL 452- Virology Credit Hours: 3
[BIOL 454 - Immunology](#) Credit Hours: 3
[BIOL 475 - Molecular Genetics](#) Credit Hours: 3
[BIOL 480 - Histology](#) Credit Hours: 3
[BIOL 484 - Developmental Biology](#) Credit Hours: 3
[BIOL 491 - Human Anatomy](#) Credit Hours: 3
[BIOL 493 - Human Anatomy Laboratory](#) Credit Hours: 1
[BIOL 495 - Physiology Laboratory](#) Credit Hours: 1
[BIOL 498 - Cancer Biology](#) Credit Hours: 3
[CHEM 454 - Biochemistry II: Gene Expression](#) Credit Hours: 3
[CHEM 463 - Biochemistry Laboratory I](#) Credit Hours: 1
[CHEM 430 - Medicinal Chemistry](#) Credit Hours: 3
[CHEM 413 - Physical Chemistry/Life Sciences](#) Credit Hours: 3
[CHEM 356 - Analytical Chemistry II](#) Credit Hours: 4

Total: 6 Credit Hours

Advanced Biology & Chemistry Selection

Choose a minimum of 9 hours, not previously taken, from BIOL or CHEM 300 or higher

Total: 9 Credit Hours

Experiential Learning

Students are required to complete an experiential learning component.

Choose one option from the list below:

[BIOL 399 - Biology Research](#) Credit Hours: 1-3 ^
[CHEM 393 - Introduction to Research](#) Credit Hours: 0-3^

PHP 305 - Medical Missions Seminar Credit Hours: 1

PHP 310 - Clinical Internship Credit Hours: 1

[PHP 308 - Global Healthcare](#) Credit Hours: 3^ or other Study Abroad Experience^

^Hours fulfill either general education or major requirements and are not counted a second time for this requirement.

Total: 0-1 Credit Hours

Supplement for the Major

Physics

[PHYS 110 - General Physics I](#) Credit Hours: 3*

[PHYS 111 - General Physics I Laboratory](#) Credit Hours: 1

[PHYS 112 - General Physics II](#) Credit Hours: 3

[PHYS 113 - General Physics II Laboratory](#) Credit Hours: 1

Mathematics

[MATH 131 - Calculus for Application](#) Credit Hours: 3 *

Or

[MATH 185 - Calculus I](#) Credit Hours: 3 *

[MATH 123 - Elementary Statistics](#) Credit Hours: 3

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

Total: 8 Credit Hours

Electives

Minimum - 9-10 Credit Hours

Total Major Hours: 74

Other Graduation Requirements:

Minimum GPA in major: 2.00

Minimum GPA for graduation: 2.00

Minimum advanced hours: 33

Minimum total hours: 128

*Courses numbered 0** do not count in minimum hours required for degree.*

BS: Biomedical Sciences (BMSC), Pre-Medical

General Education Requirements

Please see the [General Education](#) section of this catalog.

Major Requirements

Biomedical Sciences

[BIOL 121 - Introductory Biology I](#) Credit Hours: 3 *
[BIOL 122 - Introductory Biology I Laboratory](#) Credit Hours: 1
[BIOL 123 - Introductory Biology II](#) Credit Hours: 3
[BIOL 124 - Introductory Biology II Laboratory](#) Credit Hours: 1
[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
[PHP 201 - Introduction to Health Professions Seminar](#) Credit Hours: 1
[PHP 301 - Health Professions Application Seminar](#) Credit Hours: 1
[BIBP 352 - Biomedical Ethics](#) Credit Hours: 3 *
[BIOL 497 - Seminar in Biology](#) Credit Hours: 3 (capstone and writing-intensive course)
OR
[CHEM 423 - Chemistry and Biochemistry Seminar](#) Credit Hours 3 (capstone and writing-intensive course)

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

Total: 18 Credit Hours

Pre-Medical Track

[BIOL 312 - Cell Biology](#) Credit Hours: 3
[BIOL 351 - Genetics](#) Credit Hours: 3
BIOL 352 - Genetics Laboratory Credit Hours: 1
[BIOL 491 - Human Anatomy](#) Credit Hours: 3
[BIOL 492 - Physiology](#) Credit Hours: 3
[BIOL 493 - Human Anatomy Laboratory](#) Credit Hours: 1
[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 453 - Biochemistry I: Foundations of Biochemistry](#) Credit Hours: 3
[CHEM 456 - Biochemistry III: Metabolism](#) Credit Hours: 2
[PSYC 120 - Introduction to Psychology](#) Credit Hours: 3*
Or
[SOC 111 - Introduction to Sociology](#) Credit Hours: 3*

Total: 27 Credit Hours

Advanced Biomedical Sciences Electives

Choose a minimum of 6 hours from the following courses:

[BIOL 355 - Microbiology](#) Credit Hours: 3
[BIOL 357 - Microbiology Laboratory](#) Credit Hours: 1
BIOL 452- Virology Credit Hours: 3
[BIOL 454 - Immunology](#) Credit Hours: 3
[BIOL 475 - Molecular Genetics](#) Credit Hours: 3
[BIOL 480 - Histology](#) Credit Hours: 3
[BIOL 484 - Developmental Biology](#) Credit Hours: 3
[BIOL 498 - Cancer Biology](#) Credit Hours: 3
[CHEM 454 - Biochemistry II: Gene Expression](#) Credit Hours: 3
[CHEM 463 - Biochemistry Laboratory I](#) Credit Hours: 1
[CHEM 430 - Medicinal Chemistry](#) Credit Hours: 3
[CHEM 413 - Physical Chemistry/Life Sciences](#) Credit Hours: 3
[CHEM 356 - Analytical Chemistry II](#) Credit Hours: 4

Total: 6 Credit Hours

Advanced Biology & Chemistry Selection

Choose a minimum of 6 hours, not previously taken, from BIOL or CHEM 300 or higher

Total: 6 Credit Hours

Experiential Learning

Students are required to complete an experiential learning component.

Choose one option from the list below:

[BIOL 399 - Biology Research](#) Credit Hours: 1-3 ^

[CHEM 393 - Introduction to Research](#) Credit Hours: 0-3^

PHP 305 - Medical Missions Seminar Credit Hours: 1

PHP 310 - Clinical Internship Credit Hours: 1

[PHP 308 - Global Healthcare](#) Credit Hours: 3^ or other Study Abroad Experience^

^Hours fulfill either general education or major requirements and are not counted a second time for this requirement.

Total: 0-1 Credit Hours

Supplement for the Major

Physics

[PHYS 110 - General Physics I](#) Credit Hours: 3*

[PHYS 111 - General Physics I Laboratory](#) Credit Hours: 1

[PHYS 112 - General Physics II](#) Credit Hours: 3

[PHYS 113 - General Physics II Laboratory](#) Credit Hours: 1

Mathematics

[MATH 131 - Calculus for Application](#) Credit Hours: 3 *

Or

[MATH 185 - Calculus I](#) Credit Hours: 3 *

[MATH 123 - Elementary Statistics](#) Credit Hours: 3

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

Total: 8 Credit Hours

Electives

Minimum - 8-9 Credit Hours

Total Major Hours: 74

Other Graduation Requirements:

Minimum GPA in major: 2.00

Minimum GPA for graduation: 2.00

Minimum advanced hours: 33

Minimum total hours: 128

*Courses numbered 0** do not count in minimum hours required for degree.*

BS: Biomedical Sciences (BMSC), Pre-Dental

General Education Requirements

Please see the [General Education](#) section of this catalog.

Major Requirements

Biomedical Sciences

[BIOL 121 - Introductory Biology I](#) Credit Hours: 3 *
[BIOL 122 - Introductory Biology I Laboratory](#) Credit Hours: 1
[BIOL 123 - Introductory Biology II](#) Credit Hours: 3
[BIOL 124 - Introductory Biology II Laboratory](#) Credit Hours: 1
[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
[PHP 201 - Introduction to Health Professions Seminar](#) Credit Hours: 1
[PHP 301 - Health Professions Application Seminar](#) Credit Hours: 1
[BIBP 352 - Biomedical Ethics](#) Credit Hours: 3 *
[BIOL 497 - Seminar in Biology](#) Credit Hours: 3 (capstone and writing-intensive course)
OR
[CHEM 423 - Chemistry and Biochemistry Seminar](#) Credit Hours 3 (capstone and writing-intensive course)

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

Total: 18 Credit Hours

Pre-Dental Track

[BIOL 312 - Cell Biology](#) Credit Hours: 3
[BIOL 351 - Genetics](#) Credit Hours: 3
BIOL 352 - Genetics Laboratory Credit Hours: 1
[BIOL 355 - Microbiology](#) Credit Hours: 3

[BIOL 357 - Microbiology Laboratory](#) Credit Hours: 1
[BIOL 491 - Human Anatomy](#) Credit Hours: 3
[BIOL 492 - Physiology](#) Credit Hours: 3
[BIOL 493 - Human Anatomy Laboratory](#) Credit Hours: 1
[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 453 - Biochemistry I: Foundations of Biochemistry](#) Credit Hours: 3
[CHEM 456 - Biochemistry III: Metabolism](#) Credit Hours: 2

Total: 31 Credit Hours

Advanced Biomedical Sciences Electives

Choose a minimum of 3 hours from the following courses:

[BIOL 452- Virology](#) Credit Hours: 3
[BIOL 454 - Immunology](#) Credit Hours: 3
[BIOL 475 - Molecular Genetics](#) Credit Hours: 3
[BIOL 480 - Histology](#) Credit Hours: 3
[BIOL 484 - Developmental Biology](#) Credit Hours: 3
[BIOL 495 - Physiology Laboratory](#) Credit Hours: 1
[BIOL 498 - Cancer Biology](#) Credit Hours: 3
[CHEM 454 - Biochemistry II: Gene Expression](#) Credit Hours: 3
[CHEM 463 - Biochemistry Laboratory I](#) Credit Hours: 1
[CHEM 430 - Medicinal Chemistry](#) Credit Hours: 3
[CHEM 413 - Physical Chemistry/Life Sciences](#) Credit Hours: 3
[CHEM 356 - Analytical Chemistry II](#) Credit Hours: 4

Total: 3 Credit Hours

Advanced Biology & Chemistry Selection

Choose a minimum of 6 hours, not previously taken, from BIOL or CHEM 300 or higher

Total: 6 Credit Hours

Experiential Learning

Students are required to complete an experiential learning component.

Choose one option from the list below:

[BIOL 399 - Biology Research](#) Credit Hours: 1-3^
[CHEM 393 - Introduction to Research](#) Credit Hours: 0-3^

PHP 305 - Medical Missions Seminar Credit Hours: 1

PHP 310 - Clinical Internship Credit Hours: 1

[PHP 308 - Global Healthcare](#) Credit Hours: 3^ or other Study Abroad Experience^

^Hours fulfill either general education or major requirements and are not counted a second time for this requirement.

Total: 0-1 Credit Hours

Supplement for the Major

Physics

[PHYS 110 - General Physics I](#) Credit Hours: 3*

[PHYS 111 - General Physics I Laboratory](#) Credit Hours: 1

[PHYS 112 - General Physics II](#) Credit Hours: 3

[PHYS 113 - General Physics II Laboratory](#) Credit Hours: 1

Mathematics

[MATH 131 - Calculus for Application](#) Credit Hours: 3 *

Or

[MATH 185 - Calculus I](#) Credit Hours: 3 *

[MATH 123 - Elementary Statistics](#) Credit Hours: 3

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

Total: 8 Credit Hours

Electives

Minimum - 7-8 Credit Hours

Total Major Hours: 74

Other Graduation Requirements:

Minimum GPA in major: 2.00

Minimum GPA for graduation: 2.00

Minimum advanced hours: 33

Minimum total hours: 128

*Courses numbered 0** do not count in minimum hours required for degree.*

BS: Biomedical Sciences (BMSC), Pre-PA

General Education Requirements

Please see the [General Education](#) section of this catalog.

Major Requirements

Biomedical Sciences

[BIOL 121 - Introductory Biology I](#) Credit Hours: 3 *
[BIOL 122 - Introductory Biology I Laboratory](#) Credit Hours: 1
[BIOL 123 - Introductory Biology II](#) Credit Hours: 3
[BIOL 124 - Introductory Biology II Laboratory](#) Credit Hours: 1
[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
[PHP 201 - Introduction to Health Professions Seminar](#) Credit Hours: 1
[PHP 301 - Health Professions Application Seminar](#) Credit Hours: 1
[BIBP 352 - Biomedical Ethics](#) Credit Hours: 3 *
[BIOL 497 - Seminar in Biology](#) Credit Hours: 3 (capstone and writing-intensive course)
OR
[CHEM 423 - Chemistry and Biochemistry Seminar](#) Credit Hours 3 (capstone and writing-intensive course)

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

Total: 18 Credit Hours

Pre-PA Track

[BIOL 312 - Cell Biology](#) Credit Hours: 3
[BIOL 351 - Genetics](#) Credit Hours: 3
BIOL 352 - Genetics Laboratory Credit Hours: 1
[BIOL 355 - Microbiology](#) Credit Hours: 3
[BIOL 357 - Microbiology Laboratory](#) Credit Hours: 1

[BIOL 491 - Human Anatomy](#) Credit Hours: 3
[BIOL 492 - Physiology](#) Credit Hours: 3
[BIOL 493 - Human Anatomy Laboratory](#) Credit Hours: 1
[BIOL 495 - Physiology Laboratory](#) Credit Hours: 1
[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 453 - Biochemistry I: Foundations of Biochemistry](#) Credit Hours: 3
[PSYC 120 - Introduction to Psychology](#) Credit Hours: 3*

[PSYC 232 - Developmental Psychology](#) Credit Hours: 3

Or

[PSYC 382 - Abnormal Psychology](#) Credit Hours: 3

Or

[SOC 111 - Introduction to Sociology](#) Credit Hours: 3

[KINE 302 - Medical Terminology](#) Credit Hours: 2

Total: 35 Credit Hours

Advanced Biomedical Sciences Electives

Choose a minimum of 3 hours from the following courses:

[BIOL 452- Virology](#) Credit Hours: 3
[BIOL 454 - Immunology](#) Credit Hours: 3
[BIOL 475 - Molecular Genetics](#) Credit Hours: 3
[BIOL 480 - Histology](#) Credit Hours: 3
[BIOL 484 - Developmental Biology](#) Credit Hours: 3
[BIOL 498 - Cancer Biology](#) 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 430 - Medicinal Chemistry](#) Credit Hours: 3
[CHEM 413 - Physical Chemistry/Life Sciences](#) Credit Hours: 3
[CHEM 356 - Analytical Chemistry II](#) Credit Hours: 4

Total: 3 Credit Hours

Advanced Biology & Chemistry Selection

Choose a minimum of 6 hours, not previously taken, from BIOL or CHEM 300 or higher

Total: 6 Credit Hours

Experiential Learning

Students are required to complete an experiential learning component.

Choose one option from the list below:

[BIOL 399 - Biology Research](#) Credit Hours: 1-3 ^

[CHEM 393 - Introduction to Research](#) Credit Hours: 0-3^

[PHP 305 - Medical Missions Seminar](#) Credit Hours: 1

[PHP 310 - Clinical Internship](#) Credit Hours: 1

[PHP 308 - Global Healthcare](#) Credit Hours: 3^ or other Study Abroad Experience^

^Hours fulfill either general education or major requirements and are not counted a second time for this requirement.

Total: 0-1 Credit Hours

Supplement for the Major

Physics

[PHYS 110 - General Physics I](#) Credit Hours: 3*

[PHYS 111 - General Physics I Laboratory](#) Credit Hours: 1

Mathematics

[MATH 131 - Calculus for Application](#) Credit Hours: 3 *

Or

[MATH 185 - Calculus I](#) Credit Hours: 3 *

[MATH 123 - Elementary Statistics](#) Credit Hours: 3

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

Total: 4 Credit Hours

Electives

Minimum - 7-8 Credit Hours

Total Major Hours: 74

Other Graduation Requirements:

Minimum GPA in major: 2.00

Minimum GPA for graduation: 2.00

Minimum advanced hours: 33

Minimum total hours: 128

*Courses numbered 0** do not count in minimum hours required for degree.*

BS: Biomedical Sciences (BMSC), Pre-Pharmacy/Optometry

General Education Requirements

Please see the [General Education](#) section of this catalog.

Major Requirements

Biomedical Sciences

[BIOL 121 - Introductory Biology I](#) Credit Hours: 3 *
[BIOL 122 - Introductory Biology I Laboratory](#) Credit Hours: 1
[BIOL 123 - Introductory Biology II](#) Credit Hours: 3
[BIOL 124 - Introductory Biology II Laboratory](#) Credit Hours: 1
[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
[PHP 201 - Introduction to Health Professions Seminar](#) Credit Hours: 1
[PHP 301 - Health Professions Application Seminar](#) Credit Hours: 1
[BIBP 352 - Biomedical Ethics](#) Credit Hours: 3 *
[BIOL 497 - Seminar in Biology](#) Credit Hours: 3 (capstone and writing-intensive course)
OR
[CHEM 423 - Chemistry and Biochemistry Seminar](#) Credit Hours 3 (capstone and writing-intensive course)

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

Total: 18 Credit Hours

Pre-Pharmacy/Optometry Track

[BIOL 312 - Cell Biology](#) Credit Hours: 3
[BIOL 351 - Genetics](#) Credit Hours: 3
[BIOL 352 - Genetics Laboratory](#) Credit Hours: 1
[BIOL 355 - Microbiology](#) Credit Hours: 3
[BIOL 357 - Microbiology Laboratory](#) Credit Hours: 1
[BIOL 491 - Human Anatomy](#) Credit Hours: 3
[BIOL 492 - Physiology](#) Credit Hours: 3

[BIOL 493 - Human Anatomy Laboratory](#) Credit Hours: 1
[BIOL 495 - Physiology Laboratory](#) Credit Hours: 1
[CHEM 221 - Organic Chemistry Laboratory](#) |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 453 - Biochemistry I: Foundations of Biochemistry](#) Credit Hours: 3

Total: 30 Credit Hours

Advanced Biomedical Sciences Electives

Choose a minimum of 3 hours from the following courses:

[BIOL 452- Virology](#) Credit Hours: 3
[BIOL 454 - Immunology](#) Credit Hours: 3
[BIOL 475 - Molecular Genetics](#) Credit Hours: 3
[BIOL 480 - Histology](#) Credit Hours: 3
[BIOL 484 - Developmental Biology](#) Credit Hours: 3
[BIOL 498 - Cancer Biology](#) 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 430 - Medicinal Chemistry](#) Credit Hours: 3
[CHEM 413 - Physical Chemistry/Life Sciences](#) Credit Hours: 3
[CHEM 356 - Analytical Chemistry II](#) Credit Hours: 4

Total: 3 Credit Hours

Advanced Biology & Chemistry Selection

Choose a minimum of 6 hours, not previously taken, from BIOL or CHEM 300 or higher

Total: 6 Credit Hours

Experiential Learning

Students are required to complete an experiential learning component.

Choose one option from the list below:

[BIOL 399 - Biology Research](#) Credit Hours: 1-3^
[CHEM 393 - Introduction to Research](#) Credit Hours: 0-3^
PHP 305 - Medical Missions Seminar Credit Hours: 1
PHP 310 - Clinical Internship Credit Hours: 1
[PHP 308 - Global Healthcare](#) Credit Hours: 3^ or other Study Abroad Experience^

^Hours fulfill either general education or major requirements and are not counted a second time for this requirement.

Total: 0-1 Credit Hours

Supplement for the Major

Physics

[PHYS 110 - General Physics I](#) Credit Hours: 3*

[PHYS 111 - General Physics I Laboratory](#) Credit Hours: 1

[PHYS 112 - General Physics II](#) Credit Hours: 3

[PHYS 113 - General Physics II Laboratory](#) Credit Hours: 1

Mathematics

[MATH 185 - Calculus I](#) Credit Hours: 3 *

[MATH 123 - Elementary Statistics](#) Credit Hours: 3

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

Total: 8 Credit Hours

Electives

Minimum - 8-9 Credit Hours

Total Major Hours: 74

Other Graduation Requirements:

Minimum GPA in major: 2.00

Minimum GPA for graduation: 2.00

Minimum advanced hours: 33

Minimum total hours: 128

*Courses numbered 0** do not count in minimum hours required for degree.*

BS: Biomedical Sciences (BMSC), Pre-Veterinary Medicine

General Education Requirements

Please see the [General Education](#) section of this catalog.

Major Requirements

Biomedical Sciences

[BIOL 121 - Introductory Biology I](#) Credit Hours: 3 *
[BIOL 122 - Introductory Biology I Laboratory](#) Credit Hours: 1
[BIOL 123 - Introductory Biology II](#) Credit Hours: 3
[BIOL 124 - Introductory Biology II Laboratory](#) Credit Hours: 1
[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
[PHP 201 - Introduction to Health Professions Seminar](#) Credit Hours: 1
[PHP 301 - Health Professions Application Seminar](#) Credit Hours: 1
[BIBP 352 - Biomedical Ethics](#) Credit Hours: 3 *
[BIOL 497 - Seminar in Biology](#) Credit Hours: 3 (capstone and writing-intensive course)
OR
[CHEM 423 - Chemistry and Biochemistry Seminar](#) Credit Hours 3 (capstone and writing-intensive course)

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

Total: 18 Credit Hours

Pre-Veterinary Medicine Track

[BIOL 312 - Cell Biology](#) Credit Hours: 3
[BIOL 351 - Genetics](#) Credit Hours: 3
[BIOL 352 - Genetics Laboratory](#) Credit Hours: 1
[BIOL 355 - Microbiology](#) Credit Hours: 3
[BIOL 357 - Microbiology Laboratory](#) Credit Hours: 1
[BIOL 492 - Physiology](#) 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 453 - Biochemistry I: Foundations of Biochemistry](#) Credit Hours: 3
[ANSC 336 - Animal Nutrition](#) Credit Hours: 3

[ANSC 111 - General Animal Science](#) Credit Hours: 3

Or

[ANSC 235 - Companion Animal Management](#) Credit Hours: 3

Or

[ANSC 343 - Animal Reproduction](#) Credit Hours: 3

Total: 31 Credit Hours

Advanced Biomedical Sciences Electives

Choose a minimum of 3 hours from the following courses:

BIOL 452- Virology Credit Hours: 3
[BIOL 454 - Immunology](#) Credit Hours: 3
[BIOL 475 - Molecular Genetics](#) Credit Hours: 3
[BIOL 480 - Histology](#) Credit Hours: 3
[BIOL 484 - Developmental Biology](#) Credit Hours: 3
[BIOL 491 - Human Anatomy](#) Credit Hours: 3
[BIOL 493 - Human Anatomy Laboratory](#) Credit Hours: 1
[BIOL 495 - Physiology Laboratory](#) Credit Hours: 1
[BIOL 498 - Cancer Biology](#) 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 430 - Medicinal Chemistry](#) Credit Hours: 3
[CHEM 413 - Physical Chemistry/Life Sciences](#) Credit Hours: 3
[CHEM 356 - Analytical Chemistry II](#) Credit Hours: 4

Total: 3 Credit Hours

Advanced Biology & Chemistry Selection

Choose a minimum of 6 hours, not previously taken, from BIOL or CHEM 300 or higher

Total: 6 Credit Hours

Experiential Learning

Students are required to complete an experiential learning component.

Choose one option from the list below:

[BIOL 399 - Biology Research](#) Credit Hours: 1-3 ^

[CHEM 393 - Introduction to Research](#) Credit Hours: 0-3^

PHP 305 - Medical Missions Seminar Credit Hours: 1

PHP 310 - Clinical Internship Credit Hours: 1

[PHP 308 - Global Healthcare](#) Credit Hours: 3^ or other Study Abroad Experience^

^Hours fulfill either general education or major requirements and are not counted a second time for this requirement.

Total: 0-1 Credit Hours

Supplement for the Major

Physics

[PHYS 110 - General Physics I](#) Credit Hours: 3*

[PHYS 111 - General Physics I Laboratory](#) Credit Hours: 1

[PHYS 112 - General Physics II](#) Credit Hours: 3

[PHYS 113 - General Physics II Laboratory](#) Credit Hours: 1

Mathematics

[MATH 131 - Calculus for Application](#) Credit Hours: 3 *

Or

[MATH 185 - Calculus I](#) Credit Hours: 3 *

[MATH 123 - Elementary Statistics](#) Credit Hours: 3

Or

[MATH 377 - Statistical Methods I](#) Credit Hours: 3

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

Total: 8 Credit Hours

Electives

Minimum - 7-8 Credit Hours

Total Major Hours: 74

Other Graduation Requirements:

Minimum GPA in major: 2.00

Minimum GPA for graduation: 2.00

Minimum advanced hours: 33

Minimum total hours: 128

*Courses numbered 0** do not count in minimum hours required for degree.*

- 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 program.

Please find attached letters from the following departments: Biology, Chemistry & Biochemistry, Physics & Engineering, Agriculture & Environmental Sciences, Mathematics, Bible, Missions, & Ministry, Communication & Sociology, Language & Literature, Kinesiology & Nutrition, and Psychology

- C. Courses. Create a table with one row for every course, existing and new, included in the program/major 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) 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?	Tracks Served	Names of Credentialed Faculty
BIOL 121	Fall & Spring	Yes	All	Huddleston, Holowiecki, Flanagan, Hennigan, Xu, Hunter, Brokaw, Lee, Washington
BIOL 122	Fall & Spring	Yes	All	Huddleston, Holowiecki, Flanagan, Hennigan, Xu, Hunter, Brokaw, Lee, Washington
BIOL 123	Fall & Spring	Yes	All	Huddleston, Holowiecki, Flanagan, Hennigan, Xu, Hunter, Brokaw, Lee, Washington
BIOL 124				Huddleston, Holowiecki, Flanagan,

	Fall & Spring	Yes	All	Hennigan, Xu, Hunter, Brokaw, Lee, Washington
CHEM 133	Fall & Spring	Yes	All	Sutherlin, Robison, G. Powell, C. Powell, Rix, Lee, Pamplin, Johnstone, Isenhower
CHEM 131	Spring	Yes	All	Sutherlin, Robison, G. Powell, C. Powell, Rix, Lee, Pamplin, Johnstone, Isenhower
CHEM 134	Fall & Spring	Yes	All	Sutherlin, Robison, G. Powell, C. Powell, Rix, Lee, Pamplin, Johnstone, Isenhower
CHEM 132	Spring	Yes	All	Sutherlin, Robison, G. Powell, C. Powell, Rix, Lee, Pamplin, Johnstone, Isenhower
BIOL 497	Fall & Spring	Part of Capstone Menu	All	Huddleston, Holowiecki, Flanagan, Hennigan, Xu, Hunter, Brokaw, Lee
CHEM 423	Fall & Spring	Part of Capstone Menu	All	Sutherlin, Robison, G. Powell, C. Powell, Rix, Lee, Pamplin, Johnstone, Isenhower

PHP 201	Fall	Yes	All	C. Powell, Rix, Flanagan
PHP 301	Spring	Yes	All	Huddleston, Holowiecki, Flanagan, Hennigan, Xu, Hunter, Brokaw, T. Lee, Sutherlin, Robison, G. Powell, C. Powell, Rix, K. Lee, Pamplin, Johnstone
BIPO 352	Fall & Spring	Yes	All	McCracken, Wentz, C. Powell

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
2. Course title and description
3. Existing programs in which the courses will also be used, if applicable

Subject Code	Course Number	Course Title	Course Description	Existing Programs which use course
BIOL	352	Genetics Laboratory	Introduction to analytical and laboratory techniques used by research and applied fields in transmission, molecular, and population genetics.	All Biology degrees and tracks Upper-level elective for Biochemistry degree
PHP	305	Medical Missions Seminar	Incorporates training in best practices in intercultural service and medical missions into preparation for and participation in a short-term	N/A

			service trip with a domestic or international Christian ministry. Students will learn from medical practitioners and ministers who are serving medically fragile populations. Experiential learning credit.	
PHP	310	Clinical Internship	Students will participate in an internship in a healthcare setting, gaining practical, hands-on experience. They will have the opportunity to develop skills and gain insights into the realities of a career in healthcare provision while still in undergraduate studies. Experiential learning credit.	N/A

6. Assessment Plan

- A. Curriculum map. Prepare a table that lists all required courses in the degree plan and program outcomes from Section 3.C. Identify the program outcomes that each course supports and mark whether the course addresses the program outcome at an introductory, reinforcing, or advanced level (see example).

	Outcome 1	Outcome 2	Outcome 3	Outcome 4
BIOL 121	I		I	
BIOL 122	R	I		
BIOL 123	I		I	
BIOL 124	R	R		
BIOL 312	R		I	
BIOL 351	A		R	I
BIOL 352	R	A		
BIOL 491	A		R	

BIOL 492	A		A	
BIOL 493	A		A	
BIOL 497				A
CHEM 131	R	I		
CHEM 132	R	I		
CHEM 133	I			
CHEM 134	A			
CHEM 221	R	R		
CHEM 223	R			
CHEM 322	A	A		
CHEM 324	A			
CHEM 423		A	R	R
CHEM 453	A		R	
CHEM 456	A		A	
PHP 201				I
PHP 301				R
BIBP 352				A

B. Outcome assessment measures. For each program outcome (from Section 3.C), identify *at least* two measures. These may be course-embedded components (e.g., assignments, projects, exams) or other measures, such as pre- and post-tests, external certification or licensure, portfolio assessment, standardized exams, research presentation, juries, etc. You should be able to collect each measure every year unless the course is offered less frequently. Each measure will include:

1. Measure description. These are details about the artifact or assignment
2. Measure location. This is the course (or other exam or jury source) in which the measure occurs.
3. Student target. What percentage of students will meet what threshold of performance? This is the minimum acceptable target (e.g., 80% of students will demonstrate competency; 75% of students will earn a C or higher) that defines success.
4. Timeline. When will you measure the outcome? This may happen every time the class is taught, during a particular semester (e.g. annually in fall), or on a regular basis (e.g., every other year).

Outcome 1: Students will demonstrate an understanding of the fundamental concepts in biology and chemistry.

Measure 1

Measure Description: Final Exam: The students enrolled in the course complete a minimum of four non-cumulative unit exams throughout the semester assessing student understanding of introductory-level molecular and cellular biology, genetics, gene expression, evolution and ecology. The final exam is a cumulative assessment that consists of questions from each of the units in proportion to the number of learning outcomes for each unit. The assessment includes questions from all levels of biological hierarchy.

Measure Location: BIOL 121: Introductory Biology I

Student Target: 60% of the students will earn a "C" or higher

Measurement Timeline: Every time the class is taught, fall and spring

Measure 2

Measure Description: Performance on the American Chemical Society's standardized exam after completion of first-year chemistry sequence

Measure Location: CHEM 134: General Chemistry II

Student Target: The median score for biomedical science majors is above 50th percentile.

Measurement Timeline: Spring semesters

Outcome 2: Students will be able to analyze experimental data and interpret results.

Measure 1

Measure Description: Lab notebook assessment #2 which evaluates students' interpretation and analysis of data including reflections on experimental design

Measure Location: BIOL 352: Genetics Laboratory

Student Target: 80% of biomedical science students will earn a "B" or higher

Measurement Timeline: Spring semesters

Measure 2

Measure Description: Laboratory Final Exam, where students must interpret several types of experimental data (mathematical, spectroscopic, qualitative, and quantitative)) to arrive at a correct conclusion

Measure Location: CHEM 322: Organic Chemistry Laboratory II

Student Target: 70% of biomedical science students will earn a "C" or Higher on the final exam.

Measurement Timeline: Spring semesters

Outcome 3: Students will be able to apply core scientific principles to human health and disease.

Measure 1

Measure Description: Anatomy in Action: student presentation that focuses on anatomical changes and how that changes function and causes disease

Measure Location: Biology 493: Human Anatomy Laboratory

Student Target: 80% of biomedical science students will earn a "B" or higher.

Measurement Timeline: Every time the class is taught, fall and spring

Measure 2

Measure Description: CHEM 453 - Biochemistry I Final Exam

Measure Location: CHEM 453

Student Target: 70% of biomedical science majors will score a 'C' or better on the final exam.

Measurement Timeline: Fall semesters

Outcome 4: Students will be able to identify societal and ethical issues in biomedical sciences.

Measure 1

Measure Description: Case-study analysis of issues individuals face in health-related and research careers.

Measure Location: PHP 301: Health Professions Application Seminar

Student Target: 80% of biomedical science students will earn a "B" or higher

Measurement Timeline: Spring semesters

Measure 2

Measure Description: Biomedical Ethics final exam

Measure Location: BIPO: Biomedical Ethics

Student Target: 80% of biomedical science students will average 70% or better on the Biomedical Ethics final exam.

Measurement Timeline: Every time the class is taught, fall and spring

7. Required Institutional Support

A. Faculty requirements and availability.

1. Describe the new program'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.

The biomedical sciences program will not significantly impact faculty workload as the overwhelming majority of classes are pre-existing classes and the degree plan is a

merging of two current degree plans offered by the Departments of Biology and Chemistry & Biochemistry. The new classes have either already been taught as special topics courses or already proposed and planned for by the department. The Department of Biology's new class, BIOL 352: Genetics Laboratory, is currently moving through the academic approval process. PHP 305 (Medical Missions Seminar) and PHP 310 (Clinical Internship) are also currently moving through the academic approval process.

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

No additional faculty are required for the biomedical sciences degree program.

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

No part-time instructors are required for the biomedical sciences degree program.

- 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.

From Dr. Autumn Sutherlin, Chair and Professor, Department of Chemistry & Biochemistry: This degree will likely have a major impact on the number of Biochemistry majors, particularly those on the Biomedical Sciences track. However, this is a strategic move on the part of the department. Anecdotally, over the past few years, we seem to have started losing pre-health students to universities that offer a pre-health/ biomedical sciences degree. Because in many ways this degree is similar to the biochemistry degrees, many of the courses taught by our department will hopefully have an increased enrollment. It may lead to a decrease in the number of students in some of the upper level chemistry courses. If part of the purpose of this degree is to attract students, we want to provide a path for students who wish to follow a pre-health path in a more traditional science degree.

From Dr. Jennifer Huddleston, Associate Professor & Chair, Department of Biology: The overall number of biology majors is expected to be greatly reduced. Currently, about 89% of biology majors have chosen the health professions (BIOH) track (81 of 92) or pre-veterinary medicine (1 of 92). The other 11% are in the BICM (3 of 92), BIOG (5 of 92), BLOW (1 of 92), or BLOO (1 of 92) tracks. It is assumed that practically all of our future health professions and pre-veterinary medicine students, along with some current students, will choose the new biomedical sciences major. However, the addition of the biomedical sciences degree programs will hopefully increase enrollment overall and the department will see increased student numbers enrolled in classes.

- C. Program director. Identify the program director (who may or may not be the department chair). If the program director does not have a terminal degree in the discipline, provide a justification of the director's qualifications.

The designated program director will be the Executive Director of the Center for Pre-Health Professions as the Chair of the OCSE Biomedical Sciences Standing Committee.

Due to the interdepartmental nature of the biomedical sciences degree plans, a shared model of oversight is required.

Proposed Oversight Model:

Create an OCSE Biomedical Sciences Standing Committee to review and update curricular changes to the Biomedical Sciences degrees. Biomedical Sciences Standing Committee recommendations to degree plan changes will be required to move forward through the normal academic approval process and will be submitted to the OCSE Academic Council for review and approval. The chair of the Biomedical Sciences Standing Committee will be the signatory reflecting the committee's wishes since a single signatory is required by ACU's academic system.

OCSE Biomedical Sciences Standing Committee Membership:

OCSE Dean, ex officio (non-voting)

Executive Director, Center for Pre-Health Professions (committee chair)

Assistant Director, Center for Pre-Health Professions

Chair, Department of Biology

Chair, Department of Chemistry & Biochemistry

- D. 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.

No additional staff are required for the biomedical sciences degree program. However, CPHP, the Departments of Biology and Chemistry & Biochemistry will need to discuss with the Academic Advising Center about having one of the academic advisors designated for the biomedical sciences degree program.

- E. 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.

The current library resources that are routinely used by the Departments of Biology and Chemistry & Biochemistry will be sufficient to support the biomedical sciences degree program.

Additionally,

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.

If courses require electronic access to information, students will continue to access it in the same way that they do currently. Most courses already use Canvas to distribute information or provide instructions on how to access course materials through the platform.

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

Canvas resources and the Help Desk are available to assist students who encounter difficulties accessing learning materials.

- F. 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.

No additional physical resources will be needed to implement the biomedical sciences degree programs.

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

Center for Pre-Health Professions administers several endowed pre-health designated scholarships: Clark Stevens, Dr. L. Roger and Janeal Knight, Dr. Perry Reeves, Joseph Virone, Mike and Sally Allen, and J.R. Endsley. Students meeting the criteria are eligible to apply and be considered for these scholarships.

- H. 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?

The biomedical sciences degree programs should be marketed to prospective students who are interested in human health-focused careers and pursuing admission into health profession programs (medical school, dental school, PA school, etc.) or biomedical science graduate programs.

- I. Additional cost to deliver program. Total expenses from sections A to H. Clarify which expenses are one-time and which are ongoing.

There are no additional costs to deliver the program.

Stop here and resubmit to the vice provost. Section 8 is not required for all applications, and you will only need to complete it if requested by the SACSCOC liaison.

8. Additional Information Required for Substantive Changes

- A. 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.
- B. 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.
- C. 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 program as presented.


Wes Crawford (Apr 7, 2025 17:02 CDT)

04/07/2025

Vice Provost

Date

This proposal connects the program's student learning outcomes, curriculum, and assessment plan completely and has designed a program that institutional systems can support.



04/14/2025

Assistant Vice President for Academic Affairs

Date

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



04/14/2025

Associate Dean of the Library

Date

Comments, if needed:

We have developed a pro forma budget for the graduate program under consideration.

Associate Provost for Residential Graduate Programs

Date

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.

Chris Riley

04/15/2025

SACSCOC Liaison

Date

Market Analysis

26.0102 Biomedical Sciences, General — Bachelor's

Jessica Smith — February 27, 2025

Program Comparisons and Competitors

National Trends

Nationally for 26.0102 Biomedical Sciences General, both the number of institutions offering the program and number of completions are up at least 25% in the last five years (in 2023: 127 institutions, 6,110 completions). 57% percent of the institutions offering the program are private not-for-profit, but they have only 22% of the completions. Notable private NFPs with the program are Marquette, Liberty, and Biola; one or more of these schools would be worth benchmarking in addition to Texas competitors.

Two CIP codes from other families have related programs, outlined here for context of the broader market.

- 30.0101 Biological and Physical Sciences has 89 institutions and 2,426 completions. The private NFP programs seem to be clustered at northeastern institutions and have shrunk in the last five years. Whitworth would be an interesting comparison; other schools, include Notre Dame, Georgetown, and Cornell. No schools in Texas offer this program.
- 51.1102 Pre-Medicine/Pre-Medical Studies has 49 institutions and 970 completions, and private NFPs are shrinking in this CIP code, too. Augustana and Samford are reasonable comparisons; the other institutions offering the program aren't often within our sphere. No schools in Texas offer this program.

The three CIP codes combined are offered at 246 institutions (up 3% in 5 years) with 9,506 completions (up 16% in 5 years).

This suggests that 26.0102 is the best area to build. I suggest reviewing the curriculum for Whitworth, Augustana, and Samford to confirm that the curriculum content we're thinking of is distinct from these shrinking areas and instead looks more like Marquette, Liberty, and Biola.

However, an important note is that only one school in ACU's admissions peer group, Texas A&M, offers this program. Texas Tech, Samford, Lipscomb, UNT, UTSA, Baylor, Texas State, and Harding do not.

In Texas

26.0102 Biomedical Sciences, General is growing in Texas, but not as much as in the nation at large. Eleven institutions (up 10% in 5 years) offer the program in the state with 938 completions (up 16% in 5 years). Texas Southern's program is the addition; they had their first completions in 2023. 58% of the completions are from A&M.

The private NFPs that offer a general biomedical sciences program in Texas (McMurry, Howard Payne, and Southwestern Adventist) are very small (average completions is 5, and the median was 4) and are not in ACU's admissions peer group, so prospective students generally aren't comparing us to these. These completions are only 1.6% of the total, so the market share is more than 98% public.

For context, the 938 completions in the state are roughly equivalent to the number of students who have earned biochemistry (1,000) or animal science (993) degrees. English is almost double (1,766), and biology is more than 6.5 times larger (6,186).

For Section 4.D, I suggest benchmarking curriculum against Texas A&M-College Station, UT-Rio Grande Valley, and Sam Houston State.

Enrollment Expectations

Average enrollment among Texas programs is 85. The median is 34.

Among private NFPs in Texas, the average is 5 and the median is 4. Since this pool is small and not comparable to ACU, the numbers for private NFPs throughout the United States is an average 18 and median 7.

To predict enrollment, I typically estimate five times the median to take into account attrition before graduation, which suggests a range of 20-35. This is higher than the range predicted by Gray's program prediction tool of 10-24.

For Section 3.E, I suggest an estimated enrollment of 20. Although the size of this program at other institutions is discouraging, the decisions that the faculty make about whether to maintain the content and tracks of the biology, chemistry, biochemistry, and perhaps animal science programs will heavily influence the enrollment of biomedical sciences at ACU. I suggest that the application thoroughly address the plan for maintaining our existing curriculum in this area (and perhaps the target audience of each of the new and old programs) **in Section 7.B,** impact on existing programs. Although our approach may shift

over time, understanding your short- and long-term planning for these other programs will be key to understanding the likelihood of success for biomedical sciences.

Jobs Outlook

Although many students who complete this program will go on to graduate or professional school, understanding the job outlook for students who complete this bachelor's only is helpful, and more detail is available in the Lightcast report provided to the faculty and provost's office. On the positive side, jobs related to this program are expected to grow nearly 32% in the next decade, compared to 21% for the nation. However, students earn less at these jobs in Texas (median \$55,700) than nationally (median \$65,200). This information may inform your response to **Section 4.B.2**, but other data that takes into account the professional degrees that students will pursue would certainly provide a more complete picture.

Reviewing the lists of specialized skills, common skills, and software skills that are most commonly included in job descriptions in this area are an important guide for curriculum at the course and assignment level in the program. Focusing on skills classified as “rapidly growing” can provide students a competitive advantage over those from existing programs that have not yet adapted.

Program Overview

Biomedical Sciences, General

Lightcast Q1 2025 Data Set

February 2025

1600 Campus Ct
Abilene, Texas 79601
(325) 674-2000

Parameters

Completions Year: 2023

Jobs Timeframe: 2022 - 2032

Job Postings Timeframe: Aug 2019 - Oct 2023

Programs:

Code	Description
26.0102	Biomedical Sciences, General

Regions:

Code	Description
48	Texas

Education Level:

Description
Bachelor's degree

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

Residency: In-State

11

Institutions

10% Growth (2019-2023)

938

Completions

16% Growth (2019-2023)

Completions Distribution

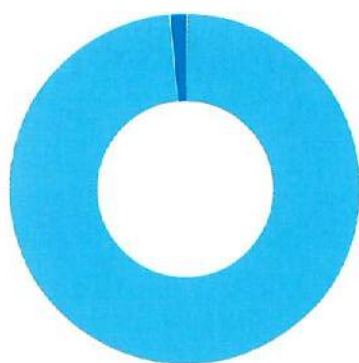


Program Overview



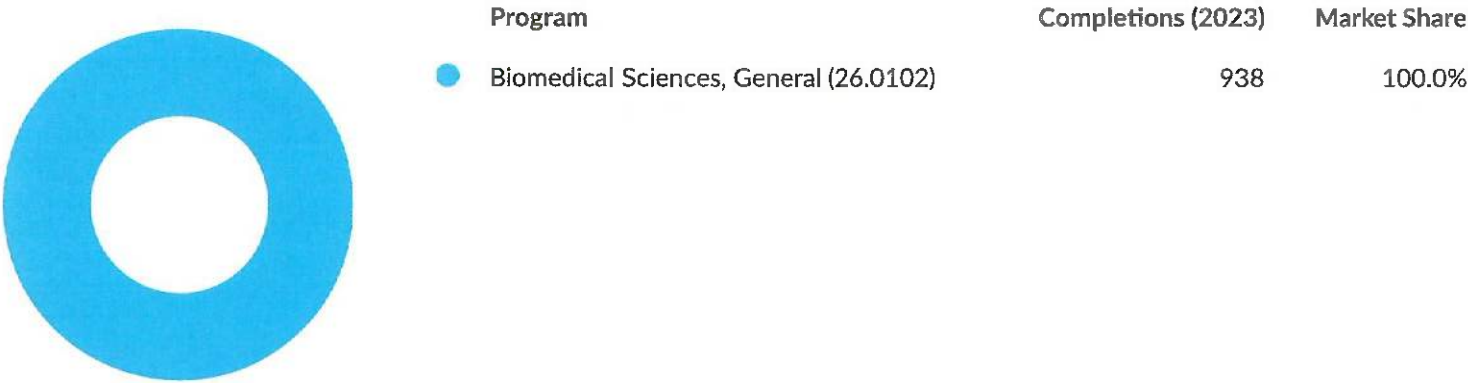
	Completions (2023)	% Completions	Institutions (2023)	% Institutions
● All Programs	938	100%	11	100%
● Distance Offered Programs	0	0%	0	0%
● Non-Distance Offered Programs	938	100%	11	100%

Market Share by Institution Type



Institution Type	Completions (2023)	Market Share
● Public, 4-year or above	923	98.4%
● Private not-for-profit, 4-year or above	15	1.6%

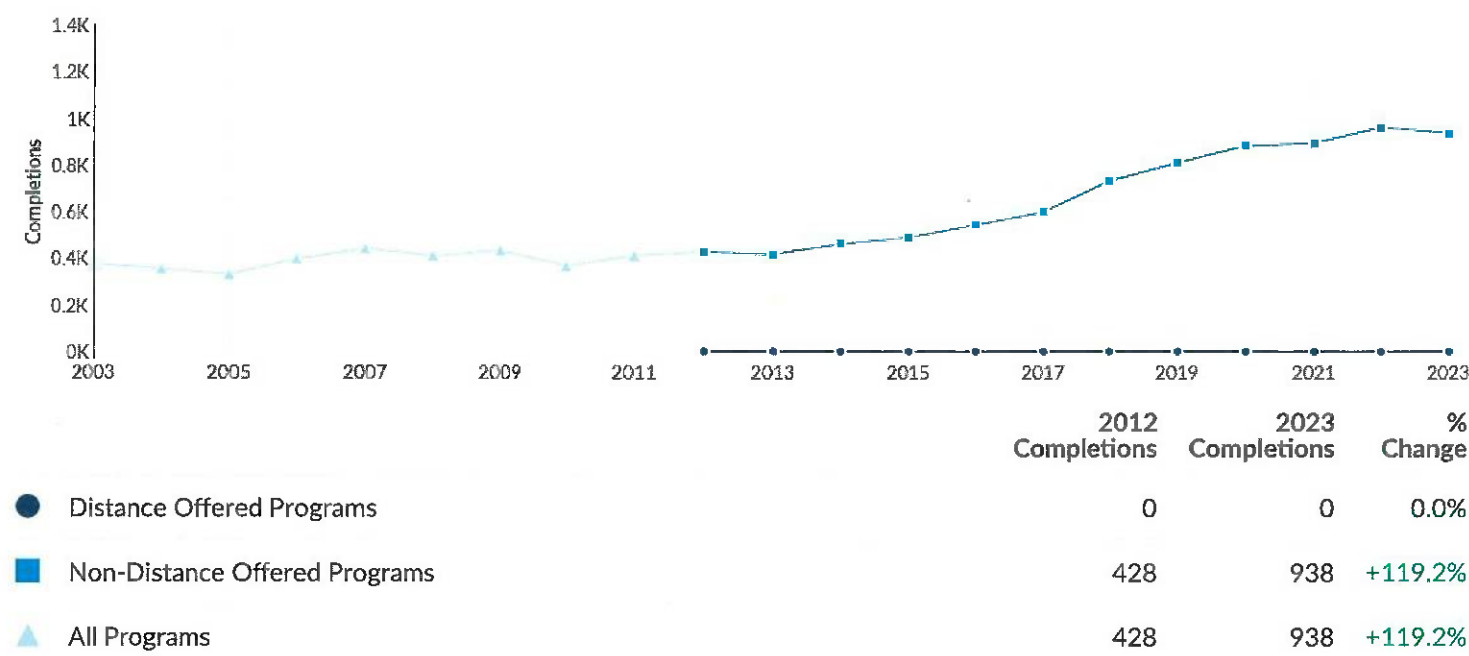
Market Share by Program



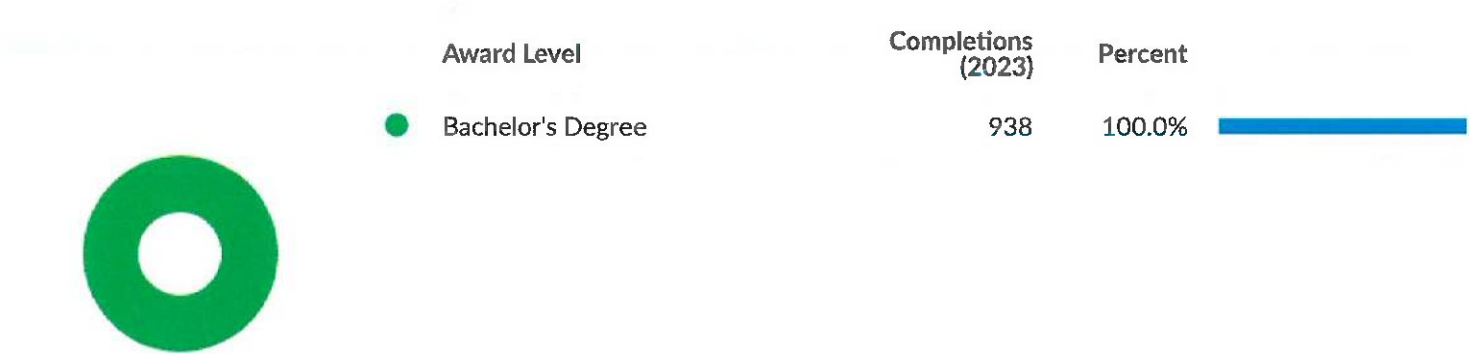
Completions by Institution

Institution	Bachelor's Degree Completions (2023)	Growth % YOY (2023)	Market Share (2023)	IPEDS Tuition & Fees (2023)	Completions Trend (2019-2023)
Texas A & M University-College Station	546	-6.5%	58.2%	\$12,841	
The University of Texas Rio Grande Valley	115	55.4%	12.3%	\$9,467	
Texas A & M University-Corpus Christi	101	-13.7%	10.8%	\$9,748	
Sam Houston State University	56	0.0%	6.0%	\$9,228	
Tarleton State University	51	6.3%	5.4%	\$7,878	
Texas A & M University-Kingsville	34	-39.3%	3.6%	\$9,892	
Texas Southern University	11	Insf. Data	1.2%	\$8,637	
University of Houston	9	-18.2%	1.0%	\$9,711	
McMurry University	9	12.5%	1.0%	\$31,162	
Howard Payne University	4	Insf. Data	0.4%	\$33,402	
Southwestern Adventist University	2	-77.8%	0.2%	\$24,588	

Regional Trends



Regional Completions by Award Level



Similar Programs

141

Programs (2023)

38,660

Completions (2023)

CIP Code	Program	Bachelor's Degree Completions (2023)
51.3801	Registered Nursing/Registered Nurse	11,872
26.0101	Biology/Biological Sciences, General	6,186
31.0505	Exercise Science and Kinesiology	4,358
27.0101	Mathematics, General	1,349
11.0701	Computer Science	1,305
51.2201	Public Health, General	1,122
26.0202	Biochemistry	1,000
51.0001	Health and Wellness, General	987
51.0000	Health Services/Allied Health/Health Sciences, General	934
26.1501	Neuroscience	768

Target Occupations

*Filtered to be a proportion of the national workforce in target occupations with a Bachelor's degree

48,581	+31.6%	\$26.78/hr \$55.7K/yr	6,169
Jobs (2022)*	% Change (2022-2032)*	Median Earnings	Annual Openings*
10% below National average*	Nation: +21.9%*	Nation: \$31.35/hr; \$65.2K/yr	

Occupation	2022 Jobs*	Annual Openings*	Median Earnings	Growth (2022 - 2032)*	Employment Concentration (2022)*
Medical and Health Services Managers	16,204	2,104	\$50.44/hr	+44.11%	1.10
Clinical Laboratory Technologists and Technicians	11,353	1,058	\$25.18/hr	+21.20%	0.92
Medical Assistants	8,015	1,356	\$18.05/hr	+25.70%	0.99
Medical Scientists, Except Epidemiologists	2,432	244	\$40.45/hr	+36.76%	0.87
Natural Sciences Managers	2,319	269	\$52.55/hr	+31.82%	0.80
Life, Physical, and Social Science Technicians, All Other	2,016	331	\$23.11/hr	+21.92%	0.83
Biological Technicians	1,607	245	\$23.06/hr	+14.93%	0.64
Medical Equipment Repairers	1,504	198	\$24.29/hr	+24.93%	1.39
Biological Scientists, All Other	1,145	141	\$37.89/hr	+33.28%	0.46
Statisticians	574	77	\$45.77/hr	+55.75%	0.48
Bioengineers and Biomedical Engineers	494	49	\$41.24/hr	+30.77%	0.63
Microbiologists	391	40	\$28.28/hr	+12.28%	0.45
Biochemists and Biophysicists	336	41	\$31.71/hr	+26.49%	0.24
Epidemiologists	190	18	\$35.65/hr	+28.95%	0.81
Family Medicine Physicians	0	0	\$88.67/hr	0.00%	0.00

Job Postings Summary

107,439 Unique Postings 355,745 Total Postings	3 : 1 Posting Intensity  Regional Average: 4 : 1	10,237 Employers Competing 245,118 Total Employers	28 days Median Posting Duration Regional Average: 28 days
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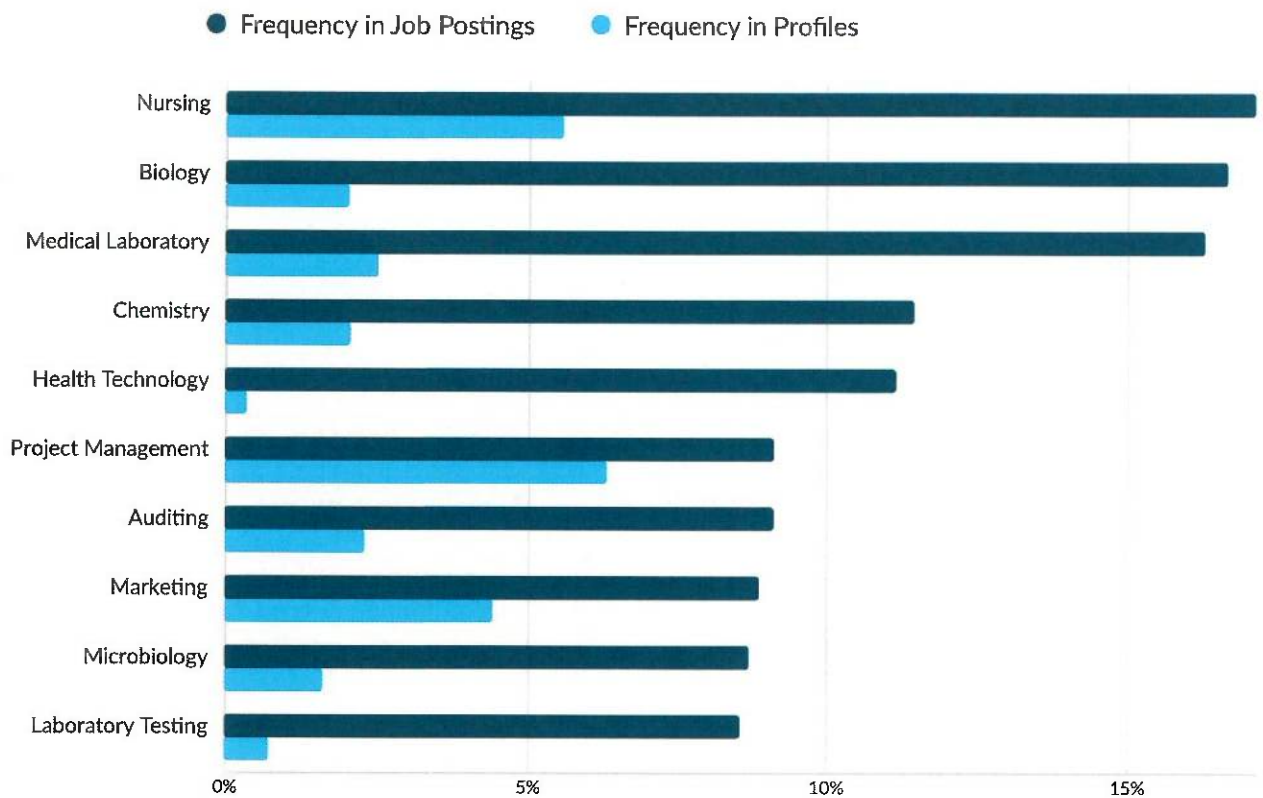
There were 355,745 total job postings for your selection from August 2019 to October 2023, of which 107,439 were unique. These numbers give us a Posting Intensity of 3-to-1, meaning that for every 3 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (4-to-1), indicating that they are putting average effort toward hiring for this position.

Top Posted Job Titles

Job Title	Total/Unique (Aug 2019 - Oct 2023)	Posting Intensity	Median Posting Duration
Medical Technologists	16,321 / 3,786	4 : 1 	25 days
Laboratory Technicians	9,028 / 3,138	3 : 1 	28 days
Medical Laboratory Scientists	10,738 / 2,684	4 : 1 	29 days
Directors of Nursing	7,279 / 1,814	4 : 1 	29 days
Clinical Research Associates	4,261 / 1,683	3 : 1 	19 days
Clinical Laboratory Scientists	6,080 / 1,229	5 : 1 	25 days
Clinical Research Coordinators	4,601 / 1,150	4 : 1 	27 days
Laboratory Managers	3,866 / 1,123	3 : 1 	27 days
Medical Technologists/Medical Laboratory Technicians	3,446 / 1,051	3 : 1 	29 days
Medical Assistants	4,150 / 941	4 : 1 	28 days

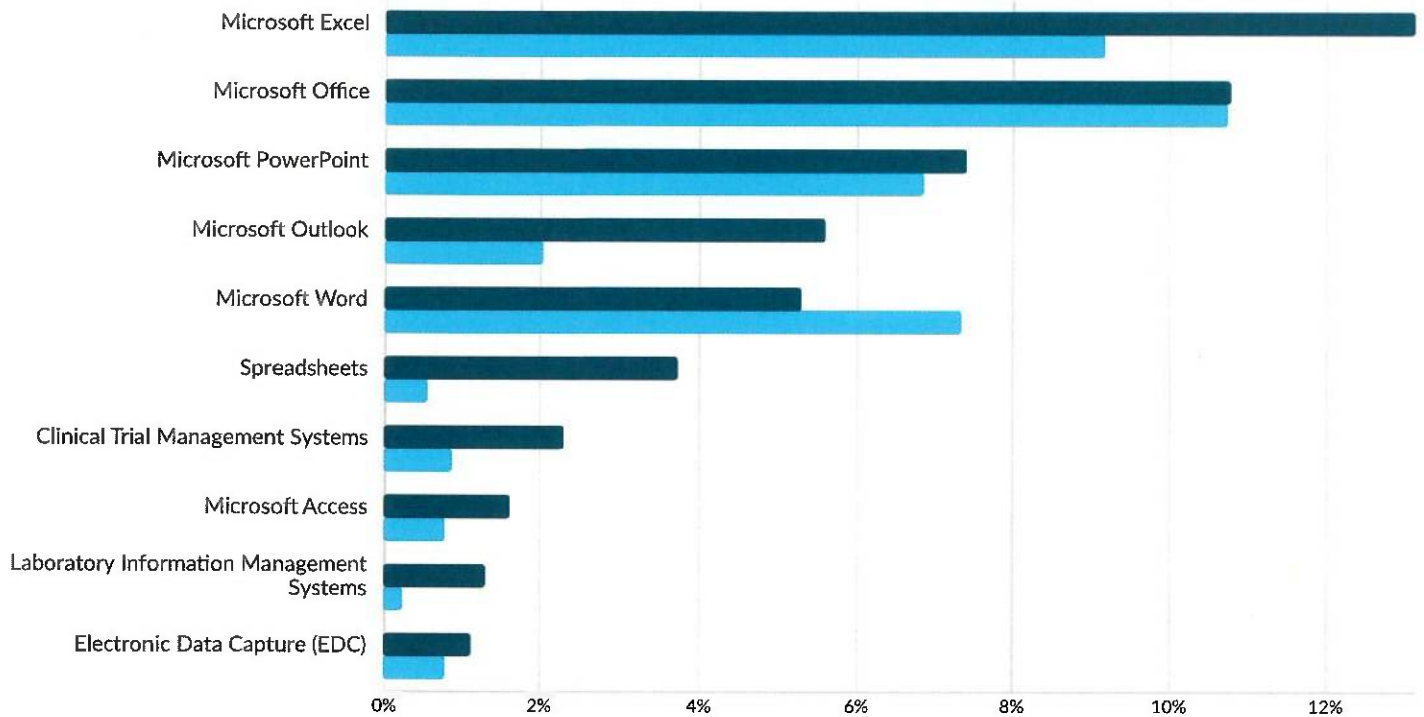
Top Specialized Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Nursing	18,419	17%	10,525	6%	+20.1%	Rapidly Growing
Biology	17,920	17%	3,900	2%	+25.7%	Rapidly Growing
Medical Laboratory	17,495	16%	4,820	3%	+22.6%	Rapidly Growing
Chemistry	12,319	11%	3,955	2%	+18.2%	Growing
Health Technology	11,992	11%	696	0%	+11.7%	Growing
Project Management	9,814	9%	11,923	6%	+19.8%	Rapidly Growing
Auditing	9,802	9%	4,423	2%	+21.8%	Rapidly Growing
Marketing	9,557	9%	8,357	4%	+23.0%	Rapidly Growing
Microbiology	9,369	9%	3,120	2%	+9.3%	Growing
Laboratory Testing	9,202	9%	1,409	1%	+14.4%	Growing

Top Software Skills

● Frequency in Job Postings ● Frequency in Profiles



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Microsoft Excel	14,104	13%	17,352	9%	+17.7%	Growing
Microsoft Office	11,580	11%	20,272	11%	+18.5%	Growing
Microsoft PowerPoint	7,963	7%	12,986	7%	+26.1%	Rapidly Growing
Microsoft Outlook	6,018	6%	3,831	2%	+25.0%	Rapidly Growing
Microsoft Word	5,683	5%	13,878	7%	+7.2%	Stable
Spreadsheets	3,986	4%	1,019	1%	+22.2%	Rapidly Growing
Clinical Trial Management Systems	2,478	2%	1,633	1%	+7.0%	Stable
Microsoft Access	1,729	2%	1,451	1%	+3.9%	Lagging
Laboratory Information Management Systems	1,393	1%	435	0%	+13.3%	Growing
Electronic Data Capture (EDC)	1,190	1%	1,474	1%	+6.7%	Stable

Top Qualifications

Qualification	Postings with Qualification
American Society For Clinical Pathology (ASCP) Certification	15,712
Registered Nurse (RN)	13,758
American Medical Technologists (AMT) Certification	9,974
Valid Driver's License	8,024
Basic Life Support (BLS) Certification	7,288
Medical Laboratory Scientist (MLS-ASCP)	3,689
Cardiopulmonary Resuscitation (CPR) Certification	3,070
Advanced Cardiovascular Life Support (ACLS) Certification	2,555
Technologist In Microbiology (M-ASCP)	2,364
Medical Laboratory Technician (MLT-ASCP)	2,344

Appendix A

Program Selection Details

CIP Code	Program Name
26.0102	Biomedical Sciences, General

Appendix B - Data Sources and Calculations

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

State Data Sources

This report uses state data from the following agencies: Texas Workforce Commission

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Dr. Jennifer R. Huddleston
Associate Professor
Department Chair
Department of Biology
Abilene Christian University
ACU Box 27868
Abilene, Texas 79699-7868
jennifer.huddleston@acu.edu

March 31, 2025

Dear ACU Academic Councils:

On behalf of the Department of Biology, I would like to express our strong support for the shared Biomedical degrees (both B.A. and B.S.) and the associated tracks as prepared by Dr. Diana Flanagan. Dr. Flanagan has spent countless hours combing through medical and health professions school prerequisites, as well as the degree programs of our strongest competitors. The degree plans that she has put together will serve our students well and give them a strong foundation and prepare them well for their advanced studies.

The Department of Biology, along with the Department of Chemistry and Biochemistry, have decades of experience in preparing students to be successful applicants and strong biomedical students in advanced programs. These degrees are not actually proposing anything new, just a repackaging of degrees with enhancements to serve our students better that allows us to continue to do what we have done well for so long..

Furthermore, these new degrees with their new names and the clear tracks will allow ACU to recruit strong prospective students who are interested in biomedical careers. Universities that we compete with have these clear names and tracks, and we know that we have already lost a number of prospective students because of this.

The proposed degrees would be shared between the departments of Biology and Chemistry and Biochemistry. This makes sense since so many of the foundational courses lie in these two departments. We already serve students in both departments and have them all in our classes. The faculty in the two departments have excellent working relationships with one another. Although we each currently offer similar degrees, we do not feel like we are competing with one another for students. These shared degrees will only build on the cooperation and good relationships that already exist.

These new degrees do present a new challenge. There are still questions about how to count majors and how to reimagine departmental identity. However, these are challenges that can be addressed.

Again, we are strongly in support of the creation of these new, shared biomedical degrees.

On behalf of the ACU Department of Biology,

Jennifer Huddleston, Ph.D.

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April 1, 2025

To Whom It May Concern:

The department of Chemistry and Biochemistry (C&BC) supports the creation of the Biomedical Sciences degree. This degree was created through a collaboration of the center for Pre-Health Professions, the department of Biology, and the department of Chemistry and Biochemistry and is intended to be a shared degree.

This will likely impact the number of biochemistry majors, however, this is a strategic move on our part. Anecdotally, over the past few years, we seem to have started losing pre-health students to universities that offer a pre-health/ biomedical sciences degree. Because in many ways this degree is similar to the biochemistry degrees, many of the courses taught by our department will hopefully have an increased enrollment. It may lead to a decrease in the number of students in some of the upper-level chemistry courses.

The department of Chemistry and Biochemistry can accommodate additional students in our chemistry courses included in this degree.

We feel this is a well-designed degree that will serve our students well.

Autumn Sutherlin, Ph.D.
Chair and Professor
Department of Chemistry and Biochemistry
Abilene Christian University



Tim Head
Department of Engineering and Physics
ACU Box 27963
Abilene, TX 79699
tim.head@acu.edu
325-674-2495

March 24, 2025

Dr. Diana Flanagan
Associate Professor of Biology
Assistant Director, Center for Pre-health Professions

Subject: Letter of Support for a B.S. Chemistry (ACS Nuclear Chemistry)

Dear Dr. Flanagan,

Thank you for involving us in development of your B.S. Biomedical sciences degree. The Department of Engineering and Physics will be able to support the needs of this degree as currently proposed unless there are many more students than expected. If there are significantly more students (on the order of 20), it could require extra lab sections that we currently do not have faculty to staff. I appreciate your important work in this area and the department will look forward to teaching majors from this degree in the near future.

Sincerely,

Timothy L. Head II, Ph.D.
Professor and Chair, Department of Engineering and Physics,

Diana Flanagan

[Quoted text hidden]

—
Diana L. Flanagan, Ph.D.
Associate Professor of Biology
Assistant Director, Center for Pre-Health Professions
Abilene Christian University
325-674-2749
Student Office Hour Appointment Link

Jim Carpenter <jac16d@acu.edu>
To: Diana Flanagan <dlf09b@acu.edu>

Tue, Apr 1, 2025 at 9:08 AM

Diana,

Thank you for the additional information on the Biomedical Sciences Pre-Vet track. We are following up with Texas A&M Veterinary College on adding MATH 123 to their list of accepted statistics courses. I apologize for not addressing the specific points on the degree plan of conflicts with the A&E Pre-Vet track and accommodation of students in A&E courses. To be honest, it did not occur to me since the degree plan is replacing the pre-veterinary medicine tracks in Biology and Chemistry. You are correct in your interpretation of my response. The Biomedical Sciences Pre-Vet track does differ enough from the Agricultural & Environmental Sciences Pre-Vet track that I will not object to it. If the number of students does not grow significantly from the number currently in the Biology and Chemistry tracks, we will be able to accommodate the students in the Animal Science courses.

In Him,
JimC

[Quoted text hidden]



Memo

From: Dr. Cliff Barbarick
Chair of the Department of Bible, Missions, and Ministry

Date: March 21, 2025

Subject: Support for Including BIBP 352 as a requirement for the Biomedical Sciences degrees

I support the proposal to include BIBP 352: Biomedical Ethics as a requirement for the B.A. in Biomedical Sciences and for all tracks of the B.S. in Biomedical Sciences. I think the course clearly contributes to the program outcome that "students will be able to identify societal and ethical issues in biomedical sciences." Because we currently offer the course every full semester, adding BIBP 352 as a requirement to the degrees should not create any scheduling conflicts for students. If student demand increases beyond our current capacity, we are committed to adding additional sections to meet student need.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Cliff Barbarick', is written over a light blue horizontal line.

Clifford A. Barbarick
Chair, Department of Bible, Missions and Ministry



To: Diana Flanagan, Assistant Director, Center for Pre-Health Professions
From: John Ehrke, Chair of Mathematics

Re: Memo of Support for New Biomedical Science Tracks

I have reviewed the proposal for the new Biomedical Science tracks sponsored by the departments of Biology, Chemistry and Biochemistry, and the Center for Pre-Health Professions. 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. This proposal should have minimal impact on our department's course offerings as the mathematics track requirements, MATH 185 or MATH 131 with MATH 123, remain unchanged from other degree plans.

The department looks forward to working with CPHP on this plan.

Blessings,

Dr. John Ehrke
Chair of Mathematics

Proposed New B.A. Degree Program

Cole Bennett <cole.bennett@acu.edu>
To: Diana Flanagan <dlf09b@acu.edu>

Thu, Mar 27, 2025 at 3:09 PM

Diana,

The Dept of Language and Literature can certainly accommodate a substantial increase in language students as you have described with revisions to your degree configurations. We are happy to hear of this development in your area, and we wish you much success.

Best,

CB

On Mon, Mar 24, 2025 at 4:31 PM Diana Flanagan <dlf09b@acu.edu> wrote:
[Quoted text hidden]

[Quoted text hidden]

BS/BA in Biomedical Sciences

1 message

Lynette Sharp Penya <penyal@acu.edu>
To: Diana Flanagan <dlf09b@acu.edu>

Mon, Mar 17, 2025 at 10:09 PM

Hi Diana,

Our department is looking forward to supporting your new program (BS/BA in Biomedical Sciences) by including SOCI 111 in the degree plan. We're also happy to provide seats in any communication courses you would like to include.

Blessings,
Lynette

—
Lynette Sharp Penya, Ph.D.
Professor of Communication
Chair, Department of Communication & Sociology
Abilene Christian University
ACU Box 28156
Abilene, TX 79699-28156
Office: 325-674-2136
Email: penyal@acu.edu

[Click here](#) to book an appointment with me.

Biomedical Sciences Degree Programs

Melissa Long <mdl16a@acu.edu>

Wed, Apr 2, 2025 at 10:19 AM

to: Diana Flanagan <dlf09b@acu.edu>

cc: Dirk Nelson <jdn23a@acu.edu>, Sheila Jones <joness@acu.edu>

Hi Diana,

Thank you for the update and for taking the time to meet with our department. The Kinesiology department would be able to support the use of KINE 302 in the BS Pre-PA and BA Pre-PA tracks. Please communicate the expected number of enrolled students annually so we can deploy faculty appropriately.

Thank you,

Melissa

[Quoted text hidden]

--

Melissa D. Long EdD, LAT, ATC

Abilene Christian University;

Kinesiology and Nutrition Department,

Department Chair;

Master of Strength, Conditioning, and Human Performance Program,

Program Director;

ACU Box 28084

(817) 807-6539 cell

(325) 674-2328 office

(325) 674-4822 fax

"Be shepherds of God's flock that is under your care, watching over them—not because you must, but because you are willing, as God wants you to be" 1 Peter 5:2

Bioengineering Biomedical Sciences

	McHenry (biology)	Baylor (health)	Tarleton State (biology)	TWU own plan	Texas A&M (BMS dept in Vet School)	RIT (inundisp)	Sam Houston (biology)	Marquette College of Health Sciences	Liberty School of Health Sciences	UT Dallas School of Nat Sciences
BIOLOGY CORE										
General Bio I	X	research	X	planned & prePA	X	X	X	X	X	X
General Bio I Lab	X	premed only	X	minors for major	X	X	X	X	X	X
General Bio II	X	apply 2nd yr	X	outside sciences	X	X	X	X	X	X
General Bio II Lab	X		X		X	X	X	X	X	X
Genetics	X		X & Lab		X	X	X	X	X	X
REQUIRED COURSES										
Cell Biology	X		X							
Microbiology	X		X							
Human Physiology	X		X							
Molecular Biology	X		X							
Molecular Biology Lab	X		X							
Ecology & Lab	X		X							
Advanced Elective Hours	9 hrs BMS oc. BIOL Biochem I		X							
SUPPORTING COURSES										
Gen Chem I	X	X	X		X	X	X	X	X	X
Gen Chem II	X	X	X		X	X	X	X	X	X
O Chem I	X	X	X		X	X	X	X	X	X
Biochem I	X	X	X		X	X	X	X	X	X
Physics I	X	X	X		X	X	X	X	X	X
Physics II	X	X	X		X	X	X	X	X	X
Math	X	X	X		X	X	X	X	X	X
Statistics	X	X	X		X	X	X	X	X	X
CAPSTONE	Calculus or Stats X (4hr)	Calculus I X (4hr)	PreCalc or Calc X (4hr)		Calculus I X	Calculus I X	Calculus I X	Calculus I X	Calculus I X	Calculus I X
CAREER	BIOL or BMS junior seminar	BIOL or BMS junior seminar	current topics cancer pathways		Seminar	Protein Biologist				
No Certification			Human Anatomy 7-shrs from Immunology, Vir, MedBio, DevBio Biochem 2, Biochem Lab 7 hrs adv							
PreMed/Dent			Gen Chem II O Chem II Gen Physiol Immunology Human Anatomy							
PrePT/PrePA			3-4 hrs from Vir, DevBio, MedBio Biochem 2 Biochem Lab							
PrePharm			Gen Psych Med Term Human Anatomy							
			8-9 hrs from Immunology, Vir, Micro, DevBio Biochem 2 Biochem Lab							
			Calculus I O Chem II Human Anatomy							
			7-shrs from Immunology, Vir, MedBio, DevBio Biochem 2 Biochem Lab 7 hrs adv							
			Public Speaking Gen Psych Ochem II Comp Vet Anatomy Animal Nutrition							
			8-shrs from Immunology, Vir, MedBio, DevBio Biochem 2 Biochem Lab 7 hrs adv							

ACU's designated Biomedical Sciences Menu aligns with the Biology education
Several of these schools are larger and can offer more advanced specialized electives

ABILENE CHRISTIAN UNIVERSITY

Educating Students for Christian Service and Leadership Throughout the World

Department of Psychology

McKinzie Hall 125, ACU Box 28011, Abilene, Texas 79699-8011
325-674-2310 • Fax 325-674-6968



April 2, 2025

Dear Dr. Diana Flanagan,

I am writing to express support for the proposed curriculum for the biomedical sciences degree programs. I understand that specific psychology coursework listed below will be taken by those students enrolled in the Bachelor of Science in Biomedical Sciences-Pre-Medicine, Bachelor of Science in Biomedical Sciences-Pre-Physician Assistant (Pre-PA), and Bachelor of Arts in Biomedical Sciences with Pre-PA and Pre-Physical Therapy (Pre-PT) concentrations.

The proposed requirements are as follows:

- **B.S. Biomedical Sciences-Pre-Medicine:** Students must complete either PSYC 120 or SOCI 111.
- **B.S. Biomedical Sciences-Pre-PA:** Students must complete PSYC 120 and an additional 3 credit hours from a menu of PSYC 232, PSYC 382, or SOCI 111.
- **B.A. Biomedical Sciences-Pre-PA and Pre-PT Concentration:** Students must complete PSYC 120 and an additional 3 credit hours from a menu of PSYC 232, PSYC 382, or SOCI 111.

We are pleased that you recognize the importance of social and behavioral sciences in healthcare. Please let me know if there is anything else we can do to support your programs!

Sincerely,

Cherisse Y. Flanagan
Chair and Professor
Department of Psychology
Abilene Christian University
cyf07a@acu.edu