

Approval Chart for Curriculum Changes

A = Approve I= Information Item¹ R= Advise & Respond²

Course Number BIOL 486 or Degree Plan(s) _____

State the requested change and reason. A memo may be attached if more space is necessary.

BIOL 486 Comparative Botany will fulfill requirements for the revised BA and BS degrees in Biology.

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

		COUNCIL ³								
	Change to a Course	Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD	Provost	President
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 (substantive change)	A	A	A	I				A	A
5.	Number of hours (lecture, lab, contact)	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 fee(s)	A	--	A	--				A	I
10.	From U to G <i>or</i> G to U	A	A	A	A				A	A
11.	Cross list with another department: U or G level	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
14.	New course — See website for application and process. This change includes combining or splitting a course(s).	A	A	A	A				A	A

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

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					COUNCIL ³							
	Change to a Degree Plan	Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD	Provost	Faculty	President	Board of Trustees
1.	University Requirements — Change in approved course content ⁶	A	A	A	A				A	--	A	--
2.	University Requirements — Add or drop a required course from the University Requirements chart ⁶	A	A	A	A				A	A	A	--
3.	University Requirements — Add or drop a course from a menu within the University Requirements ⁶	A	--	--	A				A	--	A	--
4.	University Requirements — Change hours within a menu on the University Requirements chart ⁶	A	A	A	A				A	A	A	--
5.	Major — Revision of major ^{4,5}	A	A	A	A				A	--	A	--
6.	Major — Adopt or change admission requirements	A	A	A	A				A	--	A	--
7.	Major — Add ^{4,5}	A	A	A	A				A	A	A	I
8.	Major – Discontinue (proposed by the department or college)	A	A	A	A				A	A	A	I
9.	Major – Discontinue (proposed by the Provost)	See below.										
10.	GPA — Revise major or cumulative requirement	A	A	A	A				A	A	A	--
11.	Minor — Revise course selection	A	A	A	I				I	--	I	--
12.	Minor — Add	A	A	A	A				A	--	A	--
13.	Minor – Discontinue (proposed by the department or college)	A	A	A	A				A	--	A	--
14.	Minor – Discontinue (proposed by the Provost)	See below.										
15.	Degree — Add	A	A	A	A				A	A	A	I
16.	Degree – Discontinue (proposed by the department or college)	A	A	A	A				A	A	A	I
17.	Degree – Discontinue (proposed by the Provost)	See below.										
18.	Any change to a graduate degree program	A	A	A	A				A	--	A	--

COUNCIL ³										
	Provost-Proposed Change	Provost	Department	Dean	TEC	UUAC	Graduate	Faculty	President	Board of Trustees
1.	Major/Graduate Program – Discontinue (proposed by the Provost)	A	R	R	A			A	A	I
2.	Minor – Discontinue (proposed by the Provost)	A	R	R	A			--	A	--
3.	Degree – Discontinue (proposed by the Provost)	A	R	R	A			A	A	I

Approval Chart for Curriculum Changes

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COUNCIL ³										
	Change to the Catalog Information	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President
1.	General requirements for graduation including course requirements that are common to all majors for all degrees ⁷	--	--	--	A			A	A	A
2.	Admission requirements	--	--	--	A			A	A	A
3.	Policies governing academic probation and suspension	--	--	--	A			A	A	A
4.	Requirements for graduating with honors	--	--	--	A			A	A	A
5.	Other academic policy changes	--	--	--	A			A	--	A

¹ Councils may request additional information about “Information” items. These items are approved as “Consent Agenda.”

² The Dean and Department should respond to the Provost’s recommendation to close a program in writing. Advise & Respond (R) requires that the voting body should receive the written responses at least one week prior to the vote.

³ All courses that meet University Requirements for general education must go through UGEC. Courses or degrees offered only to students seeking teacher certification must go through the Teacher Education Council. All undergraduate changes must go before the UUAC. All graduate degree plan changes must go through the Graduate Council.

⁴ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

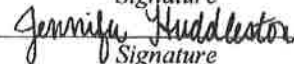
⁵ Program or course changes that apply to any major that includes Teacher Certification will be reviewed by the college, the Teacher Education Council (TEC), and then the UUAC.

⁶ Courses that satisfy ACU’s University Requirements (General Education) will normally have lower-level numbering, be free of prerequisites and co-requisites, appeal to more than one or two majors, and “not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession” (SACS 2.7.3). Departments may request exceptions to the first three criteria.

⁷ The UUAC approved the clarification that “general requirements for graduation” means the enumerated items in the “General Requirements for Bachelor’s Degrees” section of the catalog.

Revised 3-8-17

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
 Signature	5 Feb 2018 Approval date
 Signature	2/5/18 Approval date

College Academic Council(s)	
 Signature	3.2.18 Approval date
_____ Signature	_____ Approval date

Dean(s)	
 Signature	3/6/18 Approval date
_____ Signature	_____ Approval date

Teacher Education Council	
_____ Chair's signature	_____ Approval date

General Education Council	
_____ Chair's signature	_____ Approval date

Undergraduate Academic Council	
_____ Chair's signature	_____ Approval date

Graduate Council	
_____ Chair's signature	_____ Approval date

Provost	
_____ Signature	_____ Approval date

Faculty	
_____ Chair of faculty senate	_____ Approval date

President	
_____ Signature	_____ Approval date

Application for a New Course v10.6

Course ID <i>Subject and Number</i>	BIOL 486
Date APPROVED	
Date DENIED	

I. Systems and Catalog Information Complete each item.

1	Course Developer	Joshua M. Brokaw
2	Course Teacher	Joshua M. Brokaw
3	Course Title	Comparative Botany
4	Course Abbreviation (if title is over 30 characters)	
5	College	College of Arts & Sciences
6	Department	Department of Biology
7	Number of Credit Hours	4
8a.	Number of contact hours - lecture	3
8b.	Number of contact hours – lab/activity	3
9	Is the course for a fixed or variable number of credit hours?	Fixed Credit
10	Explanation for variable credit	
11	Is the course repeatable for additional credit?	No
12	Maximum total number of credit hours a student can earn for this course	
13	What type of course is this? (Select one. Please see Schedule Type definitions above.)	☐ Traditional lecture ☐ Traditional lab ☒ Traditional lecture/lab ☐ Experiential Learning ☐ Seminar ☐ Studio ☐ Thesis ☐ Dissertation

14	Instructor Workload	Typical 4 credit hour course workload
15	Grade Mode (check all appropriate):	☒ Standard ☐ Credit/No Credit (undergrad only)
16	Maximum Enrollment	16
17	Catalog Description (50 words or less)	BIOL 486, Comparative Botany (3-3-4) spring, odd years. Advanced study of the anatomy, physiology, ecology, and taxonomy of plants and their relatives from a synthetic evolutionary perspective.
18	List any prerequisites (course/s, test scores, class standing, major, etc.)	BIOL 112/114, BIOL 113/115, and BIOL 351
19	List any co-requisites	
20	If the course is cross listed, specify the Course ID(s); MUST have signature in Section V from all Department Chairs	
21	Does this course have any special student costs?	☒ No, (only the basic science lab fee) ☐ Yes (If yes, must attach a <u>completed</u> "Request to Add or Change Course Fees" form. Describe in section IV-F.)
22a	How frequently will the course be offered in the Fall ? All, even or odd years?	Never
22b	How frequently will the course be offered in the Spring ? All, even or odd years?	Odd
22c	How frequently will the course be offered in the Summer ? All, even or odd years?	Never
23	First semester this course will be offered <i>New courses may not be taught under their approved course ID until they appear in the catalog, therefore, no earlier than the coming fall.</i>	2021
24	List course/s that should be deleted, (Also, include the last semester for course/s being deleted) <i>A course cannot be deleted when it is a requirement in a degree plan in any department.</i>	

25	Is this course required for a degree/s? <i>If "Yes," attach a revised degree plan(s) reflecting the placement of the new course.</i>	☐ No ☒ Yes
26	Should the addition of this course be retroactively applied to the degree plan it supports?	☒ No ☐ Yes Explanation:
27	Has this course been offered as a Special Topics course?	☒ No ☐ Yes <i>If "Yes," specify the Course ID and enrollment for each term it was taught. (Note: New courses are NOT required to be taught as Special Topics courses prior to being approved. However, a course may be taught once as Special Topics before it is proposed. See the Course Descriptions section of the Catalog for details.)</i>
28	List any courses in which the content overlaps the proposed course. (Course ID and Name) <i>Attach a statement from the instructor/dept chair of the existing course justifying the new offering in Section IV-D.</i>	

II. Curriculum

1	Degree Plan Explanation of how this course affects degree requirements.	It fulfills core requirements for the Biology BS and BA.
2	Justification State the justification for adding this course to the current curriculum. Represent the need.	The Department of Biology currently offers Plant Biology BIOL 222/224 as a sophomore-level lab and lecture course. As the product of many years of discussion and planning for curriculum redevelopment, the Department has decided to develop a sequence of courses in the Biology BS and BA degrees that is more consistent with the majority of biology programs in the United States. An integral part of this plan involves the revision of organism-specific courses, including Animal Biology and Plant Biology, to become junior- or senior-level courses and the

		introduction of Genetics (BIOL 351) during the sophomore year. Plant Biology has been re-envisioned as the senior-level course Comparative Botany. Unlike Plant Biology, Comparative Botany will focus less on general concepts that are explored in 300-level courses, such as Cell Biology, Genetics, and Ecology, and will incorporate a substantial component of individual inquiry and application through scientific writing. A new term-paper will consist of an individually chosen topic related to the evolutionary context and significance of an organismal trait or group of organisms. The term paper will be assessed following criteria that are consistent with the rigorous standards of Biology Seminar capstone papers. However, the organismal term paper will focus on topics related to organismal biology, whereas Seminar capstone papers focus on topics related to religious and ethical worldviews. All Biology majors will be required to take at least one senior-level course requiring a term paper about organismal biology; Comparative Botany will be the course option that fulfills this requirement during the spring semester of odd years. During a typical four-year Biology degree, students would write a Seminar capstone paper in either the fall or spring of their 4th year and write an organismal term paper during the alternate semester of the 4th year.
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III. Course Design

1. Audience and Course Goal

1	Describe the intended audience, including prerequisite skills.	This course is intended for Biology majors and other students preparing for fields that study organismal biology, including, but not limited to, agriculture, environmental science, and wildlife. Students are expected to have basic knowledge and skills necessary to have completed general biology, genetics, and ecology courses.
2	State the overarching course goal(s) in performance terms.	Students will gain knowledge and appreciation of organismal biology and learn to describe the function and importance of individual organisms in broader contexts. The breadth of knowledge will be assessed through lecture exams. The ability to appreciate and apply specific knowledge in a broader context will be assessed through a term paper and research project presentation.

2. Competencies and Measurements

	Competency	Measurement
1	Students will demonstrate basic knowledge and understanding of plant diversity and evolution.	Lecture exam grades
2	Students will demonstrate basic knowledge and understanding of plant form and function.	Lecture exam grades
3	Students will demonstrate competence in molecular (DNA based) lab techniques.	Graded as part of a semester research project requiring data collection and presentation
4	Students will demonstrate competence in phylogenetic and/or population genetic analyses of molecular data	Graded as part of a semester research project requiring data collection and presentation
5	Students will demonstrate ability to make a research conference presentation.	Graded as part of a semester research project requiring data collection and presentation
6	Students will demonstrate ability to interpret scientific literature.	Graded as part of a term paper requiring scientific literature review and defense of a thesis
7	Students will demonstrate ability to synthesize scientific information.	Graded as part of a term paper requiring scientific literature review and defense of a thesis

8	Students will demonstrate ability to explain the broader significance of individual organisms in the context of biological diversity and ecosystem function.	Graded as part of a term paper requiring scientific literature review and defense of a thesis
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3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings.
2. For **combined undergraduate/graduate** courses, make two lists:
 - a. full publication information; label **Undergraduate**.
 - b. full publication information; label **Graduate**. Indicate number of pages required.

The following texts are recommended and serve as the basis for lecture topics:

Biology of Plants, 8th edition, by Evert, and Eichhorn (2012)

- **Publisher:** W. H. Freeman
- **ISBN-10:** 1429219610
- **ISBN-13:** 978-1429219617

Plants & Society, 7th edition, by Levetin and McMahon (2015)

- **Publisher:** McGraw-Hill Education
- **ISBN-10:** 0078023033
- **ISBN-13:** 978-0078023033

Other books and journal articles are assigned on a student-by-student basis according to the topics of their research presentations and term papers.

IV. Supporting Documentation

Supporting documents must accompany proposal prior to preliminary approval by chair and dean.

1	Library — Submit new course application and syllabus to the Dean of the Library. Consult with the director and establish a deadline for completion of the library report. Attach the signed copy of the Library report.
2	Instructional Design — The application and syllabus must be reviewed by the Adams Center. Attach a copy of the Adams Center Review Letter.
3	Content Overlap — Include one document for each course you listed in Section I-I. Attach statement from instructor/dept chair of existing course justifying the new offering.
4	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location/s.
5	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.
6	Expenses — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). Attach a complete list of all items, the estimated cost of each and the source of the funds.
7	Justification — Attach all documents referred to in Section II-2
8	Syllabus — Attach the syllabus for the course based upon the anticipated first-semester offering.
9	Provide documentation for all additional attachments here

Application for a New Course v10.6

	4	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location/s.
	5	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.

This course will use a plant growth room, herbarium (botanical specimens), and ecology lab located in Onstead (room # to be determined).

This course will use molecular research facilities located in the Halbert-Walling Research Center (room 170). These equipment already exist and are shared with other courses, including Biology Research (BIOL 399).

V. Preliminary Approvals

All supporting documentation has been assembled and attached to this application. I believe this course is ready to be presented to appropriate councils. We have a plan to fund this new course.

Course Number and Name BIOL 486 Comparative Botany

Primary Department

Thomas E. Lee

Department Chair
Dean of the College

6 Feb. 2018
Date

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair
Dean of the College

Date

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair
Dean of the College

Date

Date

VI. Actions *Place all actions on one page.*

Course ID: BIOL 476

Course Title: Comparative Botany

1. College Academic Council: (for all courses)

Note: Insert additional lines for College Academic Council action for each college involved in cross-listed courses.

Approved ☒ Denied ☐  3.2.18
College Dean or Director Date

Approved ☐ Denied ☐ _____
College Dean or Director Date

2. Graduate Council: (for graduate level courses)

Approved ☐ Denied ☐ _____
Dean of Graduate School Date

3. Teacher Education Council: (when applicable)

Approved ☐ Denied ☐ _____
TEC Chair Date

4. University General Education Council: (when applicable)

Approved ☐ Denied ☐ _____
Provost's designee Date

5. University Undergraduate Academic Council: (*undergraduate level courses*)

Approved ☐ Denied ☐ _____
Vice Provost Date

6. Academic Provost: (for all courses)

Approved ☐ Denied ☐ _____
Provost Date

7. President of the University: (for all courses)

Approved ☐ Denied ☐ _____
President Date

Attach notes, comments, or conditions from appropriate councils:

Course Syllabus for Comparative Botany

BIOL 486.01 Spring 2021

TR 9:30-10:50 am, W 2:00-4:50 pm

Halbert-Walling Research Center Room 281

Mission Statements:

ACU: The mission of Abilene Christian University is to educate students for Christian service and leadership throughout the world.

College of Arts and Sciences: The College of Arts and Sciences engages students with humanity's greatest ideas to create understanding, apply insights, and serve the world as Christian thinkers and problem solvers.

Biology Department: The Department of Biology educates students for Christian service and leadership by preparing them to become biological scientists, pre-college teachers, and health care professionals.

Instructor: Dr. Joshua Brokaw, Associate Professor, Biology Office: Halbert-Walling, Room 232
Office Hours: 9-10 am (MTWRF), 1-2 pm (MR), or appointment*
Phone: 325-674-2168 E-mail: josh.brokaw@acu.edu

*E-mails are welcome and are encouraged to schedule office hour appointments.

Course Description:

BIOL 486, Comparative Botany (3-3-4) spring, odd years. Advanced study of the anatomy, physiology, ecology, and taxonomy of plants and their relatives from a synthetic evolutionary perspective.

Recommended Textbooks:

Biology of Plants, 8th edition, by Evert, and Eichhorn (2013)
Plants & Society, 7th edition, by Levetin and McMahon (2015)

Prerequisites: BIOL 112/114, BIOL 113/115, and BIOL 351.

Purpose: Comparative Botany is designed to serve as an advanced biology course for students interested in a career in botany or related fields, including agriculture, ecology, environmental science, horticulture, wildlife management, medicine, and teaching. Students will apply fundamental concepts in biology, including genetics, ecology, and evolution to achieve a synthetic understanding of the roles of plants and plant relatives in ecosystems and human culture.

Anticipated Outcomes and Competency Measures: This course provides the opportunity to consider patterns and principles of botany pertaining to a wide variety of biological fields. Course competencies include demonstrated knowledge and understanding of 1) foundational importance of plants and plant relatives to **ecosystem function** and responsible **environmental stewardship**; 2) **evolutionary history** and unique characteristics of the green plant clade and other plant-like groups; 3) the basic **anatomy** of plants and plant-like groups, including cell types, tissues, and organ systems; 4) the major alternative chemical pathways for carbon dioxide reduction through **photosynthesis** and **other physiological processes** in plants and plant-like groups, including mineral nutrition and growth and development; and 5) overall importance of plants to human cultures with special emphases on **health and nutrition**.

Competency in this biological knowledge will be assessed by your performance on tests, a term paper, and lab quizzes and projects as outlined below.

Grade Assessment:

Grades	Weight
3 Tests	(60%)
Term Paper	(20%)
Lab Grade	(20%)
Total	(100%)

Grade Scale:

A:	$\geq 89.5\%$
B:	$\geq 79.5\%$
C:	$\geq 69.5\%$
D:	$\geq 59.5\%$
F:	$< 59.5\%$

Test and Term Paper Schedule:

Week	Day	Date	Event
1	Tue	16-Jan	First Day
5	Tue	13-Feb	<i>Term Paper Topic Due</i>
6	Tue	20-Feb	<i>Test 1</i>
	Tue	13-Mar	Spring Break
10	Tue	27-Mar	<i>Term Paper Draft 1 Due</i>
11	Tue	3-Apr	<i>Test 2</i>
12	Tue	10-Apr	<i>Term Paper Final Draft Due</i>
Finals			<i>Test 3</i>

Tests: Tests will be given on dates noted in the schedule. Tests will **cover all material since the previous test**. Tests contain 50 multiple-choice and 5–15 fill-in-the-blank questions. Multiple-choice questions are worth 1 pts each. Fill-in-the-blank questions may have different point values but will have a total value of 50 pts. Tests 1 and 2 last 80 minutes, and Test 3 lasts 105 minutes; Test 3 is not comprehensive but will occur at the exam time during Finals Week.

Attendance: Attendance is vital for success in this class. Students that exceed the maximum of 6 TR absences will be automatically withdrawn from the course.

All quizzes, tests, and project due dates should be taken/submitted when scheduled. If an acceptable excuse for missing a quiz or test is given, you may take it within a week upon your return. The **only** acceptable excuses for missing class are 1) illness with doctor's letter (note: the school medical clinic **does not** provide excuse notes under most circumstances), 2) death in immediate family (parents, siblings, grandparents), 3) official school trips (with **advance** approvals). Students must notify the professor prior to the next class that they are requesting a "make-up." According to university policy, if a student misses a final examination with permission, the teacher will record an "I" (incomplete) for the course grade. The final examination may be given at a later date (within the first six weeks of the following semester), with permission from the college dean.

Term Paper. From the 'Scheduled Topics' list and/or the recommended textbooks, choose a plant group or plant trait of interest; you will review the adaptive history and significance of this group or trait. Share the **topic of interest and a thesis regarding its evolutionary significance** with five key references during the 5th week of class; references must be primary literature and/or books (minimum of 5 sources); failure to submit a topic will disqualify the final draft from consideration. By the 10th week of class, submit a 3000 – 5000-word rough draft of the term paper; failure to submit a rough draft will disqualify the final draft from consideration. The final draft will be due by the 12th week of class. The final draft will be graded on a 100-point scale using the sum of categories from the following rubric.

Term Paper Rubric.

Category	Exemplary (20 pts)	Effective (17 pts)	Emergent (15 pts)	Elementary (13 pts)	Missing (0 pts)
Thesis	Clearly and concisely articulates and develops the thesis; scope is suitable for assigned task and focuses all elements of work; firmly establishes significance of project	Effectively articulates and develops the thesis; generally focused and specific; reasonably addresses assigned task; demonstrates significance of project	The thesis of the essay is present but vague and offers limited significance of the essay.	The thesis of the essay is not clear or appropriate and offers little to no explanation of the significance of the essay.	No thesis.
Organization	Superior and carefully organized analysis and discussion of the topic. Each paragraph has a focused idea and excellent supporting detail. Sources are critically synthesized to address chosen topic. Appropriate, logical conclusions are made and connected to the thesis.	Effective analysis and discussion of the topic. Synthesis of information is coherent. Conclusions are appropriate and connected to the thesis.	Weak analysis and discussion of the topic: moderately sustained and developed ideas and acceptable analysis of topic ideas. Conclusions are made, but not entirely supported by presented information or do not attempt to fully address the thesis.	Inadequate analysis and discussion of the topic: ideas are undeveloped, confused or disconnected. Conclusions are not present or are not connected to presented information or thesis.	No discernable organization.
Integrative Learning	Relevant and critical connections exhibited from a variety of sources. Demonstrates deep understanding of connections between historical knowledge and contemporary theories.	Makes generally effective connections from a variety of sources. Shows an understanding of connections between historical knowledge and contemporary theories.	Makes weak connections between sources; shows little understanding of historical knowledge and contemporary theories.	Underdeveloped or missing connections between sources; shows no understanding of historical knowledge and contemporary theories.	No sources.
Appropriate Sources	Information appropriately and fully answers the proposed question. Sources are appropriately synthesized in a way that addresses chosen topic. Appropriate, logical conclusions are made and connected to the research question.	Information is mostly linked to the proposed question. Synthesis of information is coherent. Conclusions are appropriate and mostly connected to the research question.	Attempts are made to relate information to proposed question. Information is connected, but weakly synthesized. Conclusions are made, but not entirely supported by presented information or do not attempt to fully answer question.	No link between information presented and original proposed question. Sources are not connected with little to no synthesis. Conclusions are not present or are not connected to presented information or research question.	No question.
Mechanics and Appropriate Citation of Sources	Excellent command of standard English that skillfully communicates meaning to readers with clarity and fluency, and is virtually error-free. Student correctly implements all four of the following information use strategies: 1) selects critical sources; 2) adheres to proper citation and reference style; 3) paraphrases,	Sufficient command of standard English that adequately communicates meaning to readers with infrequent errors in grammar, punctuation or usage. Paper flows well. Student correctly uses three of the information use	Weak command of standard English. Errors in grammar, punctuation, or usage are present but do not compromise meaning. Student correctly uses two of the information use strategies and practices ethical and legal restrictions on the use of published,	Inadequate command of standard English. Major errors or repeated minor errors in grammar, punctuation, or usage obscure meaning. Student correctly use one or none of the information use strategies and practices ethical and legal restrictions on the use of published, confidential, and/or	Shows no regard for rules of grammar and citation.

	summarizes, or quotes in ways that are true to original context; 4) distinguishes between common knowledge and ideas requiring attribution. Practices ethical and legal restrictions on the use of published, confidential, and/or proprietary information.	strategies and practices ethical and legal restrictions on the use of published, confidential, and/or proprietary information.	confidential, and/or proprietary information.	proprietary information.	
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Behavior/Dress Code: Clothing and behavior should be appropriate to promote learning under lecture and/or laboratory conditions. Any behavior or dress that distracts other students or inhibits learning will receive one warning. If there is a second infringement, you will be asked to leave class. Harassment will not be tolerated: <http://www.acu.edu/community/offices/hr-finance/hr/title-ix/overview.html>

Learning Disabilities: If you have a documented disability and wish to discuss academic accommodations, you must contact the *ACU Student Disability Services Office* (part of *Alpha Academic Service*) at (325) 674-2667 to make an appointment with the Director of Disability Services. In order to receive accommodations, you must be registered with them for each class in which you need accommodations. They will make necessary arrangements in cooperation with instructors.

Academic Integrity: Academic integrity is defined as academic work completed as assigned for each class. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent. Academic misconduct includes, but is not limited to, the following: 1) Cheating on tests and quizzes, 2) Failure to give credit to sources used in a work in an attempt to present the work as one's own, 3) Submission of papers or projects obtained from another source (e.g., research service or club paper file) as one's own, and 4) Falsifying information orally or in writing. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of the College of Arts and Sciences, and the Dean of Student Life will be notified. See the full university policy, including how to appeal a decision, by following this link: <http://www.acu.edu/content/dam/community/documents/cas/cas-academic-integrity.pdf>

Faith and Inquiry: As with all areas worthy of inquiry, material in this course **will** challenge your understanding of the world (i.e. challenge your worldview). It is my objective as a mentor and a brother in Christ to provide the space for your questions and your personal development during this process because I believe that it is essential that we temper our faith through adversity. "Then we will no longer be infants, tossed back and forth by the waves, and blown here and there by every wind of teaching and by the cunning and craftiness of people in their deceitful scheming." (**Ephesians 4:14**).

Lecture Schedule: * Any changes to planned topics will be communicated orally and/or in writing to students.

Scheduled Topics

Systematics & Plant-like groups
Bryophytes and Seedless Vascular Plants
Gymnosperms
Angiosperms
Molecular Composition of Plant Cells
Plant Cell and Cell Cycle
Cells and Tissues of the Plant Body
Roots and Shoots: Structure and Development

Suggested Reading

Raven Ch 12-15; Levetin Ch 8, 22, 23
Raven Ch 16&17; Levetin Ch 9
Raven Ch 18; Levetin Ch 9
Raven Ch 19&20; Levetin Ch 9
Raven Ch 2; Levetin Ch 2
Raven Ch 3&4; Levetin Ch 2
Raven Ch 22&23; Levetin Ch 3
Raven Ch 24&25; Levetin Ch 4&5

Secondary Growth of Stems	Raven Ch 25&26; Levetin Ch 3
Respiration and Photosynthesis	Raven Ch 5-7; Levetin Ch 4
Hormones Regulating Growth and Development	Raven Ch 27
External Factors and Plant Growth	Raven Ch 28
Plant Nutrition	Raven Ch 29&30
Plants and People	Raven Ch 21; Levetin Ch 1
Medicinal Plants	Levetin Ch 19
Stimulating & Psychoactive Plants	Levetin Ch 16&20
Poisonous and Allergy Plants	Levetin Ch 21
Sexual Reproduction & Heredity	Raven Ch 8; Levetin Ch 7
Evolution	Raven Ch 11; Levetin Ch 8
Ecology and Ecosystems	Raven Ch 31-32 pdf; Levetin Ch 26

Lab Activities:

Lab handouts will be provided on the weeks preceding labs. Labs will provide students opportunities to make observations and conduct experiments illustrating concepts covered in lectures. Due to the nature of the experiments, several labs will require collection and analysis of data in subsequent weeks.

Lab Schedule: * Any changes to planned topics will be communicated orally and/or in writing to students.

Week	Date	Topic/Activity
1	17 Jan	No Lab
2	24 Jan	Introduction to Lab Projects and Systematics
3	31 Jan	Quiz L1 Tues., Plant Molecules
4	7 Feb	Quiz L2 Tues., Molecular Systematics Project
5	14 Feb	Molecular Systematics Project
6	21 Feb	Quiz L3 Tues., Molecular Systematics Project
7	28 Feb	Taxonomy and Diversity
8	7 Mar	Quiz L4 Tues., Molecular Systematics Project
	14 Mar	Spring Break
9	21 Mar	Quiz L5 Tues., Cells and Tissues
10	28 Mar	Quiz L6 Tues., Anatomy
11	4 Apr	Quiz L7 Tues., Growth and Hormones
12	11 Apr	Quiz L8 Tues., Medicinal Plants
13	18 Apr	Quiz L9 Tues., Field Botany and Plant Identification
14	25 Apr	Quiz L10 Tues., Community Ecology
15	2 May	Quiz L11 Tues., Project Presentation

Lab Grade Assessment:

The final lab grade will count towards 20% of the total course grade. **Quizzes represent 80% of the final lab grade.** Eleven online quizzes will be taken throughout the semester on Tuesdays. These quizzes will cover **material from the previous lab handout.** All quizzes will be taken in Canvas and will be timed with automatic grading. Beginning on the second week of the semester, students will have access to quizzes starting at 12:01 a.m. each Tuesday morning. The quiz must be taken by 11:59 p.m. each Tuesday night. Quizzes are to be taken **INDIVIDUALLY.** Quizzes will include ten questions (multiple choice) worth one point each (ten-point scale). Seven minutes will be allotted for each quiz. Grades will be available immediately, however, correct answers will not be available until the deadline for all students to have completed the quiz. Correct answers will be available on Canvas from 12:01 a.m.

Thursday morning through 6 p.m. Friday evening of each week. Thus, it is each student's responsibility to review their quizzes on Canvas during the appropriate time frame.

The **Systematics Project** labs will result in a **poster (20% of the final lab grade)** to be presented after chapel during the Biology Research Club Spring Poster Session. The poster is graded as a group project involving 3 or 4 group members. Projects can be submitted by students to the ACU Undergraduate Research Festival with instructor approval, but this is not required, and the Research Festival has an early deadline that must be met for abstract acceptance. Posters submitted as pdf files are **due April 18**. Group members are expected to attend the Poster Session.

Research Poster Grade (average of 3 components): based on the following rubric.

	A-100	B-85	C-75	D-65	F-0
Clarity and Completion	Product is well-written, void of mistakes, and makes purpose, relevance, and methods clear. Product contains and appropriately distinguishes introduction, methods, results, and discussion. Sources are appropriately cited.	Product is mostly well written, leaving only minimal lack of clarity. Product contains and usually distinguishes introduction, methods, results, and discussion appropriately. Sources are cited.	Product is poorly written, leaving questions about the purpose, relevance, and methods of the research. Product lacks or fails to appropriately distinguish one or two of the following: introduction, methods, results, and discussion. Most sources are cited.	Poor writing quality and clarity make it difficult to judge the product at all. Product lacks or fails to appropriately distinguish three or all of the following: introduction, methods, results, and discussion. Most/all sources are not appropriately cited.	No product/ plagiarism
Results and Analysis	Research is innovative and original with obvious relevance to the field. Analysis is appropriate and complete, given the data.	Research is original with clear relevance to the field. Analysis is appropriate, given the data, but more thorough analysis would be preferable.	Review of literature or previous research with inadequate originality of findings, or research is original but lacks analysis of data.	Review of literature or previous research: does not appear relevant and/or the findings are merely a summary of previous work.	No product/ plagiarism
Review and Discussion	Review of preexisting knowledge is thorough and demonstrates context and relevance of the research. Discussion appropriately interprets the results while fully considering caveats without making claims not supported by the data.	Review of preexisting knowledge is satisfactory to demonstrate context and relevance of the research. Discussion interprets the results but does not fully consider caveats or makes some claims not clearly supported by the data.	There is some review of preexisting knowledge but does not demonstrate context and relevance of the research. Discussion merely restates the results and does not consider caveats or makes claims not supported by the data.	Review and discussion are merely a summary of previous work and/or unsupported claims.	No product/ plagiarism

Dr. Josh Brokaw

Halbert-Walling Research Center Room 281

325-674-2168

josh.brokaw@acu.edu

Re: Review of BIOL 486: Comparative Botany

Dear Dr. Brokaw,

Thank you for the submission of Comparative Botany: BIOL 486. I reviewed the syllabus based on the ACU application requirements and the syllabus meets those requirements. Please also see the attached checklist. I only have one suggestion for consideration:

- In an effort to keep the syllabus to a manageable length, you might consider referring to the rubrics as you did in the assignment description, but then not including the actual rubric in the syllabus. For example, the wording at the end of the term paper description reads, ".....sum of categories from the following rubric." The sentence could read, "..... sum of categories from the rubric provided in Canvas." This would alert students to the rubric while keeping the length of the syllabus a bit shorter.

The syllabus is exemplary! However, this letter is not meant to be a final approval in the course application process. Instead it is intended as a reference, which will be read by your department chair and members of the council, who may also have questions or comments of their own.

We would like to thank you for allowing the Adams Center team to review your course application. The instructional design team would love to work with you on your syllabus, as well as the design, development or revision of this and other courses. If there is anything else we can do to help you, please feel free to let me know.

Sincerely yours,



Amy Boone
alb17a@acu.edu

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: 14:53
TO: Dr. Josh Brokaw
FROM: Mark McCallon, Associate Dean for Library Services
RE: Course Application for BIOL 486 – Comparative Botany

After reviewing the course application, the library should be able to support the proposed course, depending on the projects chosen by students. If you require additional library resources in support of the course, please contact Erica Pye, Librarian Liaison for the Department of Biology, at expl0a@acu.edu. Thank you for letting the library review the course application.

From: Joshua Brokaw jmb97t@acu.edu
Subject: Re: Confirmation: BIOL course number requests.
Date: January 22, 2018 at 9:54 AM
To: Eric Gumm gummj@acu.edu

JB

Thanks!

Joshua M. Brokaw, Ph.D.
Associate Professor
Department of Biology
Abilene Christian University
ACU Box 27868
Abilene, Texas 79699-7868
325-674-2168
josh.brokaw@acu.edu

On Jan 22, 2018, at 9:38 AM, Eric Gumm <gummj@acu.edu> wrote:

Sorry for the transposition. Yes, BIOL 482 is available.

-Eric

Dr. Eric Gumm
Registrar and Director of the First-Year Program and Academic Development Center
Abilene Christian University
ACU Box 29104
Abilene, TX 79699-9104

On Mon, Jan 22, 2018 at 9:35 AM, Joshua Brokaw <jmb97t@acu.edu> wrote:
Thank you.

I would like to confirm that we are happy to use BIOL 482 for General Mammalogy (please reconfirm that this is the number that you can offer because it looks different in the response below).
And we would be a happy to accept BIOL 486 and BIOL 487.

Sincerely,

Joshua M. Brokaw, Ph.D.
Associate Professor
Department of Biology
Abilene Christian University
ACU Box 27868
Abilene, Texas 79699-7868
325-674-2168
josh.brokaw@acu.edu

On Jan 22, 2018, at 9:17 AM, Eric Gumm <gummj@acu.edu> wrote:

Good morning! There are only five numbers available for BIOL in the 480's at this point. 428 is available for the renumbering of the General Mammalogy course. 485 is not available so if you are looking for two consecutive numbers for the two new courses you can use 486 and 487. Let me know if you need any other assistance.

In His Service,
Eric

Dr. Eric Gumm
Registrar and Director of the First-Year Program and Academic Development Center
Abilene Christian University
ACU Box 29104
Abilene, TX 79699-9104

----- Forwarded message -----

From: Joshua Brokaw <jmb97t@acu.edu>
Date: Sun, Jan 21, 2018 at 3:04 PM
Subject: BIOL course number requests

Subject: BIOL course number request,
To: registrar@acu.edu

Hi registrar's office,

As part of a curriculum update, we are proposing to create two courses and change the course number on one other.

1. If it is available, we would like to change the course number of General Mammalogy from BIOL 380 to BIOL 482 in order to place it in the catalog near Plant Systematics (BIOL 481), which is a similar course.
2. For two new courses, we would like consecutive numbers in the 480s for Zoology and Botany. If they are available, we would suggest Zoology become BIOL 485 and Botany become BIOL 486.

Thanks for your consideration,

Joshua M. Brokaw, Ph.D.
Associate Professor
Department of Biology
Abilene Christian University
ACU Box 27868
Abilene, Texas 79699-7868
[325-674-2168](tel:325-674-2168)
josh.brokaw@acu.edu

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Katherine Redman
Assistant Registrar for Student Services and Enrollment
Abilene Christian University
Registrar's Office
Box 29141
Abilene, TX 79699
Ph. [325-674-2236](tel:325-674-2236)
Fax: [325-674-2238](tel:325-674-2238)
registrar@acu.edu
www.acu.edu/registrar

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Karen Witemeyer
Student Services & Catalog Specialist
Abilene Christian University
Hardin Administration Bldg. Room 207
122 McGlothlin, ACU Box 29141
Abilene, Texas 79699
Phone: (325) 674-4913
karen.witemeyer@acu.edu