

# Program Change Request

## New Program Proposal

Date Submitted: 09/18/18 4:31 pm

Viewing: **BIOL-CRTU : Certificate in Biotechnology**

Last edit: 02/08/19 10:01 am

Changes proposed by: dyanv

### In Workflow

- A. CLAS Dean or Associate Dean
- B. Provost's Office
- C. CLAS Undergraduate Program and Course Coordinator
- D. CUSA Subcommittee
- E. CUSA Committee
- F. CAC
- G. CLAS Final Approval
- H. OIRP CIP Approval
- I. Provost's Office
- J. Future Academic Catalog

### Approval Path

- A. 10/25/18 6:47 pm  
Karen Ledom (kjh): Approved for CLAS Dean or Associate Dean
- B. 11/14/18 1:05 pm  
Linda Luckey (lluckey): Approved for Provost's Office
- C. 11/15/18 3:13 pm  
Rachel Schwien (rschwien): Approved for CLAS Undergraduate Program and Course Coordinator
- D. 02/08/19 10:02 am  
Bridget Bradley (bbradley): Approved for CUSA Subcommittee

Academic Career Undergraduate, Lawrence  
 Program Type Certificate  
 Department/Program Biology  
 School/College College of Lib Arts & Sciences  
 Consulting School(s)/College(s)  
 Consulting Department(s)  
 CIP Code 26.1201  
 Program Name Certificate in Biotechnology

Do you intend to offer a track(s)?

Yes

Please name the track(s)

Track Name(s)
Bioscience Pathway
BioAnalytical Pathway

Location(s) of Instruction Edwards

Do you intend for this program to be offered online?

No

Effective Catalog 2019 - 2020

**Program Description**

The biotechnology certificate is designed for individuals seeking to broaden their science content-knowledge and gain cutting-edge, hands-on training in biotech research methods. This certificate will help prepare individuals for the demands of STEM-related graduate programs and the demands of careers in the biotech industry.

**Demand/Need for the Program**

There are more than 245 biotech companies that employ over 28,000 people in the Kansas City region. These companies have a significant and growing demand for scientists trained in biotechnology. These companies have expressed a need for scientists trained in functional laboratory skills and research methods. The biotech certificate will enhance access to courses offered through the existing B.A.S. in Biotechnology degree program. Biotech courses are specifically designed to delivery training on these highly needed skills.

**Comparative/Locational Advantage**

That said, the Kansas City region could benefit from this certificate as no other 4-year college currently offers a biotech certificate.

**Admission Requirements**

The prerequisites for this certificate articulates well with STEM-related degree programs (A.S. degrees at community colleges and bachelor's degrees at 4-year colleges). The general science requirements for admissions are as follows—  
General Chemistry I & II, Organic Chemistry I, General Molecular Biology, Genetics, or associates of science degree in related scientific field.

**Degree Requirements**

**Course List**

Code	Title	Hours
<a href="#">BTEC 300</a>	<b>Research Methods in Biotechnology</b>	<b>3</b>
<a href="#">BTEC 305</a>	<b>Molecular and Microbiological Techniques</b>	<b>4</b>
<b>Choose from the following pathways</b>		
<b>Bioscience Pathway</b>		
<a href="#">BTEC 400</a>	<b>Applied Immunology</b>	<b>3</b>
<a href="#">BTEC 550</a>	<b>Applied Bioinformatics</b>	<b>2</b>
<b>OR</b>		
<b>BioAnalytical Pathway</b>		
<a href="#">BTEC 475</a>	<b>Applied Separation Science and Quantitative Analysis</b>	<b>6</b>

**Faculty Profile**

Name of Faculty and Rank	Highest Degree	Number of Faculty FTE
Dr. Randall Logan	Ph.D.	1.0
Dr. Jack Trembl	Ph.D.	1.0

**Student Profile**

<b>Anticipated student enrollment</b>			
	<b>Full Time</b>	<b>Part Time</b>	<b>Total</b>
<b>Year 1</b>	2	0	2
<b>Year 2</b>	4	0	4
<b>Year 3</b>	6	0	6

<b>Anticipated number of program graduates</b>	
<b>After 5 Years</b>	20
<b>After 7 Years</b>	30

**Academic Support**

No additional resources required.

**Facilities and Equipment**

No additional resources required.

**Program Review, Assessment, Accreditation**

Program Review will occur every two years.

Assessment of student-learning occurs continuously throughout all courses.  
Biotechnology has no accrediting body.

## Costs, Financing

	Salaries	OOE	Equipment	Other	TOTAL
Year 1	0	0	0	0	0
Year 2	0	0	0	0	0
Year 3	0	0	0	0	0

## What is the source of the new funds?

No additional funding resources required for this certificate.

## Rationale for proposal

There are >245 biotech companies employing >28,000 people in the KC region. These companies have a significant, growing demand for scientists trained in biotechnology. Unfortunately, the KC region currently does not have an established undergraduate-level biotechnology certificate at any 4-year institution. KU is well-positioned to take advantage of the booming growth in biotech and establish the leading role in this educational sector.

## Additional Information

The biotech certificate enhances access to courses specifically designed to deliver training on highly needed functional laboratory skills and knowledge of research methods. This certificate program will allow KU to capitalize on the existing curriculum and courses established in the B.A.S. in Biotechnology with no additional investments in facility FTE or faculty upgrades.

## Supporting Documents

## Program Reviewer Comments

**Bridget Bradley (bbradley) (02/08/19 10:01 am):** Per recommendation from the CUSA subcommittee, I have adjusted the curriculum table to show that the student will either choose one pathway course sequence or the other in order to complete the certificate.

Key: 642





### Approval Path

- A. 05/01/18 4:10 pm  
Bridget Bradley  
(bbradley):  
Rollback to  
Initiator
- B. 09/05/18 8:54 am  
Rachel Schwien  
(rschwien):  
Rollback to  
Initiator
- C. 09/18/18 10:05 am  
Rachel Schwien  
(rschwien):  
Rollback to  
Initiator
- D. 11/09/18 11:21 am  
Karen Ledom  
(kjh): Rollback  
to Initiator
- E. 02/08/19 10:08 am  
Bridget Bradley  
(bbradley):  
Approved for  
CLAS Dean or  
Associate Dean

### Program Description

The Department of Geography and Atmospheric Science in the College of Liberal Arts and Sciences proposes to create a new undergraduate certificate program in Climate and Climate Change (CCH).

Climate Change is becoming an increasingly more important societal issue since it will impact how we secure water, energy, and food in the near future. The primary cause of current trends in global climate are emissions of carbon dioxide and other greenhouse gases into the atmosphere since the start of the Industrial Revolution and the rise of fossil fuels as primary energy sources. In 2013, the Intergovernmental Panel on Climate Change concluded that “the human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system.”

The potential impacts from a changing climate are widespread and range from a rise in global sea level as ocean waters are heated and ice stored on land is transferred to the oceans at increasing rates; increasing surface temperatures; more widespread drought events of longer duration; and the possibility of more frequent and more intense hurricanes making landfall in the region surrounding the Gulf of Mexico. To cope with these consequences, and to build a more resilient society and infrastructure, there is an urgent need for an informed citizenry. It is critical to educate future decision makers who can influence national and international policies and adopt a more rational approach to dealing with impacts of climate change.

The goal of this Certificate Program aligns well with the University of Kansas' mission to educate citizens, consumers, and leaders, and to contribute to the building of safe and healthy communities. Within the University, the Department of Geography and Atmospheric Science is eminently positioned to take the lead in this program. Our diverse faculty approaches impacts of climate change from a variety of disciplines, ranging from the purely physical and climatological approach, to the political consequences of human relationships and interactions with the biophysical world around us.

### Demand/Need for the Program

Misinformation and misconceptions about climate change inundate the media and blogosphere to the extent that the general public, as well as political leaders, are understandably confused. To counter the avalanche of misinformation, students need to be well-versed in the physical aspects of the climate system and how these physical systems interact with human systems.

However, rectifying the stream of disinformation alone is not sufficient. The lack of public response to climate change has been meager at best. Kari Norgaard proposes that this inaction derives from the phenomenon of socially organized denial, whose roots go far deeper than simple lack of factual data. This is why scientific organizations increasingly call for collaboration between the physical and humanistic sciences, to bridge the intellectual gap and get the message about climate change and our future, across to politicians and the general public. In short, the IPCC may have concluded that “the science is settled” but this

does not mean that the message has been successfully conveyed nor received. More attention needs to be focused on how societal systems will need to change to align with environmental values and realities.

As climate change impacts are increasingly evident and more severe, governments, companies and other organizations will be forced to respond and adapt to these changes. Formulating appropriate strategies will require scientifically-based current knowledge of how the climate system operates, communication of societal impacts, and creative development of response scenarios for different geographic contexts.

This certificate program brings together courses from the physical side as well as from the humanistic side, to ensure a well-rounded curriculum for students. The certificate would be valuable to a wide range of career options including, but not limited to: local, state, and federal government administrators; land managers; environmental and social equity advocates; environmental consultants; scientists; planners and policy-makers; and individuals looking to become better global citizens through understanding the science behind climate and climate change.

[Comparative/Locational Advantage](#)

The Department of Geography at the University of Utah offers an undergraduate Climate Change Certificate that requires a total of 18-19 credit hours.

The Department of Geography at the University of Idaho offers a Climate Change Certificate for both undergraduate and graduate students, requiring 12 credit hours.

The Department of Geography and Anthropology at Louisiana State University offers a Graduate Certificate in Climatology and Climate Change. Students are expected to select two Climate Science courses, and two courses from Climate Communication, Human Dimensions, and Policy, for a total of 12 credit hours.

[Admission](#)

[Requirements](#)

All students enter the certificate program by emailing [collegeadvising@ku.edu](mailto:collegeadvising@ku.edu) to have their request sent to the Registrar's Office to add the certificate to the student's record. The Undergraduate Advisor or the Director of this certificate program will be available to meet with each student and discuss the selection of electives that best meets the student's needs..

[Degree](#)

[Requirements](#)

General requirements:

Students must maintain a 2.0 GPA in courses taken in the certificate program and maintain good standing in any University program of study for which they are enrolled. Students are encouraged to meet with the certificate Director to discuss progress in the program.

Course requirements:

To complete the certificate, 12-13 credit hours must be completed. Among them 6 credit hours are from two required core courses and the additional 6-7 credit hours are from electives.

Course List

Code	Title	Hours
<b>Core Courses</b>		
<a href="#">ATMO/GEOG 321</a>	<b>Climate and Climate Change</b>	<b>3</b>
<a href="#">GEOG 371</a>	<b>Environmental Geopolitics</b>	<b>3</b>
<b>Elective Courses</b>		
<a href="#">ATMO 521</a>	<b>Microclimatology</b>	<b>6-7</b>
<a href="#">ATMO 634</a>	<b>Physical Climatology</b>	
<a href="#">ATMO 680</a>	<b>Physical Meteorology</b>	
<a href="#">GEOG 332</a>	<b>Glaciers and Landscape</b>	
<a href="#">GEOG 336</a>	<b>Introduction to Environmental Hydrology and Water Resources</b>	
<a href="#">GEOG 372</a>	<b>Environmental Policy</b>	
<a href="#">GEOG 526</a>	<b>Remote Sensing of Environment I</b>	
<a href="#">GEOG 556</a>	<b>Geography of the Energy Crisis</b>	
<a href="#">GEOG 577</a>	<b>Human Dimensions of Global Change</b>	

Faculty Profile

Name of Faculty and Rank	Highest Degree	Number of Faculty FTE
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The current faculty who can teach in this program: David Braaten (Professor), Nathaniel Brunsell (Professor), So-Min Cheong (Associate Professor), Steve Egbert (Professor), David Mechem (Professor), Shannon O'Lear (Professor), David Rahn (Associate Professor), Pamela Sullivan (Assistant Professor), Justin Stachnik (Assistant Professor), Cornelis van der Veen (Professor). Profiles and curriculum vitae are available on the department website.	PhD	10
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#### Student Profile

Anticipated student enrollment			
	Full Time	Part Time	Total
Year 1	5	0	5
Year 2	10	2	12
Year 3	15	5	20

Anticipated number of program graduates	
After 5 Years	15
After 7 Years	15

#### Academic Support

No additional academic support is required.

#### Facilities and Equipment

No additional facilities and equipment are required.

#### Program Review, Assessment, Accreditation

In addition to regular mandated University review, the department is reviewed every 7-8 years, most recently in 2016/2017. Curricula for department courses are reviewed annually during the faculty evaluation process to ensure that they are appropriate for the courses being taught. No professional organization accredits certificate programs in geography.

#### Costs, Financing

	Salaries	OOE	Equipment	Other	TOTAL
Year 1	0	0	0	0	0
Year 2	0	0	0	0	0
Year 3	0	0	0	0	0

#### What is the source of the new funds?

New funds are not requested.

#### Rationale for proposal

The Department of Geography and Atmospheric Science is the only unit on campus that has expertise in both the physical and human aspects of issues related to climate change.

#### Additional Information

#### Supporting Documents

[ClimateClimateChange\\_feedback\\_to\\_department.pdf](#)  
[Intent Form.docx](#)

#### Program Reviewer Comments

**Karen Ledom (kjh) (02/05/18 12:32 pm):** Questions regarding requirements and restrictions in proposal. Dept emailed. KJL

**Bridget Bradley (bbradley) (05/01/18 4:10 pm):** I'm rolling back the certificate to the department. I have attached the feedback email for reference. The Policy and Awards subcommittee completed a pre-review (the certificate was not sent to the Provost's office) because there

was additional provisions that are not normally included in College Certificates and feedback was requested.

**Bridget Bradley (bbradley) (05/01/18 4:10 pm):** Rollback: Hi Beverly - I have sent an email detailing some of the concerns. Please let me know if you have any questions. Bridget

**Rachel Schwien (rschwien) (09/05/18 8:54 am):** Rollback: per request for further edits.

**Rachel Schwien (rschwien) (09/18/18 10:05 am):** Rollback: for further edits. Please see separate email for details.

**Karen Ledom (kjh) (10/14/18 4:04 pm):** re-submitted on 10/1 but still includes outstanding questions. Confer with subcommittee liaison and respond.

**Karen Ledom (kjh) (11/09/18 11:21 am):** Rollback: Per conversation between Bridget Bradley and Bev Koerner, roll back for additional edits.

**Bridget Bradley (bbradley) (02/08/19 10:07 am):** Subcommittee approved certificate with one change. They did not approve the topics courses that were

listed below the curriculum table. The subcommittee does not approve certificate curriculum that will need to be addressed through a petition process. Since the certificate has many electives they wanted to allow it to proceed.

Key: 600

