New Course Form

	For help filling out the form press F1 or look at the bottom of the screen. For additional instructions, see Course Form Instructions.									
	pe of Action		se not previously offered.	1						
1.	Catalog Prefix a	and Number*: BTN 105								
2.	Course Title:	Applied Laboratory Calcu	lations for Biotechnology							
	Pilot Course Information:									
	Are you requesting pilot status <u>only</u> at this time? Yes \square No \boxtimes Implementation Date?									
	Are you requesting pilot status <u>in addition to</u> regular approval process? Yes No [Implementation date? Fall or Spring? Fall Year? 2013									
		Has this course been previ	ously approved as pilot status	Yes No 🖂						
3.	Justification fo	or requested action.								
	and BTN 202 laboratory ca slow the pace language and algebra strug students enro real laborator focus on prob	which are contextually- an lculations that require any to of the class and have difficu content is the problem, not gle. Therefore, this proposed led in biotechnology course y situations. This course is a blems unique to biotechnology.	d computationally-rich. Many type of applied practical appli alty transitioning to higher leve the computations, because eve d contextual laboratory calculuses by preparing them to apply not intended to replace a math	cation. These students tend to yel biotechnology courses. The en students who are proficient is lations course will benefit basic laboratory calculations in a course. Rather, this course will mmon strategies of solving those						
4.	Submitting Enti	ty: Curriculum Committee:								
		Or College: BCTC								
5.		• •	(Complete item only if course	-						
	package. Verify that members are still current and active prior to submission.):									
	<u>Nar</u>	<u>ne</u>	Teaching Area	<u>College</u>						

<u>Name</u>	<u>Teaching Area</u>				
Deborah Davis	Biology, Biotechnology Coordinator	ВСТС			
Keith Allen	Biotechnology, Biology	BCTC			
Tammy Liles	Biotechnology, Biology, NS Asst. Dean	ВСТС			
Larry Porter	Instructional Specialist, Biology	BCTC			
Yasemin Congleton	Biotechnology, Biology Coordinator	BCTC			

Shirley Whitescarver Molly Frisbie				Biology, NS CRC Biology, NS CRC			BCTC					
								BCTC				
Tracy Knowles				Chemistry Coordinator, NS CRC				BCTC				
Jean Watts				Environmental Science, NS CRC				BCTC				
Invo	lveme	nt of Others (I	dentify Indiv	iduals):								
6.	Syste	em Office Staff	:	Mary K								
7.	Other	·s:										
8.	If yes	s course offered t, have they bee opment of this	n involved in	_		Yes Yes		No No	\boxtimes	N/A		
9.		s course duplica	ttive or simila	r to other cour	rses offer	ed by K	CTCS?			Yes		No
10.	Credi	t / Contact Hou		mester Credit l mester Contac		Min 45	imum	3 If lab, etcontact hours. (Socredit hours)	c., ration nours to bee con	credit tact/	3	
11. 12.		ng Basis: [Letter C	Grades	Pass/F	ail No	☐ Le	etter Grade	es/No (GPA		
If v	_	mplete the f										
٠		credit earned i	Ü				Total co	ompletions	s:			
13.	Open	Entry – Open I	Exit:	Yes 🛛	No							
14a.	cred	ponents (Check it hours and cor aponent			ent that i	s checke		(that is Credit Iours		, enter	
	\boxtimes	Lecture	3	45		Pı	racticum	l				
		Laboratory				C	о-Ор					
		Clinical				D	iscussio	n				

OR

14b.	Integrated Components (If components are integrated, and only one component (lecture or lab) needs scheduling, rather than both lecture and lab, complete this section.)								needs		
	Lecture/ Lab	Lecture Credit		Lecture Con		atact	Lab Credi	ontact			
15.	Requisites:										
	Pre-requisite		Yes		No	If yes, list MAKCTCS exam		quivalent	as deteri	mined by	
	Co-requisite		Yes		No	If yes, list:					
	Pre-requisite or		Yes		No	If yes, list:					
	Co-requisite										
16.	Implementation 2012):	on Term	n (Course so	chedule	ed to begi	n, ex. Fall	Spring	2014			
17. verb.	17. Proposed Course Description (Course description as it will appear in the catalog. Begin each statement with a werb.):										
	Introduces concepts, techniques and applications of common basic laboratory calculations that are routinely used in the biotechnology laboratory. Emphasis will be placed on applications of basic computational concepts required of biotechnicians. Students will apply strategies to calculate amounts of chemicals required to make solutions, calibrating instruments, data collection, and data interpretation. Some computer applications may be introduced.										
	Course Prop	osal Ra	tionale:								
18.	Will this cou	rse be a	part of app	roved o	curriculun	n/curricula?		Yes		No	
	If yes, which curriculum/curricula? (Submit a New Curriculum or Revision Form) Biotechnology Laboratory Technician										
	Course Com	petenci	es and Deli	ivery:							
19.	Proposed Co	urse Cor	npetencies/	Studen	t Outcom	nes					
	Upon con	npletion	of this cou	rse, the	student c	ean:					
:	 Use common laboratory glassware and instruments to accurately measure quantities in metric units. Apply basic laboratory calculations to prepare percent, molar, and proportional solutions and dilutions correctly. Apply basic laboratory calculations to common molecular biology techniques, including nucleic acids and protein assays, spectrophotometry, centrifugation, and cell culture techniques. Perform metric unit conversions. Describe relationships using basic graphing techniques. 										
 Apply basic laboratory calculations to prepare percent, molar, and proportional solutions and dilutions correctly. Apply basic laboratory calculations to common molecular biology techniques, including nucleic and protein assays, spectrophotometry, centrifugation, and cell culture techniques. Perform metric unit conversions. 											

- 20. Course Outline (Two-level outline required. Although courses may have more than two levels, the third level is not necessary.)
 - I. Introduction to basic lab math techniques
 - A. Commonly used exponents and scientific notation
 - B. Commonly used metric units of measurement
 - C. Importance of significant figures in a laboratory setting
 - II. Applications of Proportional Relationships in the Laboratory
 - A. Commonly used ratios and proportions
 - B. Density and percent
 - C. Calculation of the concentration of solutions with one solute
 - D. Calculation of the concentration of solutions with more than one solute
 - E. Conversion between different concentration expressions
 - F. Calculation of a solution after dilution
 - III. Describing Relationships with Equations and Graphs
 - A. Graph data points and create standard curves
 - B. Standard curves of known quantities to determine unknown quantities
 - C. Graph exponential equations
 - IV. Introduction to Commonly used Descriptive Statistics
 - A. Introduction to Terminology
 - B. Calculation of range, variance, and standard deviation to determine laboratory instrument accuracy and precision
 - V. Introduction to Common Biotechnology Applications
 - A. Cell culture techniques
 - B. Nucleic acid techniques
 - C. Protein purification techniques
- 21. List of experiments/activities (Courses with components other than lecture. e.g., laboratory, clinical, practicum, etc., must include a <u>sample</u> list of experiment topics or activities. Does not have to be all -inclusive.):
- 22. Indicate sample suggested classroom resources for course (Should not have publishing date greater than five years.)

SUGGESTED LEARNING RESOURCES FOR THIS COURSE

Seidman, Lisa A. (2008) *Basic Laboratory Calculations for Biotechnology*. San Francisco, CA: Pearson/Benjamin Cummings. ISBN-10: 0-13-223810-1 ISBN-13: 978-0-13-223810-6.

- 22. Provide a rationale for using textbook/references older than five years. N/A
- 23. May this course be used as an equivalent for other courses? Yes

 No X

 If yes, please list.

Signatures: Complete and submit a signature page for every proposal.

*The System Office assigns new course numbers. Contact Mary Kleber at Mary.Kleber@kctcs.edu