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.	
Type of Action	**New Course – Course not previously offered.**

1. Catalog Prefix and Number*: **BTN 160**

2. Course Title: **Introduction to Agricultural Biotechnology**

   Pilot Course Information:

   Are you requesting pilot status only at this time? **Yes** ☐ **No** ☒
   Implementation Date?

   Are you requesting pilot status in addition to regular approval process? Yes ☒ **No** ☐
   Implementation date? Fall or Spring? Fall Year? 2013

   Has this course been previously approved as pilot status Yes ☐ **No** ☒

3. Justification for requested action.
   The Agricultural Biotechnology class is designed to provide more instruction for students who are pursuing more in depth information of plant and animal biotechnology and its applications in agriculture. Biotechnological science is rapidly changing and becoming more and more specialized. As the US progresses toward finding new food and energy sources, new technologies are emerging, especially those directed toward resource management, genetically modified plants and livestock, and aquaculture productivity. This course along with the basic biotechnology courses will enhance students' laboratory skill sets, and provide a smoother transfer into the University of Kentucky's Agricultural Biotechnology Program and Kentucky State's Aquaculture Program.

4. Submitting Entity: Curriculum Committee:
   Or College: **BCTC**

5. Person(s) Primarily Responsible for Proposal **(Complete item only if course is not part of a curriculum package. Verify that members are still current and active prior to submission.)**:

Name	Teaching Area	College

Involvement of Others (Identify Individuals):

6. System Office Staff:

7. Others:

8. Is this course offered at other colleges? ☐ Yes ☒ No
   If yes, have they been involved in the development of this course? ☐ Yes ☐ No ☒ N/A

9. Is this course duplicative or similar to other courses offered by KCTCS? ☐ Yes ☒ No

If yes, Justification:

10. Credit / Contact Hours: 10a. Semester Credit Hours: Minimum **4** Maximum **4**

10b. Semester Contact Hours: **90** If lab, etc., ratio of contact hours to credit hours. (See contact/ credit hour ratio chart) **30:1**

11. Grading Basis: ☒ Letter Grades ☐ Pass/Fail ☐ Letter Grades/No GPA

12. Repeat for additional credit: ☐ Yes ☒ No

If yes, complete the following:

Total credit earned in course: Total completions:

13. Open Entry – Open Exit: ☐ Yes ☒ No

14a. Components (Check all components that require scheduling. For each component that is checked, enter the credit hours and contact hours for each component that is checked.):

	Component	**Credit Hours**	**Contact Hours**		**Component**	**Credit Hours**	**Contact Hours**
☒	Lecture	**2**	**30**	☐	Practicum		
☒	Laboratory	**2**	**60**	☐	Co-Op		
☐	Clinical			☐	Discussion		

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.)

Lecture/ Lab	Lecture Credit	Lecture Contact	Lab Credit	Lab Contact

15. Requisites:

Pre-requisite	☒	Yes	☐	No	If yes, list: **BTN 201 and BTN 202 with a grade of C or better, or permission of the program coordinator**
Co-requisite	☐	Yes	☒	No	If yes, list:
Pre-requisite or Co-requisite	☐	Yes	☒	No	If yes, list:

16. Implementation Term (Course scheduled to begin, ex. Fall 2012): **Spring 2014**

17. Proposed Course Description (Course description as it will appear in the catalog. Begin each statement with a verb.):

Introduces theory and methods relating to applications of biotechnology in agriculture. Emphasizes emerging laboratory technologies in the area of agricultural biotechnology including food and natural resource management. Explores plant and animal genetic engineering.

Course Proposal Rationale:

18. Will this course be a part of an approved curriculum/curricula? ☒ Yes ☐ No

If yes, which curriculum/curricula? **Biotechnology Laboratory Technician**
(Submit a New Curriculum or Revision Form)

Course Competencies and Delivery:

19. Proposed Course Competencies/Student Outcomes *(If part of an organized curriculum, how does it relate to program competencies /outcomes?* ***Begin statement with a capital letter and end with a period.****):*

Upon completion of this course, the student can:

1. **Explain agricultural biotechnology to a lay person.**
2. **Demonstrate good laboratory practices and competencies.**
3. **Evaluate and draw conclusions on both costs and benefits associated with the use of biotechnology in agriculture.**
4. **Explain the relationship between knowledge of DNA and current biotechnology applications in the food, fiber, and fuel system.**
5. **Discuss the role of biotechnology in genetic engineering.**
6. **Explain the importance of integrated pest management.**
7. **Explain the importance of ethics and ethical applications to agricultural biotechnology.**

20. Course Outline *(Two-level outline required. Although courses may have more than two levels, the third level is not necessary.)*

I. What is Biotechnology
   A. Laboratory techniques / skills
   B. What is Agriculture Biotechnology
II. Integrated Pest Management
   A. What is IPM
   B. Management with the least risk to the environment
III. Food Science (safety)
   A. Measures of contamination
   B. Responsibility and chain of custody
   C. FDA compliance
IV. World Population.
   A. Human population and growth
   B. Land vs. population

IV. Genetic Refresher
   A. What can Mendel teach us
   B. Genes and Characteristics
VI. Genetic technology
   A. Polymerase Chain Reaction, PCR
   B. Southern Blotting
VII. Genetic Transformation
   A. Cloning
   B. Animal transformation
   C. ELISA for disease detection

21. List of experiments/activities *(Courses with components other than lecture. e.g., laboratory, clinical, practicum, etc., must include a* ***sample*** *list of experiment topics or activities. Does not have to be all -inclusive.)*:

Review laboratory weights and measures by preparing cell culture media
Use of a bioassay to determine the effectiveness or the toxicity of chemicals
Perform a microbial survey to determine food safety
Conduct enzyme kinetics to determine optimum conditions
Perform PCR to detect genetically modified foods
Perform transgenic analysis using Southern blotting
Perform ELISA for diagnosis of disease
Propagate plants to determine totipotency
Determine preferential sugar fermentation by yeast by measuring CO_2 output
Extract sugars from cellulose to determine optimum ethanol production

22. Indicate sample suggested classroom resources for course (Should not have publishing date greater than five years.)

SUGGESTED LEARNING RESOURCES FOR THIS COURSE

AgrowKnowledge(2010) *Introduction to Biotechnology.* Cedar Rapids, IA. Retrieved from: http://www.agrowknow.org.

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