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 120**

2. Course Title: **Biofuels**

   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.
   This course is being offered for those students who need more detailed instruction on renewable combustion fuels.

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: **Completion of BTN 201 and BTN 202 with a grade of C or better, or permission of 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 students to combustion fuels made from nonpetroleum sources, and includes topics on feedstocks, processing, utilization, and social impacts.

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. **Describe how petroleum and bio-based fuels affect the global carbon cycle.**
2. **Explain the attributes of biofuels that make them suitable as a fuel for specific applications.**
3. **Explain the limitations of biofuels.**
4. **Describe the global impacts of biofuels on food and energy supplies.**
5. **Explain technological advances and challenges to be overcome for wide-scale biofuel adoption.**
6. **Apply laboratory exercises encompassing the appropriate practice of laboratory precautions and laboratory safety.**
7. **Perform independently proper laboratory procedures and apply laboratory activities including use of scientific equipment for weights and measures.**
8. **Demonstrate proficiency in various measurements to determine chemical and physical properties of fuel.**

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

I. Carbon in the environment
   A. Hydrocarbons
   B. Carbonates of calcium and magnesium
   C. Carbon Cycle
   D. Anthropogenic activities
   E. Greenhouse effect
II. Nonrenewable Energy
   A. Crude oil production
   B. Energy characteristics
III. Combustion engines
   A. Gasoline and diesel
   B. Octane and cetane
   C. Tests to evaluate quality

IV. Alcohol fuels
   A. Feedstocks
   B. Ethanol, methanol, butanol
V. Biodiesel
   A. Petrodiesel
   B. Chemical properties
   C. Feedstocks
   D. Tests to evaluate quality
VI. Bioethcis
   A. Carbon footprint offset
   B. Food vs. fuel

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.)*:

Estimation of carbon footprint
Yeast respiration
Cellulosic enzyme kinetics
Distillation
Making biodiesel with new oil
Making biodiesel with alternative oils
Biomass measurement

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

SUGGESTED LEARNING RESOURCES FOR THIS COURSE

Spackman, R (2009) *Introduction to Biofuels: for AgrowKnowledge.* Retrieved from Agrowknowledge: http://www.agrowknow.org

Soetaert, W. & Vandamme, E. (2009) *Biofuels.* Wiley. ISBN: 978-0-470-02674-8

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