ABE 20100 Honor Credit

Contract Objectives:

The efforts undertaken by the student seeking honors credit for ABE 20100 should deepen their understanding of thermodynamics and the law of conservation of mass and energy. This will be accomplished through applying the principles learned in the lecture to critically analyze a biological process of the student’s choice (and approved by the instructor).

Methodology:

Students will research a commercial biological process or the manufacturing process for a biological product. The topic will be proposed by the student and subject to review and approval by the instructor. Suitable topics should have publically available information, including process flow diagrams, processing conditions, flow rates, and scale. Acceptable processes must have sufficient complexity that the analysis is not trivial. Students will be required to conduct independent research to gather the necessary data for their analyses and to understand the commercial process of interest. Acceptable sources of information include trade journals, technical journal, peer-reviewed scientific literature, technical books, and personal correspondences with practicing engineers familiar with the product or process.

The students will meet with the instructor on a regular (weekly) basis to assess progress and to receive feedback. The time and location will be determined between the student(s) and the instructor.

Required Deliverables:

Product or Process Proposal: (1 page) Propose a product or process and provides at least 5 references of information pertaining to the proposed topic – Due September 26, 2016.

Process Diagram: A diagram of the overall manufacturing process that includes the major unit operations, raw material and energy inputs and products/waste outputs. The students should identify the critical unit operations that involve separations, (bio)chemical transformations, and thermodynamic changes (temperature change, phase change, etc.)- Due October 12, 2016.

Final report: (>5 pages, not including figures, tables, and references) This is a report of a critical analysis of the studied biological process/product manufacture. The analysis should include discussion of the material and energy inputs/outputs and inefficiencies in the process. At least two unit operations should be described in detail, with emphasis on thermodynamics and chemical changes occurring in that processing step. The student is expected to identify possible places where the unit operation might be improved or where recent innovations have resulted in improved yield, efficiency (material or thermodynamic) or economics. – Due December 5, 2016

TRADE JOURNAL \_\_ CEP (Chemical engineering progress) (purdue libraries—email Dr. Mosier, has access)

Dr. Rickus

Cook Medical

Revised Grading Scheme

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| Exam 1 | 100 pts |
| Exam 2 | 100 pts |
| Exam 3 | 100 pts |
| Final Exam | 200 pts |
| Quizes | 160 pts |
| Homeworks | 320 pts (approximate, subject to change) |
| Lab Project 1 | 150 pts |
| Lab Project 2 | 250 pts |
| Other Lab Assignments  Honors Proposal  Honors Process Flow Diagram  Honors Final Report | 50 pts (approximate, subject to change)  25 pts  25 pts  100 pts |
| **Total** | **1580 pts** |