



## Agriculture 772 – Page Two

### Course Requirements:

The grade for this course will be determined as follows:

A midterm and a final exam each worth 150 points.

1. Midterm Exam October 1- 7
2. Final Exam Week of December 8

New lectures will be posted each Monday. A biofuels development plan will serve as a capstone project. This term project is worth 150 points. Online quizzes will be given each week and will be worth 24-30 points each. Quizzes will be posted along with each lecture posting and will remain available from when they are posted on Wednesday through the following Tuesday evening. Two research papers assigned during the course of the semester covering various aspects of biorenewable resources will be worth 75 points each.

The grade scale based on % of total available points accumulated will be as follows:

#### Points for Class

|         |            |
|---------|------------|
| Exams   | 300        |
| Papers  | 150        |
| Quizzes | 300        |
| Project | <u>150</u> |
|         | 900        |

|   |          |
|---|----------|
| A | 90-100   |
| B | 80-89    |
| C | 70-79    |
| D | 60-69    |
| F | BELOW 60 |

### Class Policy:

It is mandatory that you take quizzes within the allotted time frame. Quizzes and tests must be taken at regularly scheduled times. Feel free to contact me at any time. We will post a discussion board to discuss topics during the semester. No makeup quizzes or exams will be posted.

**Any academic dishonesty will result in the student receiving an “F” in the course.**

**The University of Tennessee at Martin**  
**Department of Agriculture and Natural Resources**  
**Fall 2007**

**Agriculture 772**  
**Topics in AGET: Biorenewable Resources**  
**Course Outline**

| <b>Topic</b>  | <b>Chapter</b> |
|---|----------------|
| <b>Characteristics of Biorenewable Resources</b>                  |                |
| I. Introduction to Biorenewable Resources                         | 3              |
| A. Why?   |                |
| B. What?  |                |
| C. How?   |                |
| II. Chemistry of Plant Materials                                  | 2              |
| A. Plant Structure  |                |
| B. Carbohydrates  |                |
| C. Fats and Oils  |                |
| D. Proteins   |                |
| III. Production of Biorenewable Resources                         | 4              |
| A. Soil Characteristics   |                |
| B. Crop Management and Production Practices                       |                |
| C. Harvest  |                |
| D. Transport and Storage  |                |
| <b>Conversion of Biorenewable Feedstocks into Useful Products</b> |                |
| IV. Direct Combustion   | 6              |
| A. Resources  |                |
| B. Process  |                |
| C. Chemistry and Physics  |                |
| D. Products/Energy Output   |                |
| V. Gasification   | 6              |
| A. Resources  |                |
| B. Process  |                |
| C. Chemistry and Physics  |                |
| D. Products/Energy Output   |                |
| VI. Anaerobic Digestion   | 6              |
| A. Resources  |                |
| B. Process  |                |
| C. Biochemistry   |                |
| D. Products/Energy Output   |                |

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**Agriculture 772**  
**Topics in AGET: Biorenewable Resources**  
**Course Outline - Continued**

| <b>Topic</b>                                       | <b>Chapter</b> |
|--|----------------|
| VII. Fermentation                                  | 7              |
| A. Resources                                       |                |
| B. Process   |                |
| C. Biochemistry                                    |                |
| D. Products/Energy Output                          |                |
| VIII. Lipids and Transesterification               | 7              |
| A. Extraction                                      |                |
| B. Resources                                       |                |
| C. Process   |                |
| D. Chemistry                                       |                |
| E. Products/Energy Output                          |                |
| IX. Pharmaceuticals and Fiber Crops                | 8              |
| A. Resources                                       |                |
| B. Pharmaceutical Extraction                       |                |
| C. Fiber Pulping Processes                         |                |
| X. Energy Outputs/Conversion Efficiency            | 2              |
| A. EO/EI   |                |
| B. Calculation of Conversion Efficiency            |                |
| XI. Environmental Impact of Biorenewable Resources | 9              |
| A. Water   |                |
| B. Soil Erosion                                    |                |
| C. Air Pollution and Global Warming                |                |
| XII. Economics of Biorenewable Resources           | 10             |
| A. Enterprise Budgeting                            |                |
| B. Enterprise Economics of Various Biofuel Systems |                |
| C. Calculating Cost-Benefit of Various Systems     |                |