UR Biodiesel
Proposal to Incorporate UR Biodiesel into Academic Programs
April 6, 2008

Incorporation into CHE 278: Energy Alternatives Lab
Typically Offered in the Fall Semester, Taught by Professor Ben Ebenhack

One essential way to ensure the sustainability of the UR Biodiesel Program and to guarantee academic benefit from the program is to incorporate UR Biodiesel into an academic curriculum. Every fall semester, Ben Ebenhack teaches CHE 278: Energy Alternatives Lab. For this class, students currently conduct and design experiments that test various types of energy alternatives, including conservation technologies. As the class currently stands, the first few weeks of the semester are devoted to having the entire class discuss and perform common experiments. After this, the students break up into groups of approximately three students to research their chosen topics. Under our proposal, the class can be arranged so that the first section is devoted to introducing the process of biodiesel production and forming student groups. After this, student groups can take turns operating the processor for several weeks while other groups research their chosen topics. Essentially, each team would have a period of several weeks that it is responsible for operation of the biodiesel processor. Group members will meet at the biodiesel production site, likely at 612 Wilson Blvd, during appropriate times when it is their turn to produce it. This will expose the entire class to the biodiesel production process by giving them hands-on experience. Throughout the entire semester, there needs to be a designated individual to oversee the process. This person would help with training at the beginning of each group's "rotation" and would also be there to assist the

group should any problems arise. Finally, this person would be responsible for ensuring the proper procedures are followed.

Incorporation into CHE 218K: Solving UR's Environmental Footprint
Typically offered in the spring semester, taught by a variety of individuals but led by Professor Ben Ebenhack

The UR Biodiesel program can also be incorporated into CHE 281K: Solving UR's Enviro-Footprint. This course is very different than CHE 278 though. Rather than being set up as a lab class, CHE 218K focuses more on problem solving using data and research. Because of this, students in this class would not be directly involved in the biodiesel production process. Instead, these students can use data obtained from operation of the processor and the bus itself to analyze its affects on the University's sustainability movement. Groups of students in this class could use this data to make recommendations about how to refine the program based on their analysis of the data. We would eventually like to install an on-board computer on the "Bio-Bus" for the purpose of collecting data with respect to mileage, fuel use, road time, emissions and other important relevant information that could be used by this class. We have also discussed the long-term potential of publishing this information on a website and comparing it to a similar on-board computer on a regular diesel bus. Regardless, this class will have a plethora of data with which to analyze and refine the UR Biodiesel program.

The only issue with this setup is that the second semester will not have students working the processor on a regular basis. This requires either a student job or independent study to fulfill that void. One possibility would include selecting a student

from the fall semester in CHE 278 who particularly enjoyed the biodiesel aspect of the course and offering them the opportunity to perform an independent study. Professor Ebenhack is interested in sponsoring an independent study for this purpose during spring semesters.