For CTAHR Review

a. Why is the course being requested?

We are requesting permission to add a new course to the Plant & Environmental Biotechnology interdepartmental undergraduate program. It will be a 3 unit lecture and lab course on robotics and automated systems that are used in plant molecular biology. The proposed course will help to strengthen Molecular Bioscience and Bioengineering’s biotechnology program.

b. How will the content be organized?

The syllabus for the course Lab Automation for Plant Molecular Biology (MBBE 490) is attached. The course will cover various areas of automated systems that are used to identify and characterize proteins and plant genomes. It will focus on the integration of sequence data and protein function.

c. What other courses at UHM closely parallel the proposed course, and in what way will the latter make a distinct contribution?

There is not a similar course at UHM. There is a need to offer a unique course to students that integrates the fields of molecular biology, genomics, engineering, and bioinformatics.

d. Where or how does the proposed course fit into the current and future curriculum?

The course will fulfill one of the suggested electives in the Plant & Environmental Biotechnology program.

e. Why is the number of credits and level justified? Explain the prerequisites and the absence thereof.

Three credits are required to provide adequate time for complete coverage of the material. There will be a one hour weekly session in the CTAHR computer lab. This course will provide instruction on the use of robots, automated DNA sequencers, and liquid handlers to accelerate research in plant molecular biology, bioinformatics, and recombinant DNA techniques.

f. How will the course assist students to achieve the critical skill and competencies expected of CTAHR graduates?

The course will require two powerpoint presentations that will allow the students an opportunity to develop strong and effective communication skills. The course will require students to participate in computer laboratory sections that will focus on developing computer skills for use in plant molecular biology.
g. How will students be evaluated?

The grading system for the course Lab Automation for Plant Molecular Biology (MBBE 490) is attached.

h. What are the minimum qualifications for teaching this course? Is a qualified instructor now available?

The course is designed to be taught by a MBBE faculty member. Instructors will be required to have a Ph.D. in either Genetics, Biochemistry, Molecular and Cellular Biology or related field and experience in lab automation. The course can be team-taught with instructors from other departments and disciplines. Currently, Monto Kumagai intends to teach this course.

i. How will the course be financed, assuming no further cutbacks?

The course will be financed through the Department of Molecular Biosciences & Bioengineering. Instructional time will be allocated from MBBE.

j. Is the course cross-listed with another department?

No.