University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course

1. Type of Action
   - A. Addition
   - B. Deletion
   - C. Modification:
     - in credits
     - in title
     - in prerequisites or co-requisites
     - in number or alpha
     - Other

2. New Alpha, Number and Title
   - BIOL 275L

3. Credits
   - 1 credit

4. Old Alpha, Number and Title

5. Credits*

6. New Catalog Description
   - Laboratory for Cell and Molecular Biology

7. Select box and type specific information in text box.
   - Prerequisites
   - Corequisites or
   - Recommended Preparation

8. Student Contact Hours Per Week
   - Lecture
   - Lecture/Lab
   - Lab
   - Other

9. Proposed Date of First Offering
   - Semester
   - Fall
   - Year
   - 2003

10. This course is proposed for the Liberal Arts Program.

11. This course is the number of credits required for the program/core.

12. Equivalent or similar courses offered in the UH System:

<table>
<thead>
<tr>
<th>Campus</th>
<th>Alpha, Number, Title</th>
<th>Campus</th>
<th>Alpha, Number, Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>UH Man</td>
<td>BIOL 270L (or BIOL 275L): Cell and Molecular Biology Lab</td>
<td>*</td>
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<td></td>
</tr>
</tbody>
</table>

13. This course is (check one and click in appropriate textbox and provide details):
   - Already articulated with
   - Provide details of existing or desired articulation (date, college(s), purposes, pre-major, etc.) in this space:
   - Appropriate for Articulation with
   - Provide details of existing or desired articulation (date, college(s), purposes, pre-major or major, etc.) in this space:
   - Not yet appropriate for Articulation.

14. Reason for Initiating, Modifying or Deleting Courses or Other Pertinent Comment
   - Consistent with the WCC proposal to provide the necessary courses for WCC students to take their first two years of a baccalaureate degree in any of the traditional natural science disciplines. In addition, this lab may be used in partial satisfaction of the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program).

Requested by: [Signature] 12/11/02
Approved by: [Signature] 1/28/03

Dean of Instruction: [Signature] 2/18/03
Provost: [Signature] 2/19/03

CCCM #6100 (Amended for WCC use October 2002)
University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course

Levels of Review of Course Proposal at Windward Community College

Course Alpha, Number, and Title: BIOL 275L: Cell and Molecular Biology Lab

1. Department Area (more than one departmental instructor's signature required)

[Signature]
Stolmenes

[Signature]
Joseph E. Ciotti

Dates
12/11/02
12/11/02
12/11/02

2. Department

[Signature]
[Name]
Department Chairperson

[Signature]
[Name]

12/11/02

Was this course discussed in a department meeting? ☒ Yes ☐ No

2. Division

[Signature]
[Name]

12/14/02

2. Curriculum Committee Review

Approved ☒ 7-0

Disapproved ☐

Reason:

[Signature]
[Name]
Curriculum Committee Chairperson

January 28, 2003

CCC M #6100 (Amended for WCC use October 2002)
1. How is this course related to the education needs and goals of the College/Department/Community as reflected in the EDP/ADP?

   Consistent with the WCC ADP goal to "provide the necessary courses for WCC students to take their first two years of baccalaureate degree in any of the traditional natural science disciplines". In addition, this lab may be used in partial satisfaction of the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program).

1. Provide details of any additional staff, equipment, facilities, library/media material, faculty preparation and other financial support that would be required to implement this course. (Include an estimate of the actual cost of supplies and equipment.) What has been done to provide for these additional costs for the proposed date of offering? Who will teach the course?

   Equipment and supplies used for BOT 210 will be shared with BIOL 275L. Additional equipment and supplies will be purchased through the grant from USDA-Cooperative State Research, Education and Extension Service.

1. Is a similar course taught elsewhere in the UH system? * If yes, provide details of how this course differs from existing similar courses.

   Yes, BIOL 275L is offered at UHM. The difference is the lab at WCC will utilize plant tissues as well as microorganisms and animal/human tissues used at UHM.

1. Is this course experimental and/or unique to Windward Community College? * If yes, provide rationale and details of its impact on the College Curriculum

   No.

1. Is a similar course taught in the upper division level by a 4-year UH college? * If yes, explain why this course is appropriate at the lower division or how it differs from its upper division counterpart.

   BIOL 275L is one of the electives to fulfill the requirements for the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program) at WCC. This course also functions as a sophomore level bridging course that helps in the transition from freshman biology to upper division courses in the life sciences.

6. Please attach a complete course outline. Your course outline should address all the items listed in the Guidelines for Course Outlines.

7. If this course is numbered 100 or above or appropriate for transfer to a 4-year college, complete and attach WCC Form for Transfer Courses (blue). See criteria for transfer courses.
University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course
Articulation with 4-year UH Campus Form

WCC Form for Transfer Courses
(To be completed for articulation with any 4-year UH campus)
(This sheet was originally blue.)

Course Alpha and Number BIOL 275L

Submitted by Inge Jia White

Date December 11, 2002

1. List the counterpart to this course on any 4-year UH campus. Describe the relationship between the course and any related baccalaureate program area.

   BIOL 270L (or BIOL 275L) at UHM. This course is required for a baccalaureate degree in Plant and Environment Biotechnology, Molecular Bioscience and Biosystem Engineering, Medical Sciences and Biology at UHM.

2. Is this course taught or accepted by major accredited colleges or universities? Give one or two examples.

   Yes. BMB 342: Laboratory in Proteins, Nucleic Acids, and Molecular Cloning, at Pennsylvania State University, and BIOL 402: Cell Biology Lab, at University of Washington.

3. Please attach a complete course outline if you have not done so already. Your course outline should address all the items listed in the Guidelines for Course Outlines.
University of Hawaii Community Colleges  
Proposal to Initiate, Modify or Delete a Course  
Articulation with 4-year UH Campus Form  

**COURSE ARTICULATION FORM (GENERAL EDUCATION CORE)**  

ORIGINATING CAMPUS: Windward Community College  
DATE SUBMITTED: December 11, 2002  

COURSE ALPHA & NUMBER: BIOL 275L  
SEMESTER CREDITS: 1  

COURSE TITLE: Cell and Molecular Biology Lab  

DATE OF OUTLINE: December 11, 2002  

(** Representative outline, no multiple syllabi, please.**)  

1. Articulation committee to review this course:  

   Standing Committees  
   Written Communication □  
   Mathematical & Logical Thinking □  
   World Civilizations □  
   Languages □  
   Arts & Humanities □  
   Natural Science □  
   Social Science □  

2. The information in this item is required by the reviewing committee so that it has a starting point for reviewing the course. It is the responsibility of the submitting campus to do the necessary research to provide this information.  

   In the opinion of the originating campus, this course is equivalent to the following and/or meets the criteria for the indicated core categories. Every core category space, except your own campus, must be filled in (can include 'none'). An equivalent course, if known, may be helpful to committee members but is not required.  

<table>
<thead>
<tr>
<th>Receiving Campus</th>
<th>Equivalent Course (Alpha and Number)</th>
<th>Core Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>UH Hilo</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>UH Manoa</td>
<td>BIOL 270 (or BIOL 275L)</td>
<td>Natural Sciences Group I (UHM General Education Core)</td>
</tr>
<tr>
<td>UH West Oahu</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Hawaii CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Honolulu CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Kapiolani CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Kauai CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Leeward CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Maui CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Windward CC</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

3. If submitted electronically, I understand that this outline will be posted to a publicly accessible web site to enable open access for reviewing committees and campuses. The outline will be taken off the site upon completion of the review.  

__________________________  
Typed Name or Signature  

Note: If possible submit coversheet and course outline electronically as e-mail attachments (preferably in ‘pdf’ format). If submitting in printed form, 20 copies of coversheet and course outline are required for distribution for appropriate review.  

Note: UCA Clearinghouse  
John Muth, Office of the Chancellor for Community Colleges, is acting as staff to the University Council on Articulation and is responsible for tracking all courses submitted for articulation.
WINDWARD COMMUNITY COLLEGE
OUTLINE OF COURSE OBJECTIVES

COURSE NAME: Cell and Molecular Biology Lab

COURSE ALPHA: BIOL 275L

CREDIT HOURS: 01

CATALOG DESCRIPTION:
Laboratory for Cell and Molecular Biology (4 hr. lab)

REQUIREMENT COURSE SATISFIES:

AT WCC: Partially fulfills requirements for the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program).

AT UHM: Partially fulfills Bachelor’s degree requirements in the following majors: Molecular Biosciences and Biosystem Engineering, Plant and Environmental Biotechnology, Medical Sciences, Biology, Botany, and Horticulture.

CO-REQUISITES: BIOL 275; or consent of instructor.

RECOMMENDED SPECIAL PREPARATION:
ICS 101 or ICS 105 B-F, Calculus or Algebra

INSTRUCTOR:

OFFICE:

OFFICE HOURS:

TELEPHONE:

E-MAIL:

EFFECTIVE DATE:
COURSE GOALS:

Upon completion of this laboratory, you should:

- become familiar with the procedures and techniques currently being used in the field of Cell and Molecular Biology.
- become skilled at collecting and analyzing data.
- be able to integrate and extend your knowledge received from BIOL 275.

COURSE OBJECTIVES:

You will be able to perform and analyze the following laboratory activities:

- Protein electrophoresis
- Fluorescence and immuno fluorescence microscopies
- Enzyme kinetics and enzyme-linked immunosorbent assay
- Assembly of microtubules
- DNA and RNA isolation
- Restriction enzyme analysis
- Polymerase Chain Reaction
- Control of gene expression

MODE OF INSTRUCTION:

- Laboratory lecture and multimedia presentations
- Active participation in laboratory
- Laboratory notebook
- Laboratory summaries
- Pre-laboratory quizzes

EVALUATION OF OBJECTIVE ACHIEVEMENT:

Lab Notebook. You will be required to keep a notebook. It should be used to organize any notes, handouts, observations/data, information gathered before and during laboratory activities and lab summaries. Having a notebook insures that your data will not be misplaced. You should always bring your notebook and lab manual to the lab. Your notebook will not be graded.

Lab Summaries. Learning how to write concise laboratory summaries about your experiences with individual experiments is an important part of scientific research. Laboratory summaries not only allow your to hone your writing skills, but also help you organize and evaluate your results in a scientific manner. Lab summary includes the following parts: purpose (objective), data, and conclusion (see Format for Laboratory Summaries).
Your laboratory summaries are part of your lab notebook. They are handed to me to be corrected and should be inserted into your notebook once they are returned to you. It is recommended that all laboratory summaries are done on the computer; however, it is also recommended that all graphs be done by hand to ensure you understand the concepts associated with the laboratories. All summaries are due at the start of each new lab session, unless otherwise noted. Late summaries will not be accepted.

**Pre-Lab Quizzes.** Each laboratory session, except for the exam day and lab 0, will begin with a 5 minute pre-lab quiz. Questions pertain to the lab experiments scheduled for that period unless otherwise specified. The purpose of each quiz is to ensure that you are fully prepared for the lab that day. No make-up quizzes will be given.

**Lab Attendance.** Attendance is mandatory. Because laboratories involve considerable set-up/take-down time and supervision, you will not be able to make-up missed laboratory activities.

**METHOD OF GRADING:**

Your performance in this lab will be evaluated based on the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 Lab summaries (10 points each)</td>
<td>110</td>
</tr>
<tr>
<td>2 Lab examinations (100 points each)</td>
<td>200</td>
</tr>
<tr>
<td>12 Pre-lab quizzes (5 points each)</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>370</strong></td>
</tr>
</tbody>
</table>

Letter grades will be assigned as follows:

A.............90% or above in total points and not missing more than one scheduled lab activity.

B.............80 – 89.9% of total points and not missing more than one scheduled lab activity.

C.............65 – 79.9% of total points and not missing more than one scheduled lab activity.

D.............55 – 64.9% of total points and not missing more than one scheduled laboratory activity.

F.............Below 55% of total points or informal or incomplete official withdrawal from course, or if you miss more than one scheduled lab activity for reason other than documented illness or emergency.

I.............Incomplete; given at the instructor’s option when you are unable to complete a small part of the course because of circumstances beyond your control. It is your responsibility to make up incomplete work. Failure to satisfactorily make up incomplete work within the appropriate time period will result in a grade change for “I” to contingency grade identified by the instructor.
(see catalog); may be issued if documented serious illness or emergency forces you to miss more than one scheduled lab activity.

CR.......65% or above in total points; you must indicate the intent to take the course as CR/N in writing by the end of the 10th week of classes (see catalog).

NC.......Below 65% of total points; this grade only available under the CR/N option (see above and see Catalog).

N.........Not given by this instructor except under extremely rare circumstances (e.g. documented serious illness or emergency that prevents you from officially withdrawing from the course); never used as an alternative for an “F” grade.

W.........Official withdrawal from the course after the third week and prior to the end of the 10th week of classes (see catalog).

Waiver of minimum requirements for specific grades will be given only in unique situations at the instructor’s discretion.

STUDENT RESPONSIBILITIES:

You should carefully review the attached Laboratory Safety Regulations and Cleaning Up procedures. You should also sign the appropriate U.H. Assumption of Risk and Release (in your Lab Manual).

You are expected to participate in all lab activities and complete all lab assignments on time. You are expected to be prepared in advance when you arrive to class. Being prepared includes the following: having already read text materials (e.g. lab manual, notebook and handouts) assigned for that day’s activities, bringing required work materials (e.g. lab notebook, lab manual, handouts, writing supplies, lab coat, goggle, gloves), and having completed any assigned pre-lab tasks.

Any changes in the course schedule, such as examination dates, deadlines, etc., will be announced ahead of time in class. It is your responsibility to be informed of these changes.

LAB MANUAL AND OTHER INSTRUCTIONAL MATERIALS

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>LAB</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Introductory laboratory</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Protein electrophoresis I</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>2</td>
<td>Protein electrophoresis II</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3</td>
<td>Fluorescence microscopy</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>4</td>
<td>Immuno fluorescence microscopy</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>5</td>
<td>Principles of enzyme kinetics</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>6</td>
<td>Enzyme-linked immunosorbent assay</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>EXAM I</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>7</td>
<td>Assembly of microtubules</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>8</td>
<td>Isolation of DNA</td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>9</td>
<td>Restriction enzyme analysis</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>10</td>
<td>Polymerase Chain Reaction (PCR)</td>
</tr>
<tr>
<td>13</td>
<td>11</td>
<td>11</td>
<td>Isolating total RNA</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>12</td>
<td>Control of gene expression</td>
</tr>
</tbody>
</table>

**EXAM II**
LABORATORY SAFETY REGULATIONS

- No smoking, drinking, or eating is allowed in the laboratory.
- Bare feet are not allowed in the laboratory. Always wear covered shoes.
- You should tie back your hair, if it is long.
- A lab coat must be worn in the laboratory at all times. You must wear gloves and goggle for any laboratory using hazardous chemicals or microbes (they can be purchased at the campus bookstore).
- Broken glassware, slides, and cover slips must be disposed of in the “GLASS ONLY” box.
- Handle all hazardous chemicals and bacterial cultures with extreme care.
- Wash your hands after each lab and during, if necessary.
- Never mouth pipette a chemical.
- Never taste a chemical in the laboratory unless you are specifically instructed to do so by your instructor.
- Laboratory equipment should be used only after you have been instructed in its proper operation.
- Anyone attempting unauthorized experiments in the laboratory will be subject to disciplinary action.
- If you are in doubt concerning any laboratory procedure, consult with your instructor. Do not act in ignorance.
- Do not run in the laboratory. An accident may cause serious injury.
- Know how to look up various chemicals in the Material Safety Data Sheets (MSDS folder).
- Commit to memory the locations of the first aid kit, the fire extinguisher, the emergency shower and the emergency eyewash, as well as important emergency telephone numbers.
- **Report all injuries to your instructor immediately.**

CLEANING UP

- Properly clean and put away any instruments or equipment you have used.
- Wash and put back any items you used from your drawer.
- Clean and return all other supplies to your instructor or to their proper places.
- Wipe down your table before and after each lab period with disinfectant.
- Hazardous chemicals used in the lab must be disposed of in the proper containers.
- Paper, glass, gravel, and other solid waste should not be disposed of in the laboratory sinks.
- Discard all biologically contaminated items into the red Biohazard containers.
Format for Laboratory Summaries

Lab #. & Title
Name:

Purpose:
Date:

This section should tell me what you expect to observe or find out by performing the experiment and how you will conduct your experiment. This section should be 2 - 6 sentences long.

Results/Data:

This is the section where you will include your figures and tables as well as any information for the laboratory (color, number of colonies, pictures of gels, etc.). Please follow the following format for tables and figures:

Table 1. The number of *Staphylococcus aureus*, *S. epidermidis* and *Micrococcus luteus* in MSA broth incubated in 37° C for 2 days.

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>720,000</td>
</tr>
<tr>
<td><em>Staphylococcus epidermidis</em></td>
<td>598,000</td>
</tr>
<tr>
<td><em>Micrococcus luteus</em></td>
<td>12,000</td>
</tr>
</tbody>
</table>

Figure 1. Numbers of three bacteria cultures in MSA broth for 2 days in 37° C

Conclusion:

This is your discussion! Please tell me what went on and what the outcome was. Please be precise but not verbose. Also comment on any erroneous results. This will turn out to be your longest and the most important part of your lab summary.

Questions and Answers:

Answers can be integrated into your discussion part.