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 number or alpha
   - D. Experimental or Other (click to specify)

2. New Alpha, Number and Title
   BIOL 275: Cell and Molecular Biology

3. Credits
   3 credits

4. Old Alpha, Number and Title
   BIOL 270

5. New Catalog Description
   Integrated Cell and Molecular Biology for life science majors. Modern advances in recombinant DNA technology.

6. Select box and type specific information in text box.
   - Prerequisites
   - Corequisites or Other (click to specify)
   - Recommended Preparation
   - Pre: BIOL 171/171L, 172/172L, CHEM 152/152L or CHEM 272/272L; or 1 year of introductory college biology plus labs; or equivalent preparation; or consent of instructor. Co: BIOL 275L; or consent of instructor.

7. Student Contact Hours Per Week
   Lecture 3
   Lecture/Lab
   Other (click to specify)

8. Proposed Date of First Offering
   Semester Fall
   Year 2003

9. This course is proposed for the Liberal Arts Program Program.  
   It can fulfill ASC Elective If Other, specify Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program) General Education requirement, M or H

10. 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 Manoa</td>
<td>BIOL 275 (or BIOL 270): Cell and Molecular Biology</td>
<td></td>
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</tr>
</tbody>
</table>
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11. This course makes no change in number of credits required for the program/core.

12. This course can be articulated with
   Provide details of existing or desired articulation (date, college(s), purposes, pre-major or major, etc.) in this space:

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:

14. Reason for Initiating, Modifying or Deleting Courses or Other Pertinent Comment:
   Consistent with WCC's goal 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 class is used in partial satisfaction of the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program).

Requested by:  
Department Chairperson

Approved by:  
Curriculum Committee Chairperson
Faculty Senate Chairperson
Dean of Instruction
Provost
### Levels of Review of Course Proposal at Windward Community College

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

<table>
<thead>
<tr>
<th>Signatures</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Department Area</strong> (more than one departmental instructor’s signature required)</td>
<td>12/11/02</td>
</tr>
<tr>
<td>[Signature]</td>
<td>12/11/02</td>
</tr>
<tr>
<td>[Signature]</td>
<td>12/11/02</td>
</tr>
</tbody>
</table>

2. **Department**

| [Signature] | 1/2/11/02 | [Department Chairperson] |

Was this course discussed in a department meeting? ☑ Yes □ No

3. **Division**

| [Signature] | 1/2/11/02 |

4. **Curriculum Committee Review**

- Approved ☑ 7-0
- Disapproved □

**Reason:**

| [Signature] | January 28, 2003 | [Curriculum Committee Chairperson] |

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**CCCM #6100 (Amended for WCC use October 2002)**
University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course
New Course Proposal Form – Go to next page for Course Modification)

WCC Form for New Course Proposals
(This sheet was originally pink.)

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 a baccalaureate degree in any of the traditional natural science disciplines". In addition, this class is used in partial satisfaction of the Academic Subject Certificate in Bio-Resources and Technology (Plant Biotechnology Program).

2. 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?

   No additional library/media material, and facilities will be required. A qualified lecturer (may be team taught) will be hired using the grant provided by the USDA-Cooperative State Research, Education and Extension Service.

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

   The course is not differ from the course taught at UHM.

4. 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.

5. 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 275 is identical to UHM's BIOL 270 (or BIOL 275). It is an elective to fulfill requirements for the ASC in Bio-Resources and Technology (Plant Biotechnology Program) at WCC. This course 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.

CCCM #6100 (Amended for WCC use September 2002)
Original dated WCC 9/91
Course Alpha and Number BIOL 275

Submitted by  Ingelia 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 related baccalaureate program area.

   BIOL 270 (or BIOL 275) at UHM. This course is required for a baccalaureate degree in Plant and Environmental Biology, 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. MICRB 251: Molecular and Cell Biology I, at Pennsylvania State University; BIOL 355: Foundation in Molecular Cell Biology, 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 275  
**SEMESTER CREDITS:** 3

**COURSE TITLE:** Cell and Molecular Biology

**DATE OF OUTLINE:** December 11, 2002  
**Year 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 275)</td>
<td>Natural Science 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>
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<td>Honolulu CC</td>
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<td>Kapiolani CC</td>
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<tr>
<td>Kauai CC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Leeward CC</td>
<td>None</td>
<td>None</td>
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<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.
COURSE NAME: Cell and Molecular Biology

COURSE ALPHA: BIOL 275

CREDIT HOURS: 03

CATALOG DESCRIPTION:
Integrated cell and molecular biology for life science majors. Modern advances in recombinant DNA technology. (3 hrs. lect.)

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.

PREREQUISITES: BIOL 171/171L, 172/172L, CHEM 152/152L or CHEM 272/272L; or one year of introductory college biology plus labs; or equivalent preparation; or consent of instructor.

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

INSTRUCTOR:

OFFICE:

OFFICE HOURS:

TELEPHONE:

EFFECTIVE DATE:
COURSE GOALS:

Upon completion of this course, you should:

- have a general understanding of the principles that guide cellular organization and function.
- understand energy flow and information flow in cells; membranes and cell signaling mechanisms.
- understand the principles and techniques of light and electron microscopy.
- understand some of the recent research progress on nucleic acid and recombinant DNA, signal transduction and cell-surface receptor activities, and the cell cycle.

COURSE OBJECTIVES:

You will learn the following:

- Modern cell biology including the chemistry of the cell, the macromolecules of the cell, the organelles and their functions, bioenergetics and enzymes in the cell.
- The structure, function, transport and chemistry of membranes; and cell signaling.
- The energy flow in cells during glycolysis, fermentation, aerobic respiration and photosynthesis.
- The information flow in cells: DNA replication, mitosis, meiosis, genetic recombination, and gene expression.
- The cytoskeleton and cell motility.

MODE OF INSTRUCTION:

- Assigned readings
- Lecture
- Examinations
- Multimedia presentations

EVALUATION OF OBJECTIVE ACHIEVEMENT:

EXAMINATIONS. You will take five non-cumulative examinations throughout the semester. No make-up exams will be given, except for illness, for which a doctor’s slip is required. A make-up exam will only be given on your first day back to class.

ATTENDANCE. Class attendance is mandatory. You must sign your name on the attendance sheet provided each time you come to class.

METHOD OF GRADING:

5  Examinations (100 points each)  500 points
26  Attendance (2 points/session)  52 points

Total  552 points
Letter grades will be assigned as follows:

**A** .......... 90% or above in total points.
**B** .......... 80 – 89.9% of total points.
**C** .......... 65 – 79.9% of total points.
**D** .......... 55 – 64.9% of total points.
**F** .......... Below 55% of total points or informal or incomplete official withdrawal from course.

**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).

**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 are expected to participate in all lecture activities, and be prepared in advance when you arrive to class. Being prepared includes the following: having already read text materials (e.g. textbook readings, and handouts) assigned for that day’s activities.

Any changes in the course schedule, such as examination dates, will be announced ahead of time in class. It is your responsibility to be informed of these changes. Because of the nature of the material presented in BIOL 275, more study time is required to succeed in this class.

**HOW TO SUCCEED IN THIS CLASS:**

Understanding biological science involves understanding many difficult concepts and vocabulary, not just knowing facts. You should know that the details to these concepts are important. In addition, you will be introduced to hundreds of new words.
Other than studying your lecture notes, your study activities should also include drawing your own labeled diagrams or graphs that illustrate important biological phenomena (e.g. the internal structure of the cell, the structure of nucleotide, the structures of the 20 amino acids found in proteins, the stages of cell division). These diagrams need not be works of art, but should clearly illustrate significant information. Before an exam, it would be useful to redraw these labeled diagrams and graphs from memory.

Make flashcards for each new vocabulary word you learn (refer to Key Terms for Self-Testing provided at the end of each chapter). Test your ability to provide the right definition as often as possible. Practice using the word to explain biological concepts.

Write out answers to all of the Problem Set (at the end of each chapter) as though you were required to turn them in. Allow someone else to read your answers and give you feedback. Read someone else’s answers and provide constructive feedback.

Read the textbook materials corresponding to a particular lecture before and after that lecture. Review this material before exams.

**TEXTBOOK AND OTHER ASSIGNED INSTRUCTIONAL MATERIALS:**


Other reading assignments will be provided in class or accessed through the internet.
<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Chapter</th>
<th>Lecture Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>1</td>
<td>1</td>
<td>The world of the cell</td>
</tr>
<tr>
<td>W</td>
<td>2</td>
<td>2</td>
<td>The chemistry of the cell</td>
</tr>
<tr>
<td>M</td>
<td>3</td>
<td>3</td>
<td>The macromolecules of the cell</td>
</tr>
<tr>
<td>W</td>
<td>4</td>
<td>4</td>
<td>Cells and organelles</td>
</tr>
<tr>
<td>M</td>
<td>5</td>
<td>5</td>
<td>Bioenergetics: the flow of energy in the cell</td>
</tr>
<tr>
<td>W</td>
<td>6</td>
<td>6</td>
<td>Enzymes: the catalysts of life</td>
</tr>
<tr>
<td>M</td>
<td>Exam I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>7</td>
<td>7</td>
<td>Membranes: their structure, function and chemistry</td>
</tr>
<tr>
<td>M</td>
<td>8</td>
<td>8</td>
<td>Transport across membranes</td>
</tr>
<tr>
<td>W</td>
<td>9</td>
<td>9</td>
<td>Signal transduction mechanism I: electrical signal</td>
</tr>
<tr>
<td>M</td>
<td>10</td>
<td>10</td>
<td>Signal trans. Mech II: messengers &amp; receptors</td>
</tr>
<tr>
<td>W</td>
<td>11</td>
<td>11</td>
<td>Extracellular structure, cell adhesion/junctions</td>
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<tr>
<td>M</td>
<td>12</td>
<td>12</td>
<td>Intracellular compartments: ER, Golgi etc.</td>
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<tr>
<td>W</td>
<td>Exam II</td>
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<tr>
<td>M</td>
<td>13</td>
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<td>Glycolysis &amp; fermentation</td>
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<td>W</td>
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<tr>
<td>M</td>
<td>14</td>
<td>14</td>
<td>Aerobic respiration</td>
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<tr>
<td>W</td>
<td>15</td>
<td>15</td>
<td>Photosynthesis</td>
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<td>M</td>
<td>Appendix</td>
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<td>Principles &amp; techniques of microscopy</td>
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<td>W</td>
<td>Exam III</td>
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<tr>
<td>M</td>
<td>16</td>
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<td>DNA, chromosomes, and the nucleus</td>
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<tr>
<td>W</td>
<td>17</td>
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<td>DNA replication, mitosis, and cancer</td>
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<tr>
<td>M</td>
<td>18</td>
<td>18</td>
<td>Sexual reproduction, meiosis &amp; genetic recombination</td>
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<tr>
<td>W</td>
<td>18</td>
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<tr>
<td>M</td>
<td>Exam IV</td>
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<tr>
<td>W</td>
<td>19</td>
<td>19</td>
<td>Gene expression I: genetic code &amp; transcription</td>
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<tr>
<td>M</td>
<td>20</td>
<td>20</td>
<td>Gene expression II: protein synthesis &amp; sorting</td>
</tr>
<tr>
<td>W</td>
<td>21</td>
<td>21</td>
<td>The regulation of gene expression</td>
</tr>
<tr>
<td>M</td>
<td>22</td>
<td>22</td>
<td>Cytoskeletal systems</td>
</tr>
<tr>
<td>W</td>
<td>23</td>
<td>23</td>
<td>Cellular movement: motility &amp; contractility</td>
</tr>
<tr>
<td></td>
<td>Final Examination</td>
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</tbody>
</table>
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

2. New Alpha, Number and Title
3. Credits *

4. Old Alpha, Number and Title  BIOL 275
5. Credits 3 credits

6. New Catalog Description
   BIOL 275 Cell and Molecular Biology (3) Integrated cell and molecular biology for life science majors. Modern advances in recombinant DNA technology. Course may be taken for letter grade only.

7. Select box and type specific information in text box.

   - Prerequisites
   - Corequisites
   - Recommended Preparation
   - Other

8. Student Contact Hours Per Week
   - Lecture: 3
   - Lecture/Lab
   - Lab
   Other (click to specify)

9. Proposed Date of First Offering
   - Semester: Fall
   - Year: 2010

10. This course ___ is proposed for the Liberal Arts Program Program. ___ can fulfill * If Other, specify DB as well as ASC in Plant Biotechnology

11. This course Makes No Difference in 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 Manoa</td>
<td>BIOL 275, Cell and Molecular Biology</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>KapiolaniCC</td>
<td>BIOL 275, Cell and Molecular Biology</td>
<td>*</td>
<td></td>
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<tr>
<td>UH Hilo</td>
<td>BIOL 270, Intermediate Cell and Molecular Biology</td>
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<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 UH Manoa.
   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, colleges(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:
   Align prerequisites with UH Manoa's prerequisites for BIOL275.

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Requested by: ___________________________  Date: 11/10/05

Approved by: ___________________________  Date: 11/17/09

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CCC#6100 (Amended for WCC in October 2002)
Levels of Review of Course Proposal at Windward Community College

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

Signatures

1. Department Area (more than one departmental instructor's signature required)
   - [Signature]
   - [Signature]
   - [Signature]
   Dates: 10/2/09

2. Department
   - [Signature]
   - Department Chairperson
   Dates: 10/2/09
   Was this course discussed in a department meeting? [ ] Yes [ ] No

3. Division
   - [Signature]
   Dates: 10/2/09

4. Curriculum Committee Review
   - Approved [ ]
   - Disapproved [ ]
   Reason:
   - [Signature]
   - Curriculum Committee Chairperson
   Dates: 11/10/09

CCCM #6100 (Amended for WCC use October 2002)
1. What change is proposed in the course? Provide specific information comparing both the "new" and "old" course.

Change in prerequisites to the following: C (not C-) or better in BIOL171/171L and CHEM 272/272L or consent of instructor.

2. What is the rationale for the change?

Align prerequisites with UH Manoa's prerequisites for BIOL275.

3. Is the change substantive enough to require a change in course identification? If so, explain thoroughly.

No

4. Is the course articulated with any 4-year program? Yes

If yes, give details of the agreement(s) and explain any impact the proposed modifications may have on articulation.

No Impact.

5. Provide details of any additional staff, equipment, facilities, library/media material, faculty preparation and other financial considerations that would be required to implement this course modification. What has been done to provide for these additional costs? Who will teach the course? Is additional preparation needed?

None.

6. Will this course modification result in any alterations in the number of hours required to attain a certificate or degree? * If yes, provide details and justification for these alterations.

No.

7. If the course is renumbered to 100 or above, does it meet the criteria for transfer level courses? (Go to next page for transfer course criteria.) *