

**Clackamas Community College**  
Online Course/Outline Submission System

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BI-214 General Biology for Science Majors: Fundamentals of Molecular Biology

General education certified:  Yes  No

- Writing
- Oral Communication
- Arts and Letters
- Science & Computer Science
- Mathematics
- Social Science
- Cultural Literacy
- Health & Physical Education

Approved Date (mm/dd/yyyy):  /  /

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**Section #1 General Course Information**

**Department:** Science

**Submitter**

First Name: Ernest "Tory"

Last Name: Blackwell

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**Course Prefix and Number:** BI - 214

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**# Credits:** 5

**Contact hours**

Lecture (# of hours): 44

Lec/lab (# of hours): 0

Lab (# of hours): 33

Total course hours: 77

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

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**Course Title:** General Biology for Science Majors: Fundamentals of Molecular Biology

**Course Description:**

A laboratory class for science majors and pre-professional students, this course emphasizes molecular biology. Topics covered include but are not limited to: DNA replication, repair, and recombination, the relationship between DNA and proteins and the effects of mutation, protein structure and function, regulation of biochemical pathways, gene regulation, and the evolution of genomes. Laboratory activities focus on yeast as a model organism to study effects of mutations on biochemical pathways.

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**Type of Course:** Lower Division Collegiate**Reason for the new course:**

Required for AS degree in Biology at University of Oregon.

**Is this class challengeable?****No****Can this course be repeated for credit in a degree?****No****Is general education certification being sought at this time?****Yes****Check which General Education requirement:** **Science & Computer Science****Is this course part of an AAS or related certificate of completion?****No****Are there prerequisites to this course?****Yes****Pre-reqs:** BI211**Have you consulted with the appropriate chair if the pre-req is in another program?****No****Are there corequisites to this course?****No**

Are there any requirements or recommendations for students taken this course?

**No**

Are there similar courses existing in other programs or disciplines at CCC?

**No**

Will this class use library resources?

**Yes**

Have you talked with a librarian regarding that impact?

**No**

Is there any other potential impact on another department?

**No**

Does this course belong on the Related Instruction list?

**No**

GRADING METHOD:

A-F Only

**Audit: No**

When do you plan to offer this course?

✓ **Spring**

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

**No**

Will this course appear in the college catalog?

**Yes**

Will this course appear in the schedule?

**Yes**

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

Upon successful completion of this course, students should be able to:

1. reflect back on complex scientific problems based in molecular biology;
  2. present complex scientific concepts and information, including ethical concerns, to diverse audiences;
  3. demonstrate the ability to communicate and comprehend complex scientific principles and concepts important to an understanding of major topics in molecular biology;
  4. critically examine the fundamentals of molecular biology and their role in shaping current scientific knowledge;
  5. demonstrate an ability to work individually and collaboratively to identify scientific resources, generate further questions, gather scientific information, present complex scientific resources and critically evaluate information resources and apply them to their own research;
  6. use electronic resources and laboratory equipment, including but not limited to PCR thermal cycler and electrophoresis apparatus, in the pursuit of scientific inquiry;
  7. apply mathematics and technology to accurately analyze, interpret, validate and communicate solutions to solve scientific problems and test hypotheses.
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**AAOT/ASOT GENERAL EDUCATION OUTCOMES  
COURSE OUTLINE MAPPING CHART**

**Mark outcomes addressed by the course:**

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

***As a result of completing the AAOT/ASOT general education requirements, students will be able to:***

**WR: Writing Outcomes**

- P** 1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.
- P** 2. Locate, evaluate, and ethically utilize information to communicate effectively.
- P** 3. Demonstrate appropriate reasoning in response to complex issues.

**SP: Speech/Oral Communication Outcomes**

- P** 1. Engage in ethical communication processes that accomplish goals.
- P** 2. Respond to the needs of diverse audiences and contexts.
- P** 3. Build and manage relationships.

**MA: Mathematics Outcomes:**

- P** 1. Use appropriate mathematics to solve problems.
- P** 2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

**AL: Arts and Letters Outcomes**

- P** 1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.
- P** 2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

**SS: Social Science Outcomes**

1. Apply analytical skills to social phenomena in order to understand human behavior.
2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

**SC: Science or Computer Science Outcomes**

- S** 1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.

- S** 2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.
- S** 3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

**CL: Cultural Literacy Outcome**

1. Identify and analyze complex practices, values, and beliefs and the culturally and historically defined meanings of difference.

**Outcomes Assessment Strategies:**

- |                                  |                               |
|----------------------------------|-------------------------------|
| ✓ <b>General Examination</b>     | ✓ <b>Projects</b>             |
|                                  | ✓ <b>Writing Assignments</b>  |
| ✓ <b>Presentations</b>           |                               |
| ✓ <b>Thesis/Research Project</b> | ✓ <b>Multiple Choice Test</b> |
|                                  | ✓ <b>Portfolios</b>           |
| ✓ <b>Rubrics</b>                 |                               |

- ✓ **Other Assessment Tools:** Lab assignments

**Major Topic Outline:**

DNA repair and recombination  
 DNA mutations and relationship to amino acids and proteins  
 Relationships between protein structure and protein function  
 Biochemical pathways, their regulation, and the effects of mutations on biochemical pathways  
 Gene regulation  
 Development in eukaryotic organisms  
 Evolution of genomes

**Does the content of this class relate to job skills in any of the following areas:**

- |                                      |           |
|--------------------------------------|-----------|
| 1. Increased energy efficiency       | <b>No</b> |
| 2. Produce renewable energy          | <b>No</b> |
| 3. Prevent environmental degradation | <b>No</b> |
| 4. Clean up natural environment      | <b>No</b> |
| 5. Supports green services           | <b>No</b> |

Percent of course: 0%

**Section #2 Course Transferability**

Concern over students taking many courses that do not have a high transfer value has led to increasing attention to the transferability of LDC courses. The state currently requires us to certify that at least one OUS school will accept a new LDC course in transfer. Faculty should communicate with colleagues at one or more OUS schools to ascertain how the course will transfer by answering these questions.

1. Is there an equivalent lower division course at the University?
2. Will a department accept the course for its major or minor requirements?

3. Will the course be accepted as part of the University's distribution requirements?

If a course transfers as an elective only, it may still be accepted or approved as an LDC course, depending on the nature of the course, though it will likely not be eligible for Gen Ed status.

Which OUS schools will the course transfer to? (Check all that apply)

**UO (University of Oregon)**

Identify comparable course(s) at OUS school(s)

UO - BI 214

How does it transfer? (Check all that apply)

**required or support for major**

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Provide evidence of transferability: (minimum one, more preferred)

**Correspondence with receiving institution (mail, fax, email, etc.)**

First term to be offered:

**Specify term:** Spring, 2017

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