I. CATALOG INFORMATION

A. Discipline: BIOLOGY

B. Subject Code and Number: BIOL M50A

C. Course Title: Bridge to Biotechnology

D. Credit Course units:

Units: 0.5

Lecture Hours per week: 0

Lab Hours per week : 1.5

Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 0 - 0

Laboratory/Activity Hours:

Laboratory/Activity Hours 26.25 - 26.25

Total Combined Hours in a 17.5 week term: 26.25 - 26.25

F. Non-Credit Course hours per week

G. May be taken a total of: [X] 1 [ ] 2 [ ] 3 [ ] 4 time(s) for credit

H. Is the course co-designated (same as) another course: No [ ] Yes [X]
If YES, designate course Subject Code & Number: BIOT M50A

I. Course Description:

Develops practical, hands-on experience with laboratory techniques used in the field of biotechnology. Applies specific techniques that vary depending on the current state of technology.

J. Entrance Skills

*Prerequisite: No [X] Yes [ ] Course(s)

*Corequisite: No [X] Yes [ ] Course(s)

Limitation on Enrollment: No [X] Yes [ ]

Recommended Preparation: No [X] Yes [ ] Course(s)

Other: No [X] Yes [ ]

K. Other Catalog Information:

Provides a bridge for entry-level and high school students who are interested in exploring the field of biotechnology. (Same course as BIOT M50A.)

II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	demonstrate use of a micropipettor, microfuge, and other common equipment used in biotechnology.	In-class demonstration Lab experiment Lab practical
2	state the basic principles of molecular separation techniques, for example, electrophoresis.	Quiz Objective test In-class discussion
3	discuss the advantages of specific types of organisms used in biotechnology.	Quiz Objective test
4	explain the biological function of DNA.	Quiz Objective test
5	describe the purpose of enzymes.	Quiz Objective test
6	demonstrate basic lab safety.	In-class demonstration Lab experiment Lab practical
7	explain the use to society of the information scientists are gathering in biotechnology.	Paper Quiz Objective test Peer discussions

III. COURSE CONTENT

Estimated %	**Topic**	**Learning Outcomes**
Lecture (must total 100%)		
Lab (must total 100%)		
5.00%	Basic laboratory safety	6
15.00%	Basic techniques of biotechnology and fundamental molecular biology	1, 2, 5

10.00%	Model biological systems utilized in reference laboratories	3, 7
50.00%	Perform biotechnology lab exercises	1, 2, 3, 4, 5, 6, 7
20.00%	Application of data analysis techniques	7

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	written lab report on single nucleotide polymorphism.
2	test, quiz, and problem sets related to DNA fingerprinting lab exercise.
3	data collection and data analysis related to bioinformatics and population genetics.

B. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	use the scientific method to design an experiment to address hypotheses.
2	review test results and establish conclusion related to in vitro gene expression.
3	examine lay literature for applications of biotechnology and its impact on society.

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

- [ ] Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)
- [ ] Lecture/Discussion
- [X] Laboratory/Activity
- [X] Other (Specify) Demonstrations, small group work
- [ ] Optional Field Trips
- [ ] Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

- [ ] Essay Exam
- [X] Classroom Discussion
- [X] Skill Demonstration
- [X] Problem Solving Exam
- [X] Reports/Papers/ Journals
- [X] Participation
- [X] Objective Exams
- [ ] Projects
- [X] Other (specify)

Evaluation of students analysis of data from laboratory experiments.

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

Micklos, David, and Greg Freyer. DNA Science: A First Course. 2nd ed. Cold Spring Harbor Laboratory, 2003.

Kores, Paul. Summer Biotechnology Workshop. Moorpark College, 2018.

Daugherty, Ellyn. Biotechnology: Science for the New Millennium. 2nd ed. EMC/Paradigm, 2017.

VIII. STUDENT MATERIALS FEES

[X] No [ ] Yes

IX. PARALLEL COURSES

College	*Course Number*	*Course Title*	*Units*
Cal Poly San Luis Obispo	BIO 202	Orientation to Biotechnology	2
Ohlone College	BIOT 121	Biotechnology Careers	1
College of Marin	BIOL 113	Introduction to Biotechnology	2
Skyline College	BIOL 422	Foundations of Biotechnology Lab	1

X. MINIMUM QUALIFICATIONS

Courses Requiring a Masters Degree:
Masters degree in any biological science or Bachelors degree in any biological science and Masters degree in biochemistry, biophysics, or marine science or equivalent

XI. ARTICULATION INFORMATION

A. Title V Course Classification:

1. This course is designed to be taken either:

   [ ] Pass/No Pass only (no letter grade possible); or
   [X] Letter grade (P/NP possible at student option)

2. Degree status:
   Either [X] Associate Degree Applicable; or [ ] Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?
   Yes: [ ] No: [X] If YES, what section(s)?

   [ ] A1 - Natural Sciences - Biological Science
   [ ] A2 - Natural Sciences - Physical Science
   [ ] B1 - Social and Behavioral Sciences - American History/Institutions
   [ ] B2 - Social and Behavioral Sciences - Other Social Behavioral Science
   [ ] C1 - Humanities - Fine or Performing Arts
   [ ] C2 - Humanities - Other Humanities
   [ ] D1 - Language and Rationality - English Composition
   [ ] D2 - Language and Rationality - Communication and Analytical Thinking
   [ ] E1 - Health/Physical Education
   [ ] E2 - PE or Dance

☐ F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: ☐ No: ☒

2. If YES do you recommend this course for inclusion on the CSU General Education list?
   Yes: ☐ No: ☒ If YES, which area(s)?

   A1 ☐ A2 ☐ A3 ☐ B1 ☐ B2 ☐ B3 ☐ B4 ☐

   C1 ☐ C2 ☐ D1 ☐ D2 ☐ D3 ☐ D4 ☐ D5 ☐

   D6 ☐ D7 ☐ D8 ☐ D9 ☐ D10 ☐ E ☐

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: ☐ No: ☒

2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: ☐ No: ☒

IGETC Area 1: English Communication

- ☐ English Composition
- ☐ Critical Thinking-English Composition
- ☐ Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- ☐ Mathematical Concepts

IGETC Area 3: Arts and Humanities

- ☐ Arts
- ☐ Humanities

IGETC Area 4: Social and Behavioral Sciences

- ☐ Anthropology and Archaeology
- ☐ Economics
- ☐ Ethnic Studies
- ☐ Gender Studies
- ☐ Geography
- ☐ History
- ☐ Interdisciplinary, Social & Behavioral Sciences
- ☐ Political Science, Government & Legal Institutions
- ☐ Psychology
- ☐ Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- ☐ Physical Science Lab or Physical Science Lab only (none-sequence)
- ☐ Physical Science Lecture only (non-sequence)
- ☐ Biological Science
- ☐ Physical Science Courses
- ☐ Physical Science Lab or Biological Science Lab Only (non-sequence)
- ☐ Biological Science Courses
- ☐ Biological Science Lab course
- ☐ First Science course in a Special sequence
- ☐ Second Science course in a Special Sequence
- ☐ Laboratory Activity
- ☐ Physical Sciences

IGETC Area 6: Language other than English

- ☐ Languages other than English (UC Requirement Only)
- ☐ U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
- ☐ U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:
Research, using the Library's print and online resources, on new technologies and their application to the field of biotechnology, in preparation of writing papers.

B. Are the currently held library resources sufficient to support the course assignment?

YES: ☒ NO: ☐

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

BIOL M50A: Not Applicable

XIV. WORKPLACE PREPARATION

BIOL M50A: Not Applicable

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

BIOL M50A: Not Applicable

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

BIOL M50A: Not Applicable

XVII. STUDENT MATERIALS FEE ADDENDUM

BIOL M50A: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

BIOL M50A: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: BIOLOGY

Discipline Code and Number: BIOL M50A

Course Revision Category: Outline Update

Course Proposed By:

Originating Faculty Audrey Chen 09/01/2018

Faculty Peer: Melia Tabbakhian 09/02/2018

Curriculum Rep: Beth Miller 09/02/2018

Department Chair: Jazmir Hernandez 09/06/2018

Division Dean: Carol Higashida 09/10/2018

Approved By:

Curriculum Chair: Jerry Mansfield 02/08/2019

Executive Vice President: _____

Articulation Officer: Letrisha Mai 02/06/2019

Librarian: Mary LaBarge 02/05/2019

Implementation Term and Year: Summer 2019

Approval Dates:

Approved by Moorpark College Curriculum Committee: 03/05/2019

Approved by Board of Trustees (if applicable): _____

Approved by State (if applicable): 03/08/2019