I. CATALOG INFORMATION

A. Discipline: MICROBIOLOGY

B. Subject Code and Number: MICR M01

C. Course Title: General Microbiology

D. Credit Course units:

Units: 5

Lecture Hours per week: 3

Lab Hours per week : 6

Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 52.5 - 52.5

Laboratory/Activity Hours:

Laboratory/Activity Hours 105 - 105

Total Combined Hours in a 17.5 week term: 157.5 - 157.5

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 [X] Yes [ ]
If YES, designate course Subject Code & Number:

I. Course Description:

Emphasizes microbiological principles and lab techniques related to the morphology, metabolism, genetics, classification, and ecology of bacteria. Characterizes viruses and eukaryotic microorganisms. Focuses on human disease including characteristics of pathogens, immunology, and epidemiology. Practices laboratory exercises including aseptic technique, staining, the determination of bacterial growth conditions and requirements, and the identification of an unknown bacterium. Applies microbiology in clinical applications.

J. Entrance Skills

*Prerequisite: No [ ] Yes [X] Course(s)
BIOL M02A or BIOL M02AH or PHSO M01 or PHSO M01H and CHEM M01A or CHEM M01AH or CHEM M12 or CHEM M11 or high school Chemistry equivalent

*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:

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	apply and interpret the terminology of microbiology.	Tests Quizzes
2	demonstrate the ability to utilize and interpret standard reference and current literature in the field of microbiology.	Tests Quizzes Correct identification of an unknown microbe Written and oral presentations on pathogens in a given disease
3	apply scientific principles to the study of microbiology.	Tests Quizzes Practical evaluations in the laboratory, including correct interpretation of biochemical tests
4	describe the diversity of microbes in terms of morphology, biochemistry, and habitat.	Tests Quizzes In-class debates on moral and ethical issues related to microbiology Analyze test results and logically deduce the identification of an unknown Evaluate case studies Written and oral presentations on pathogens in a given disease
5	demonstrate understanding of the relationship of the morphology	Tests Quizzes Laboratory evaluations, including identification of

	and biochemistry of microorganisms to their habitat.	morphological structures and association patterns of microbes that relate to pathogenicity
6	demonstrate understanding of conditions required for growth of microorganisms.	Tests Quizzes Laboratory evaluations such as the identification of optimal temperatures for growth and nutrient requirements
7	discuss genetic mechanisms of evolution and adaptation of microorganisms to their environment.	Tests Quizzes Laboratory evaluations including susceptibility of microbes to antibiotics
8	describe the importance of microbes to humans in addressing societal concerns and in meeting the needs of the world's human populations.	Tests Quizzes In-class debates on moral and ethical issues related to microbiology, such as the use of vaccines
9	demonstrate awareness of the important ecological role of microscopic organisms in the environment.	Tests Quizzes
10	describe the intimate, symbiotic association of microbes and humans in health and disease.	Tests Quizzes In-class debates on moral and ethical issues related to microbiology Written and oral presentations on pathogens in a given disease
11	discuss the significance of host-parasite interactions in the disease process.	Tests Quizzes In-class debates on moral and ethical issues related to microbiology Written and oral presentations on pathogens in a given disease
		Tests Quizzes

12	describe the effect of humans on microbial populations.	In-class debates on moral and ethical issues related to microbiology Written and oral presentations on pathogens in a given disease
13	apply the general concepts from the textbook and other references to the specific principles which are demonstrated in laboratory exercises.	Lab final Quizzes Lab exercises, unknown identification and unknown notebook
14	describe and employ modern microbiological techniques and practices.	Lab final Quizzes Lab exercises, unknown identification and unknown notebook
15	develop laboratory skills for studying microbes and apply methods and tests for identifying microscopic organisms.	Lab final Quizzes Lab exercises, unknown identification and unknown notebook

III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
Lecture (must total 100%)		
6.00%	Microscopy Theory of brightfield Types of microscopy Staining techniques	1, 3, 13, 14
7.00%	Review of Chemistry Atomic nature Important organic elements Formation of ionic, covalent and hydrogen bonds Chemical reactions of the cell Significance of water Functional groups Macromolecules Carbohydrates Lipids Proteins Nucleic acids	1, 3
7.00%	Prokaryotic Cell Morphology Structures and their function Chemical composition	1, 4, 5
	Metabolism	

8.00%	Energetics Enzymes Respiration Aerobic Anaerobic Fermentation Photosynthesis Integration Metabolic diversity	1, 2, 3, 4, 5, 6, 13, 14
5.00%	Microbial Growth and Control of Growth Physical factors Chemical factors Media Growth curves Death rate Factors inflluencing Disinfectants Action Types	1, 2, 3, 6
6.00%	Antimicrobials History Action Types Microbial resistance Acquisition of Mechanisms of Problems with overuse Solutions to curtail development of resistance	1, 2, 3, 6, 12
9.00%	Genetics Review of replication, transcription and translation Prokaryotic regulation of gene expression Mutation Types Significance Bacterial genetic recombination	1, 2, 3, 7, 14
4.00%	Viruses Characteristics Structure Morphology Chemical composition Cultivation of Life cycles Replication of genetic material Relation to cancer Other infectious particle	1, 2, 3, 4, 5, 6, 7, 8, 11, 14
3.00%	Classification Classification schemes Hierarchal schemas Phylogenetic Taxonomic Scientific naming Introduction to Bergey’s manuals Methods of classifying and identifying microorganisms	1, 2, 3, 4
	Survey of Microorganisms Types Bacteria Major groupings	

10.00%	Archaea Fungi Algae Protozoa Helminths Characteristics Structure Life cycle Habitat Parasitic examples Vectors	1, 2, 3, 4, 6
6.00%	Principles of Disease and Epidemiology Normal microbiota Koch's postulates Classification of infectious disease Patterns of disease Disease transmission Nosocomial infections Epidemiology	8, 10, 11, 12
4.00%	Bacterial Pathogenicity Entrance into host Penetration of host defenses Damage to host Toxin production Nonbacterial pathogenesis	10, 11
8.00%	Host Defenses Nonspecific defenses Skin and mucous membranes Phagocytosis Inflammation Complement Interferon Specific defenses Immunity Antibodies B cells T cells Interactions	10, 11
2.00%	Immune Disorders Hypersensitivity Autoimmune diseases	10, 11
4.00%	Science of Microbiology History Scientific methods	1, 2, 3, 8, 10, 11
6.00%	DNA Technology Genetic engineering Protocol Molecular tools and mechanisms Selection of recombinants Applications and uses Selected techniques Polymerase chain reaction (PCR) Blotting Restriction fragment length polymorphism (RFLP) analysis	1, 2, 3, 13, 14
	Applied Immunology Vaccines	

2.00%	Diagnostics Classical Fluorescence Enzime-linked immuno-sorbent assay (ELISA)	1, 2, 3, 11, 13, 14, 15
3.00%	Aquatic Microbiology Biofilms Water quality Water treatment Wastewater treatment	8, 9
Lab (must total 100%)		
5.00%	Laboratory safety and aseptic techniques	1, 3, 13, 14, 15
10.00%	Basic microscopy; Brightfield and Phase Contrast	1, 3, 13, 14, 15
10.00%	Study of microbial growth: -growth in media- broth, agar and special media -growth conditions-temperature and oxygen	1, 2, 3, 4, 5, 6, 13, 14, 15
15.00%	Metabolic tests: -carbohydrates utilization -protein and amino acid utilization and respiration	1, 2, 3, 4, 5, 6, 13, 14, 15
15.00%	Unknown determination	1, 2, 3, 4, 6, 13, 14, 15
10.00%	Epidemiological studies and applied immunology	1, 2, 3, 8, 10, 12, 13, 14, 15
5.00%	Microbes in the environment	1, 2, 3, 7, 8, 9, 10
5.00%	Virology and mycology	1, 2, 3, 4, 7, 10, 11, 13, 14, 15
5.00%	Algae, protozoan, and helminths	1, 2, 3, 4, 8, 9, 10, 11, 13, 15
10.00%	Control of microbial growth -disinfectants -antimicrobial agents	1, 3, 6, 7, 10, 12
10.00%	Molecular biology application: -rapid bacterial identification techniques -bacterial transformation, Basic Local Alignment Search Tool (BLAST) analysis, PCR	1, 2, 3, 7, 13, 15

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	written evaluation of information provided on the internet regarding pathogenicity of specific microorganisms assigned to the student.

2	summary and analysis of lab results.
3	written BLAST analysis of unknown microbial pathology.
4	formal written analysis of unknown determination, disease reports, and case studies. Disease could be from bacteria, protozoa, viruses, or helminths.

B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:	
1	participate in community health education projects.
2	participate in a field trip to a wastewater treatment plant.
3	conduct research using appropriate microbiological literature from libraries and the internet.

C. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	in-class debates on moral and ethical issues relating to microbiology as it pertains to the health field, such as vaccinations and genetic modification in humans.
2	analysis of test results and logically deduce the identity of an unknown organism.
3	evaluation and organization of information relating to the pathogen in a given disease.
4	analysis of case studies, such as vaccinations or physician management of antibiotic-resistant bacteria.

V. METHODS OF INSTRUCTION

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

[X] Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)

[X] Lecture/Discussion

[X] Laboratory/Activity

[X] Other (Specify) Case studies
Oral presentation of a selected disease
Preparation of a quiz on the material for the rest of the class

[X] Optional Field Trips

[X] Required Field Trips

VI. METHODS OF EVALUATION

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

[X] Essay Exam	[X] Classroom Discussion	[X] Skill Demonstration
[X] Problem Solving Exam	[X] Reports/Papers/ Journals	[ ] Participation
[ ]	[ ]	[ ]

[X] Objective Exams [X] Projects [X] Other (specify)

Peer presentations
Peer assessments

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

Tortora, Gerard , et al. Microbiology: An Introduction. 13th ed. Pearson, 2019.

Leboffe, Michael J., and Burton E. Pierce. Microbiology: Laboratory Theory and Application. 4th ed. Morton, 2015.

Sackheim, George I. An Introduction to Chemistry for Biology Students. 9th ed. Peason, 2007.

VIII. STUDENT MATERIALS FEES

[X] No [ ] Yes

IX. PARALLEL COURSES

College	*Course Number*	*Course Title*	*Units*
CSU, Northridge	BIOL 215 & 215L	Introductory Microbiology and Introductory Microbiology Lab	2/2
UCLA	MIMG 10	Medical Microbiology for Nursing Students	4
CSU Channel Islands	BIOL 217	Medical Microbiology	4
CSU Bakersfield	BIOL 2230	Microbiology	4

X. MINIMUM QUALIFICATIONS

Courses Requiring a Masters Degree:
Bachelor's in any biological science AND Master's in biochemistry, biophysics, or marine science or the 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: [X] No: [ ] If YES, what section(s)?

   [X] 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)
- [X] 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
- [X] 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 on bacteria of unknown determination, using the Library's print and online resources. Use of the same resources, especially of specialized online periodical databases, for preparation of disease reports and BLAST analysis reports.

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

YES: [X] NO: [ ]

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

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

Requisite Justification for BIOL M02A

[X] A. Sequential course within a discipline.

1. understand and discuss the basic themes of biology that permeate all levels of organization:
  a. Define the basic vocabulary
  b. Compare and contrast the interactions between the basic vocabulary words
  c. Construct mental models for the various systems studied
  d. Evaluate and appraise the evidence behind the various models discussed
  e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

2. discuss the chemical basis of biological systems including the structure and function of biological molecules:
  a. Define the basic vocabulary
  b. Compare and contrast the interactions between the basic vocabulary words
  c. Construct mental models for the various systems studied
  d. Evaluate and appraise the evidence behind the various models discussed
  e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

3. explain the concepts and processes of cellular metabolism including photosynthesis, cellular respiration and the role of adenosine triphosphate in the thermodynamics of living systems:
  a. Define the basic vocabulary
  b. Compare and contrast the interactions between the basic vocabulary words
  c. Construct mental models for the various systems studied
  d. Evaluate and appraise the evidence behind the various models discussed
  e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

4. identify and describe prokaryotic and eukaryotic cell structures, relating structure to function, including the current model of membrane structure and function and a discussion of cellular transport:
  a. Define the basic vocabulary
  b. Compare and contrast the interactions between the basic vocabulary words
  c. Construct mental models for the various systems studied
  d. Evaluate and appraise the evidence behind the various models discussed
  e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

5. describe current models of cell communication:
  a. Define the basic vocabulary
  b. Compare and contrast the interactions between the basic vocabulary words
  c. Construct mental models for the various systems studied
  d. Evaluate and appraise the evidence behind the various models discussed
  e. Given a body of data from a scientific paper, analyze how that

evidence affects the scientific models studied.

6. discuss cellular reproduction and its controls in prokaryotes and eukaryotes including sexual and asexual life cycles:
a. Define the basic vocabulary
b. Compare and contrast the interactions between the basic vocabulary words
c. Construct mental models for the various systems studied
d. Evaluate and appraise the evidence behind the various models discussed
e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

7. apply the principles of classical and molecular genetics to solve problems in genetics or biotechnology:
a. Define the basic vocabulary
b. Compare and contrast the interactions between the basic vocabulary words
c. Construct mental models for the various systems studied
d. Evaluate and appraise the evidence behind the various models discussed
e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

8. explain prokaryotic and eukaryotic genome organization, DNA structure, DNA replication, gene expression and the control of gene expression. Relate theoretical models to the practical applications of biotechnology:
a. Define the basic vocabulary
b. Compare and contrast the interactions between the basic vocabulary words
c. Construct mental models for the various systems studied
d. Evaluate and appraise the evidence behind the various models discussed
e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

9. discuss and relate evolutionary processes to the origin and evolution of cells, species and populations:
a. Define the basic vocabulary
b. Compare and contrast the interactions between the basic vocabulary words
c. Construct mental models for the various systems studied
d. Evaluate and appraise the evidence behind the various models discussed
e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

10. explain and apply the scientific method in the study of biological concepts and laboratory exercises:
a. Define the basic vocabulary
b. Compare and contrast the interactions between the basic vocabulary words
c. Construct mental models for the various systems studied
d. Evaluate and appraise the evidence behind the various models

discussed
e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

11. acquire, read, evaluate, apply and cite scientific literature.

☐ B. Standard Prerequisite or Corequisite required by universities.

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for BIOL M02AH

☒ A. Sequential course within a discipline.

1. understand and discuss the basic themes of biology that permeate all levels of organization:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

2. discuss the chemical basis of biological systems including the structure and function of biological molecules:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

3. explain the concepts and processes of cellular metabolism including photosynthesis, cellular respiration and the role of adenosine triphosphate in the thermodynamics of living systems:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

4. identify and describe prokaryotic and eukaryotic cell structures, relating structure to function, including the current model of membrane structure and function and a discussion of cellular transport:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

5. describe current models of cell communication:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

6. discuss cellular reproduction and its controls in prokaryotes and eukaryotes including sexual and asexual life cycles:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

7. apply the principles of classical and molecular genetics to solve problems in genetics or biotechnology:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

8. explain prokaryotic and eukaryotic genome organization, DNA structure, DNA replication, gene expression and the control of gene expression. Relate theoretical models to the practical applications of biotechnology:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

9. discuss and relate evolutionary processes to the origin and evolution of cells, species and populations:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models

discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

10. explain and apply the scientific method in the study of biological concepts and laboratory exercises:

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

11. acquire, read, evaluate, apply and cite scientific literature.

12. HONORS: critically read, analyze and summarize original scientific data and research.

13. HONORS: report on seminars, conferences or presentations within the academic setting or community.

14. HONORS: identify, discuss and provide scientific significance and explanations for current biological issues impacting society.

a. Define the basic vocabulary

b. Compare and contrast the interactions between the basic vocabulary words

c. Construct mental models for the various systems studied

d. Evaluate and appraise the evidence behind the various models discussed

e. Given a body of data from a scientific paper, analyze how that evidence affects the scientific models studied.

☐ B. Standard Prerequisite or Corequisite required by universities.

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health

and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for PHSO M01

☒ A. Sequential course within a discipline.

1. describe and distinguish various roles of major classes of biomolecules in living cells.

2. describe key functional features of different types of human cells and how they communicate.

3. identify key functions of major organ systems and the physiological mechanisms underlying their operation.

4. demonstrate an understanding of how organ systems of the body are integrated and regulated.

5. demonstrate an understanding of how homeostasis is maintained in the body.

6. demonstrate knowledge of metabolic and physiological disorders of the major organ systems.

7. analyze experimental data to demonstrate physiological principles.

8. demonstrate an understanding of the scientific method, experimental design, and the philosophy of science; apply the scientific method and philosophy of science by designing components of and carrying out physiological experiments.

9. apply the general concepts from the textbook and other references to the specific principles which are demonstrated in laboratory exercises.

10. describe and employ physiological laboratory techniques and practices.

☐ B. Standard Prerequisite or Corequisite required by universities.

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for PHSO M01H

☒ A. Sequential course within a discipline.

1. describe and distinguish various roles of major classes of biomolecules in living cells.

2. describe key functional features of different types of human cells and how they communicate.

3. identify key functions of major organ systems and the physiological mechanisms underlying their operation.

4. demonstrate an understanding of how organ systems of the body are integrated and regulated.

5. demonstrate an understanding of how homeostasis is maintained in the body.

6. demonstrate knowledge of metabolic and physiological disorders of the major organ systems.

7. analyze experimental data to demonstrate physiological principles.

8. demonstrate an understanding of the scientific method, experimental design, and the philosophy of science; apply the scientific method and philosophy of science by designing components of and carrying out physiological experiments.

9. apply the general concepts from the textbook and other references to the specific principles which are demonstrated in laboratory exercises.

10. describe and employ physiological laboratory techniques and practices.

11. Honors: critically read, analyze and summarize original scientific data and research on a disease that is a current trend in allied health science.

12. Honors: summary report on seminars, conferences or presentations within the academic setting or community.

13. Honors: identify, discuss and provide scientific significance and physiological explanations for current forms of treatment of a given disease:

a. Define the basic vocabulary
b. Compare and contrast various forms of treatment of a given disease
c. Evaluate and appraise the evidence behind each form of treatment
d. Given a body of data from a scientific paper, analyze how that evidence addresses the pathophysiology behind the disease.

14. Honors: critically read primary sources for the purpose of engaging in seminar-style debates/discussions

15. Honors: creatively synthesize data from primary sources to produce, with original data, a creative research paper or project.

16. Honors: professionally and concisely present in class/public the findings of the creative project or paper.

17. Honors: offer well-reasoned and scientifically sound analyses of issues related to physiology/pathophysiology as expressed in mass/public media.

18. Honors: attend and participate in public or academic discussions or conferences related to physiology/pathophysiology both at Moorpark College and in the greater community.

☐ B. Standard Prerequisite or Corequisite required by universities.

☐ C. Corequisite is linked to companion lecture course.

☐ D. Prerequisite or Corequisite is authorized by legal statute or regulation.
Code Section: _____

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

and

Requisite Justification for CHEM M01A

☐ A. Sequential course within a discipline.

☒ B. Standard Prerequisite or Corequisite required by universities.

CSU, Northridge CSU, Bakersfield CSU, Fullerton

- [ ] C. Corequisite is linked to companion lecture course.

- [ ] D. Prerequisite or Corequisite is authorized by legal statute or regulation.
  Code Section: _____

- [ ] E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

- [ ] F. Computation or communication skill is needed.

- [ ] G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for CHEM M01AH

- [ ] A. Sequential course within a discipline.

- [ ] B. Standard Prerequisite or Corequisite required by universities.

- [ ] C. Corequisite is linked to companion lecture course.

- [ ] D. Prerequisite or Corequisite is authorized by legal statute or regulation.
  Code Section: _____

- [ ] E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

- [ ] F. Computation or communication skill is needed.

- [ ] G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for CHEM M12

- [ ] A. Sequential course within a discipline.

- [ ] B. Standard Prerequisite or Corequisite required by universities.

- [ ] C. Corequisite is linked to companion lecture course.

- [ ] D. Prerequisite or Corequisite is authorized by legal statute or regulation. Code Section: _____
- [ ] E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- [ ] F. Computation or communication skill is needed.
- [ ] G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for CHEM M11

- [ ] A. Sequential course within a discipline.
- [ ] B. Standard Prerequisite or Corequisite required by universities.
- [ ] C. Corequisite is linked to companion lecture course.
- [ ] D. Prerequisite or Corequisite is authorized by legal statute or regulation. Code Section: _____
- [ ] E. Prerequisite or Corequisite is necessary to protect the students' health and safety.
- [ ] F. Computation or communication skill is needed.
- [ ] G. Performance courses: Audition, portfolio, tryouts, etc. needed.

or

Requisite Justification for high school Chemistry equivalent

- [ ] A. Sequential course within a discipline.
- [ ] B. Standard Prerequisite or Corequisite required by universities.
- [ ] C. Corequisite is linked to companion lecture course.
- [ ] D. Prerequisite or Corequisite is authorized by legal statute or regulation. Code Section: _____
- [ ]

☐ E. Prerequisite or Corequisite is necessary to protect the students' health and safety.

☐ F. Computation or communication skill is needed.

☐ G. Performance courses: Audition, portfolio, tryouts, etc. needed.

XIV. WORKPLACE PREPARATION

MICR M01: Not Applicable

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

1. Mode of Delivery

   ☐ Online (course will be delivered 100% online)

   ☐ Online with onsite examinations (100% of the instruction will occur online, but examinations and an orientation will be scheduled onsite)

   ☒ Online/Hybrid (a percentage of instruction will be held online and the remaining percentage of instruction will be held onsite)

   ☒ Lab activities will be conducted onsite

   ☐ Televideo (Examinations and an orientation will be held onsite)

   ☐ Teleconference

   ☐ Other

2. Need/Justification

   Improve general student access.

3. Describe how instructors teaching this course will ensure regular, effective contact with and among students.

   Instructors may provide on-site orientation and on-site testing. Students may perform interactive on-line activities, engage in asynchronous discussion groups, participate in chat rooms, submit written assignment via email.

4. Describe how instructors teaching this course will involve students in active learning.

   Students may perform interactive online activities, engage in asynchronous discussion groups, participate in chat rooms, submit written assignments via email.

5. Explain how instructors teaching this course will provide multiple methods of content representation.

   Students may perform interactive online activities, engage in asynchronous discussion groups, participate in chat rooms, submit written assignments via email, computer lab simulations, and other electronically based assignments, in addition to any typical assignments an instructor may choose to require.

6. Describe how instructors teaching this course will evaluate student performance.

   Methods of evaluation may consist of electronically based assessments, exams and/or assignments, participation in chat sessions and /or asynchronous discussion forums, submission of written work electronically. Lab write-ups computer lab simulation, and other evaluation methods as determined by the instructor.

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

General Education Division of Learning [check all applicable boxes]:

- [X] Natural Sciences
  - [X] Biological Science
  - [ ] Physical Science
- [ ] Social and Behavioral Sciences
  - [ ] American History/Institutions
  - [ ] Other Social Science
- [ ] Humanities
  - [ ] Fine or Performing Arts
  - [ ] Other Humanities
- [ ] Language and Rationality
  - [ ] English Composition
  - [ ] Communication and Analytical Thinking
- [ ] Health/Physical Education
- [ ] Ethnic/Women's Studies

Check either Option 1 or Option 2

- [X] **OPTION #1:** Moorpark College has already received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. Note: This option applies only to technical revisions and updated courses.
- [ ] **OPTION #2:** Moorpark College has not received approval from the CSU and/or UC systems for this course to fulfill a GE requirement. This option applies to all new and substantively revised courses.

XVII. STUDENT MATERIALS FEE ADDENDUM

MICR M01: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

MICR M01: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: MICROBIOLOGY

Discipline Code and Number: MICR M01

Course Revision Category: Outline Update

Course Proposed By:

Originating Faculty Sandy Bryant 09/10/2018

Faculty Peer: Norman Marten 09/12/2018

Curriculum Rep: Beth Miller 09/14/2018

Department Chair: Audrey Chen 09/11/2018

Division Dean: Carol Higashida 09/10/2018

Approved By:

Curriculum Chair: Jerry Mansfield 03/12/2019

Executive Vice President: _____

Articulation Officer: Letrisha Mai 02/20/2019

Librarian: Mary LaBarge 02/16/2019

Implementation Term and Year: Fall 2019

Approval Dates:

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

Approved by Board of Trustees (if applicable): _____

Approved by State (if applicable): 03/13/2019