

Biological science

BIOLOGICAL SCIENCE – BIOSC

Diablo Valley College is approved by the California Board of Registered Nurses for continuing education credits (provider #CEP 7992). Biological Science courses that can be used are BIOSC-119, 120, 139, 140 and 146.

Charles Ramos, Dean
Sciences Division
Physical Sciences Building, Room 263

Possible career opportunities

Completion of the biology program prepares students for advanced study leading to careers in government, industry, or secondary-school teaching. The program also partially satisfies the entrance requirements for medical and dental schools. Career options include: researcher, educator, laboratory technician, botanist, ecologist, and field technician.

Associate in science degree

Allied health

Students completing any program will be able to...

- illustrate and analyze chemical bonds and reactions.
- demonstrate an understanding of the structure and growth of microbes.
- demonstrate knowledge of the structure and function of the human body.
- demonstrate knowledge of the structure of the human body including both normal and pathological conditions.
- demonstrate knowledge of cell structure and function.

The associate in science degree with a major in allied health is a transfer degree for students who wish to transfer to a four-year institution with a major in an allied health field. These fields include, but are not limited to, nursing, radiological sciences, physical therapy, occupational health, and dental hygiene. The degree offers students a broad general education, and provides basic knowledge in microbiology, human anatomy and physiology. These are common prerequisites for above mention four-year majors, while also preparing students for more advanced allied health courses. Degree requirements for four-year programs differ from institution to institution, so students wishing to transfer to a particular four-year program should consult a counselor regarding specific course requirements for that particular program.

The DVC allied health major is intended for transfer. Students wishing to transfer must consult with a counselor regarding other courses in math, chemistry and physics that may be required by the four-year institution to which they intend to transfer. Students who intend to transfer are advised to select General Education Option 2 (IGETC) or Option 3 (CSU GE). Option 1 (DVC General Education) is not generally advised.

To earn an associate in science degree with a major in allied health, students must complete each course used to meet a major requirement with a "C" grade or higher and complete all general education requirements as listed in the catalog. Major requirements may be taken only on a "for grade" basis. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

major requirements:		units
BIOSC-139	Human Anatomy.....	5
BIOSC-140	Human Physiology	5

plus at least 4 units from:		
BIOSC-119	Fundamentals of Microbiology	4
BIOSC-146	Principles of Microbiology	5

plus at least 4 units from:		
CHEM-107	Integrated Inorganic, Organic, and Biological Chemistry	5
CHEM-108	Introductory Chemistry	4
CHEM-109	Introduction to Organic and Biochemistry	4
CHEM-120	General College Chemistry I.....	5

total minimum units for the major 18

Associate in science degree

Biology

Students completing any program will be able to...

- apply the scientific method of inquiry.
- illustrate and analyze chemical bonds and reactions.
- compare and contrast organismal life structures and functions.
- demonstrate an understanding of the mechanisms and evidence for the theory of evolution.

The associate in science degree with a major in biology is designed as a two-year program that offers a broad general education background and an introduction to the basic principles of biology as well as the supporting knowledge of chemistry needed to fully understand and appreciate biology as specified by the learning objectives of the courses. The courses included in the major are also applicable to further study in the life sciences.

The DVC biology major is intended to transfer. Students wishing to transfer must consult with a counselor regarding other courses in math, chemistry and physics that may be required by the four year institution to which they intend to transfer. Students who intend to transfer are advised to select General Education Option 2 (IGETC) or Option 3 (CSU GE). Option 1 (DVC General Education) is not generally advised.

To earn an associate in science degree with a major in biology, students must complete each course used to meet a major requirement with a "C" grade or higher and complete all general education requirements as listed in the catalog. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

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<i>major requirements:</i>	<i>units</i>
BIOSC-130 Principles of Cellular and Molecular Biology.....	5
BIOSC-131 Principles of Organismal Biology, Evolution and Ecology.....	5
CHEM-120 General College Chemistry I.....	5
CHEM-121 General College Chemistry II.....	5
total minimum units for the major	20

Associate in science degree

Life science

Students completing any program will be able to...

- A. understand and apply the scientific method of inquiry.
- B. explain, illustrate and analyze chemical bonds and reactions.
- C. discuss the mechanisms and evidence for the theory of evolution.
- D. understand the molecular aspects of cell biology/genetics. (Cellular Biology emphasis)
- E. discuss interactions of organisms in communities. (Field Studies emphasis)
- F. demonstrate knowledge of the structure and function of the human body. (Health emphasis)
- G. demonstrate the proper use and care for common laboratory equipment, lab skills, and techniques.

The associate in science degree with a major in life science is designed as a two-year program that offers a broad general education background and an introduction to the basic principles of biology and the supporting knowledge of chemistry needed to fully understand and appreciate biology. Furthermore, courses in three categories of life science are offered from which students select a minimum of twelve units. These categories emphasize I: health science, II: field sciences and III: cellular and molecular biology.

The associate degree in life science is not designed to transfer as major preparation for a baccalaureate degree. DVC life science students who intend to transfer must consult with a program advisor or counselor to ensure that other major preparation courses in math, chemistry, physics and other transfer requirements at the four-year institutions of their choice are met. Students who intend to transfer are advised to select either General Education Option 2 (IGETC) or Option 3 (CSU GE). General Education Option 1 (DVC General Education) is appropriate for students who do not intend to transfer.

To earn an associate in science degree with a major in life science, students must complete each course used to meet a major requirement with a "C" grade or higher and complete all general education requirements as listed in the catalog. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

<i>major requirements:</i>	<i>units</i>
<i>complete at least 4 units from:</i>	
BIOSC-102 Fundamentals of Biological Science with Laboratory.....	4
BIOSC-117 Human Biology with Laboratory.....	4
or both	
BIOSC-130 Principles of Cellular and Molecular Biology.....	5
and	
BIOSC-131 Principles of Organismal Biology, Evolution and Ecology.....	5
<i>plus at least 4 units from:</i>	
CHEM-107 Integrated Inorganic, Organic, and Biological Chemistry.....	5
CHEM-109 Introduction to Organic and Biochemistry.....	4
CHEM-120 General College Chemistry I.....	5

plus at least 12 units from the following areas of specialization; with at least 3 units from each area:

cellular biology

BIOSC-107 Genetics and Evolution.....	4
BIOSC-119 Fundamentals of Microbiology.....	4
BIOSC-130 Principles of Cellular and Molecular Biology.....	5
BIOSC-146 Principles of Microbiology.....	5

field studies

BIOSC-126 Ecology and Field Biology.....	4
BIOSC-131 Principles of Organismal Biology, Evolution and Ecology.....	5
BIOSC-161 Fundamentals of Marine Biology.....	3
BIOSC-162 Fundamentals of Marine Biology with Laboratory.....	4
BIOSC-170 Environmental Science.....	3
BIOSC-171 Environmental Science with Laboratory.....	4
HORT-148L California Native Plants Laboratory.....	1
OCEAN-101 Fundamentals of Oceanography.....	3
OCEAN-102 Fundamentals of Oceanography with Laboratory.....	4

health

BIOSC-120 Introduction to Human Anatomy and Physiology.....	5
BIOSC-139 Human Anatomy.....	5
BIOSC-140 Human Physiology.....	5
NUTRI-160 Nutrition: Science and Applications.....	3

total minimum units for the major 20

Associate in science degree

Natural science

Students completing any program will be able to...

- A. understand and apply scientific terminology appropriate for this specific field of life or physical science.
- B. understand and apply the method of scientific inquiry appropriate for this specific field of life or physical science.
- C. collect and/or analyze laboratory and/or field data appropriate for the specific field of life or physical science.
- D. critically evaluate scientific information in various formats.
- E. understand the relationship between humans and the physical and/or life sciences.

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any updates to this document can be found in the addendum at www.dvc.edu/communication/catalog

Biological science

The associate in science degree in natural science is designed as a two-year program that offers a broad general education background and an introduction to the diverse field of the natural sciences. This degree is an appropriate choice for students who seek breadth in their knowledge of the sciences or for those starting their preparation for a career in elementary education (multi subject), secondary education (single subject), journalism, liberal arts, environmental sciences, etc. Students may transfer to a science-related major or career/technical program or may work in a science-related field.

This degree, however, is not designed to present the complete lower division preparation for a major in a traditional scientific field. DVC natural sciences students who intend to transfer must consult with a program advisor or counselor to ensure that other major preparation courses such as mathematics and other transfer requirements at the four-year institutions of their choice are met. Students who intend to transfer are advised to select either General Education Option 2 (IGETC) or Option 3 (CSU GE). General Education Option 1 (DVC General Education) is appropriate for students who do not intend to transfer.

To earn an associate in science degree in natural sciences, students must complete each course used to meet a major requirement with a "C" grade or higher and complete all general education requirements as listed in the catalog. Certain courses may satisfy both major and general education requirements; however the units are only counted once.

Major requirements – Students will select a minimum of 18 units total from courses in the biological sciences and physical sciences:

biological science

required biological science core: at least 4 units from the following biological science courses with a laboratory:

	units
BIOSC-102 Fundamentals of Biological Science with Laboratory	4
BIOSC-107 Genetics and Evolution	4
BIOSC-117 Human Biology with Laboratory	4
BIOSC-119 Fundamentals of Microbiology	4
BIOSC-120 Introduction to Human Anatomy and Physiology	5
BIOSC-126 Ecology and Field Biology	4
BIOSC-130 Principles of Cellular and Molecular Biology....	5
BIOSC-131 Principles of Organismal Biology, Evolution and Ecology.....	5
BIOSC-139 Human Anatomy.....	5
BIOSC-146 Principles of Microbiology	5
BIOSC-162 Fundamentals of Marine Biology with Laboratory	4
BIOSC-171 Environmental Science with Laboratory.....	4

physical science

required physical science core: at least 4 units from the following physical science courses with a laboratory:

	units
ASTRO-110 The Visible Universe.....	3
and	
ASTRO-130 Astronomy Laboratory	1
ASTRO-120 Elementary Astronomy.....	3
and	
ASTRO-130 Astronomy Laboratory	1
CHEM-106 Chemistry for Non-Science Majors	4
CHEM-107 Integrated Inorganic, Organic, and Biological Chemistry	5
CHEM-108 Introductory Chemistry	4
CHEM-109 Introduction to Organic and Biochemistry	4
CHEM-120 General College Chemistry I.....	5
GEOG-120 Physical Geography	3
and	
GEOG-121 Physical Geography Laboratory	1
GEOG-140 Introduction to Weather	3
and	
GEOG-141 Introduction to Weather Laboratory	1
GEOG-120 Physical Geology.....	3
and	
GEOG-122 Physical Geology Laboratory.....	1
GEOG-121 Earth and Life Through Time	3
and	
GEOG-124 Earth and Life Through Time Laboratory	1
GEOG-130 Earth Science	4
OCEAN-102 Fundamentals of Oceanography with Laboratory	4
PHYS-110 Elementary Physics.....	3
and	
PHYS-111 Physics Laboratory	1
PHYS-120 General College Physics I.....	4
PHYS-129 Introductory Physics for Engineers	4
PHYS-130 Physics for Engineers and Scientists A: Mechanics and Wave Motion.....	4

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<i>plus 8-10 units from the following if not used above:</i>		<i>units</i>
ASTRO-110	The Visible Universe.....	3
ASTRO-120	Elementary Astronomy.....	3
ASTRO-130	Astronomy Laboratory.....	1
BIOSC-101	Fundamentals of Biological Science.....	3
BIOSC-102	Fundamentals of Biological Science with Laboratory.....	4
BIOSC-107	Genetics and Evolution.....	4
BIOSC-116	Human Biology.....	3
BIOSC-117	Human Biology with Laboratory.....	4
BIOSC-119	Fundamentals of Microbiology.....	4
BIOSC-120	Introduction to Human Anatomy and Physiology.....	5
BIOSC-126	Ecology and Field Biology.....	4
BIOSC-130	Principles of Cellular and Molecular Biology....	5
BIOSC-131	Principles of Organismal Biology, Evolution and Ecology.....	5
BIOSC-139	Human Anatomy.....	5
BIOSC-140	Human Physiology.....	5
BIOSC-146	Principles of Microbiology.....	5
BIOSC-161	Fundamentals of Marine Biology.....	3
BIOSC-162	Fundamentals of Marine Biology with Laboratory.....	4
BIOSC-170	Environmental Science.....	3
BIOSC-171	Environmental Science with Laboratory.....	4
CHEM-106	Chemistry for Non-Science Majors.....	4
CHEM-107	Integrated Inorganic, Organic, and Biological Chemistry.....	5
CHEM-108	Introductory Chemistry.....	4
CHEM-109	Introduction to Organic and Biochemistry.....	4
CHEM-120	General College Chemistry I.....	5
CHEM-121	General College Chemistry II.....	5
CHEM-226	Organic Chemistry I.....	5
CHEM-227	Organic Chemistry II.....	5
GEOG-120	Physical Geography.....	3
GEOG-121	Physical Geography Laboratory.....	1
GEOG-125	Introduction to Geographic Information Systems (GIS).....	3
GEOG-126	Advanced Geographic Information Systems ...	3
GEOG-140	Introduction to Weather.....	3
GEOG-141	Introduction to Weather Laboratory.....	1
GEOG-160	Introduction to Remote Sensing.....	4
GEOG-162	Map Design and Visualization.....	3
GEOL-120	Physical Geology.....	3
GEOL-121	Earth and Life Through Time.....	3
GEOL-122	Physical Geology Laboratory.....	1
GEOL-124	Earth and Life Through Time Laboratory.....	1
GEOL-125	Geology of California.....	3
GEOL-130	Earth Science.....	4
HORT-110	Introduction to Horticulture and Plant Science.....	4
HORT-148L	California Native Plants Laboratory.....	1
NUTRI-160	Nutrition: Science and Applications.....	3
OCEAN-101	Fundamentals of Oceanography.....	3
OCEAN-102	Fundamentals of Oceanography with Laboratory.....	4
PHYS-110	Elementary Physics.....	3
PHYS-111	Physics Laboratory.....	1
PHYS-113	Elementary Modern Physics: From Atoms to the Big Bang.....	3
PHYS-120	General College Physics I.....	4
PHYS-121	General College Physics II.....	4
PHYS-124	Calculus Supplement for Physics 120.....	0.5
PHYS-125	Calculus Supplement for Physics 121.....	0.5

PHYS-129	Introductory Physics for Engineers.....	4
PHYS-130	Physics for Engineers and Scientists A: Mechanics and Wave Motion.....	4
PHYS-230	Physics for Engineers and Scientists B: Heat and Electro-Magnetism.....	4
PHYS-231	Physics for Engineers and Scientists C: Optics and Modern Physics.....	4
PHYS-112	Fundamentals of Physical Science.....	3
total minimum units for the major		18

Associate in science in biology for transfer

Students completing any program will be able to...

- apply the scientific method of inquiry using appropriate and effective tools in obtaining, analyzing (including use of statistical procedures and standard techniques in data gathering), and interpreting information including peer-reviewed articles.
- illustrate and analyze chemical bonds and reactions starting on the level of subatomic particles to the level of large organic molecules.
- compare and contrast organismal life structures and functions including microorganisms.
- demonstrate an understanding of the mechanisms and evidence for the theory of evolution.
- demonstrate the concept of limits and apply limits to real-world problems.
- solve problems involving rates of change and derivatives, including real-world problems.
- explain the core concepts in mechanics; forces, motion, momentum and energy.
- solve simple circuit problems involving electric potential, capacitance and resistance.

The associate in science in biology for transfer degree is designed as a two-year program that offers an introduction to the basic principles of biology as well as the supporting knowledge of chemistry, physics, and mathematics.

The associate in science in biology for transfer is intended for students who plan to complete a bachelor's degree in a similar major at a CSU campus. Students completing this degree are guaranteed admission to the CSU system, but not to a particular campus or major.

In order to earn the degree, students must:

- Complete 60 CSU-transferable units.
- Complete the California State University-General Education pattern (CSU GE); or the Intersegmental General Education Transfer Curriculum (IGETC) pattern, including the Area 1C requirement for Oral Communication.
- Complete a minimum of 18 units in the major.
- Attain a minimum grade point average (GPA) of 2.0.
- Earn a grade of "C" or higher in all courses required for the major.

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Students transferring to a CSU campus that accepts the degree will be required to complete no more than 60 units after transfer to earn a bachelor's degree. This degree may not be the best option for students intending to transfer to a particular CSU campus or to a university or college that is not part of the CSU system, or those students who do not intend to transfer.

Students must complete each course used to meet a major requirement with a "C" grade or higher. Some courses in the major satisfy both major and CSUGE/IGETC general education requirements; however, the units are only counted once toward the 60 unit requirement for an associate degree. Students are advised that for this major, they may use the IGETC for STEM (Science, Technology, Engineering and Mathematics) pattern. This pattern allows students to complete one course in Area 3A; one course in Area 3B; and two courses in Area 4 from two different disciplines. Some variations in major requirements may exist at certain four-year institutions; therefore, students who intend to transfer are advised to refer to the catalog of the prospective transfer institution and consult a counselor.

<i>required courses:</i>	<i>units</i>
BIOSC-130 Principles of Cellular and Molecular Biology....	5
BIOSC-131 Principles of Organismal Biology, Evolution and Ecology.....	5
CHEM-120 General College Chemistry I.....	5
CHEM-121 General College Chemistry II.....	5
<i>plus at least 4 units from:</i>	
MATH-182 Calculus for Management, Life Science and Social Science I.....	4
MATH-192 Analytic Geometry and Calculus I.....	5
<i>plus at least 8 units from:</i>	
PHYS-120 General College Physics I.....	4
PHYS-121 General College Physics II.....	4
or	
PHYS-130 Physics for Engineers and Scientists A: Mechanics and Wave Motion.....	4
PHYS-230 Physics for Engineers and Scientists B: Heat and Electro-Magnetism.....	4
<i>plus at least 3 units from:</i>	
BIOSC-119 Fundamentals of Microbiology	4
BIOSC-146 Principles of Microbiology	5
CHEM-226 Organic Chemistry I.....	5
MATH-142 Elementary Statistics with Probability.....	4
PSYCH-101 Introduction to Psychology	3
total minimum units for the major	35

Certificate of achievement Allied health

Students completing any program will be able to...

- A. illustrate and analyze chemical bonds and reactions.
- B. demonstrate an understanding of the structure and growth of microbes.
- C. demonstrate knowledge of the structure and function of the human body.
- D. demonstrate knowledge of the structure of the human body including both normal and pathological conditions.
- E. demonstrate knowledge of cell structure and function.

This program prepares the student for entry into some health professional programs or jobs in the medical field that do not require degrees. These courses provide some of the prerequisites for advanced training in the medical field for such occupations as nursing, dental hygiene, physical therapy, occupational therapy, medical laboratory technician, and radiological sciences.

To earn a certificate of achievement, students must complete the required courses with a "C" grade or higher. Course requirements are typically available in the day and evening. Students may also earn an associate in science degree in allied health.

Students who intend to transfer to a four-year program should consult with a counselor regarding course and program requirements.

<i>required courses:</i>	<i>units</i>
BIOSC-139 Human Anatomy.....	5
BIOSC-140 Human Physiology	5
<i>plus at least 4 units from:</i>	
BIOSC-119 Fundamentals of Microbiology	4
BIOSC-146 Principles of Microbiology	5
<i>plus at least 4 units from:</i>	
CHEM-107 Intergrated Inorganic, Organic, and Biological Chemistry	5
CHEM-108 Introductory Chemistry.....	4
CHEM-109 Introduction to Organic and Biochemistry	4
CHEM-120 General College Chemistry I.....	5
total minimum required units	18

Certificate of achievement Allied health fundamentals

Students completing any program will be able to...

- A. demonstrate an understanding of the structure and growth of microbes.
- B. demonstrate knowledge of the structure and function of the human body.
- C. demonstrate knowledge of changes in bodily functions as a result of disease and determine the reason for functional changes.
- D. analyze chemical reactions.
- E. demonstrate knowledge of cell structure and function.

This program prepares the student for entry into some health professional programs or jobs in the medical field that do not require degrees. These courses provide some of the prerequisites for advanced training in the medical field for such occupations as nursing, dental hygiene, physical therapy, occupational therapy, medical laboratory technician, and radiological sciences.

To earn a certificate of achievement, students must complete the required courses with a "C" grade or higher. Course requirements are typically available in the day and evening. Students may also earn a certificate of achievement in allied health or an associate in science degree in allied health.

Students who intend to transfer to a four-year program should consult with a counselor regarding course and program requirements.

Biological science

required course:	units
BIOSC-120 Introduction to Human Anatomy and Physiology	5

plus at least 4 units from:

BIOSC-119 Fundamentals of Microbiology	4
BIOSC-146 Principles of Microbiology	5

plus at least 4 units from:

CHEM-107 Intergrated Inorganic, Organic, and Biological Chemistry	5
CHEM-108 Introductory Chemistry	4
CHEM-109 Introduction to Organic and Biochemistry	4
CHEM-120 General College Chemistry I	5
total minimum required units	13

BIOSC-101 Fundamentals of Biological Science

3 units SC

- IGETC: 5B; CSU GE: B2; DVC GE: II
- 54 hours lecture per term
- Advisory: College-level reading and writing are expected.
- Note: Students who have successfully completed BIOSC-102 should not enroll in BIOSC-101. Students who have successfully completed BIOSC-102 will not receive credit for BIOSC-101.

In this course students will explore fundamental biological principles including the process of evolution by means of natural selection, cell structure and function, plant and animal growth and development, reproduction, genetics and homeostasis within and among living things, populations and communities. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-102 Fundamentals of Biological Science with Laboratory

4 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected.
- Note: Students who have successfully completed BIOSC-101 should not enroll in BIOSC-102. Students who have successfully completed BIOSC-101 will not receive credit for BIOSC-102.

In this course students will explore fundamental biological principles including the process of evolution by means of natural selection, cell structure and function, plant and animal growth and development, reproduction, genetics and homeostasis within and among living things, populations and communities. A laboratory component is included that introduces scientific method and experimentation, including data gathering and analysis with a variety of scientific equipment. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-107 Genetics and Evolution

4 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected.

This course presents the study of various aspects of genetics and evolution. Topics include cellular reproduction, Mendelian Genetics, DNA structure and function, protein synthesis, gene regulation, biotechnology, genetically-modified organisms and gene therapy as well as an introduction to the process of evolution by means of natural selection and the social implications of these topics. The laboratory component includes an introduction to the scientific method and experimentation including data gathering and analysis with a variety of scientific equipment. Laboratory activities will include manipulating DNA, conducting genetic crosses and constructing cladograms. CSU, UC

BIOSC-116 Human Biology

3 units SC

- IGETC: 5B; CSU GE: B2; DVC GE: II
- 54 hours lecture per term
- Advisory: College-level reading and writing are expected.
- Note: Students who have successfully completed BIOSC-117 should not enroll in BIOSC-116. Students who have successfully completed BIOSC-117 will not receive credit for BIOSC-116.

This course will explore fundamental biological principles as applied to humans. Topics will include evolution; ecology and human impact on the environment; human heredity including genetics and DNA structure and function; cell structure and function; major organ systems including structure, function, and pathology; human reproduction and development; and scientific method, including evaluation of scientific and medical information in the media and application of this knowledge to real life decision-making. CSU, UC (credit limits may apply to UC - see counselor)

Biological science

BIOSC-117 Human Biology with Laboratory

4 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected.
- Note: Students who have successfully completed BIOSC-116 should not enroll in BIOSC-117. Students who have successfully completed BIOSC-116 will not receive credit for BIOSC-117.

This course will explore fundamental biological principles as applied to humans. Topics will include evolution: ecology and human impact on the environment; human heredity including genetics and DNA structure and function; major organ systems including structure, function and pathology; human reproduction and development; and the scientific method, including evaluation of scientific, medical and health information in the media and the application of this knowledge to real life decision-making. The laboratory component introduces the scientific method and experimentation, including histology, dissection, data gathering and analysis with instruction in the use of a variety of scientific equipment. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-119 Fundamentals of Microbiology

4 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/54 hours laboratory per term
- Prerequisite: CHEM 107 or CHEM-108 or CHEM-109 or CHEM-120 or equivalent
- Advisory: College-level reading and writing are expected. High school or college biology or equivalents. MATH-119 or MATH-119SP or intermediate algebra or equivalent.
- Note: Students who have successfully completed BIOSC-146 should not enroll in BIOSC-119. Students who have successfully completed BIOSC-146 will not receive credit for BIOSC-119.

This course will explore the fundamentals of microbiology and emphasize its application to allied health professions. Topics include microscopy and staining, cell structure and function, biological molecules and metabolism, growth and control of microbes (with an emphasis on sterile technique), microbial genetics and biotechnology, classification and identification of microbes, immunology and applications, epidemiology, medical microbiology, and public health microbiology. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-120 Introduction to Human Anatomy and Physiology

5 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/108 hours laboratory per term
- Advisory: College-level reading and writing are expected. High school or college biology or chemistry or equivalents.

The course covers the structure and function of the human body, stressing the levels of organization within the body, the relationship between structure and function, the importance of maintaining relatively stable internal conditions for health, and some health consequences resulting from loss of this stability. Hands-on laboratory work including microscopy, experiments, and dissection (including cadavers) supports the lecture material. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-126 Ecology and Field Biology

4 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/54 hours laboratory per term
- Advisory: College-level reading and writing are expected.

This course is designed for non-majors and presents the principles of ecology, natural selection, speciation and biodiversity. During field laboratories, students will survey the natural history of ecological communities in northern California to identify dominant plant and animal species in each community, and explore the influences of the physical environment on the evolutionary adaptations and ecology of the species. Human impacts on ecological systems and conservation issues are explored. CSU, UC

BIOSC-130 Principles of Cellular and Molecular Biology

5 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/108 hours laboratory per term
- Prerequisite: CHEM-120 or equivalent
- Advisory: College-level reading and writing are expected. BIOSC-101 or BIOSC-102 or equivalents

This course is formed around the universal biological processes of all organismal life with an emphasis on the cellular level of organization and is intended for biology majors or other students with an in-depth interest in the biological sciences. Topics include principles of biomolecules, prokaryotic and eukaryotic cellular morphology and ultrastructure, biochemical pathways (photosynthesis and cellular respiration), enzymes, cellular communication and reproduction, classical and molecular genetics, gene control, embryology, immunology, and selected topics of animal physiology emphasizing homeostatic control mechanisms. The laboratory component focuses on methodologies necessary for analyzing molecular, cellular and genetic problems like microscopy, spectrophotometry, graphing and statistical analysis, as well as recombinant DNA technologies. C-ID BIOL 190, BIOSC 130 + BIOSC 131= C-ID BIOL 135S, CSU, UC

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BIOSC-131 Principles of Organismal Biology, Evolution, and Ecology

5 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/108 hours laboratory per term
- Prerequisite: CHEM-120 (may be taken concurrently) or equivalent
- Advisory: College-level reading and writing are expected. BIOSC-101 or 102 or BIOSC-130 or equivalents

This course is formed around three main biological principles: evolution, unity/diversity of life, and ecology and is intended for biology majors or other students with an in-depth interest in the biological sciences. The focus is on universal biological processes with emphasis on the whole organism and higher levels of organization. Evidence and mechanisms of evolution and speciation; evolutionary history and diversity of life; structure, function and evolutionary adaptations of organisms (including plants, fungi, animals, and unicellular organisms); general, population and community ecology; ecosystems and environmental concerns are covered. In laboratory, students will explore these themes with hands-on observations, dissections, laboratory activities and field exercises. BIOSC-130+BIOSC-131=C-ID BIOL 135S, CSU, UC

BIOSC-139 Human Anatomy

5 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/108 hours laboratory per term
- Advisory: College-level reading and writing are expected. BIOSC-102 or equivalents
- Note: The course content is appropriate for majors in Physical and Health Education; Public Health; Nursing; Physical, Occupational and Respiratory Therapy; Paramedical; Nurse Practitioner, and Physician Assistant programs.

This course examines the physical structure of the human body as an integrated unit, stressing normal structure and the changes that occur with aging and disease. Gross anatomy will be studied primarily through cadaver dissection in conjunction with preserved specimens, student self-reference, models and charts. Microscopic anatomy (histology) will be studied mainly through the use of microscope slides. C-ID BIOL 110B, CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-140 Human Physiology

5 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/108 hours laboratory per term
- Prerequisite: BIOSC-120 or BIOSC-139 or Equivalent. CHEM-107, 108, 109 or 120 or one year of high school chemistry or equivalents
- Advisory: College-level reading and writing are expected. BIOSC-102, MATH-119, MATH-119SP or intermediate algebra or equivalents
- Note: This course is primarily intended for allied health and medical professions including nursing, dental hygiene, kinesiology, physical therapy, occupational therapy, respiratory therapy, physician assistant, pharmacy and other health related majors.

This course presents the essential concepts of physiological mechanisms for the functioning of the human body. Emphasis will be given to regulatory mechanisms ranging from the cellular level to organ-system level employing chemical, mathematical and physical principles. Topics of study will include physiological function, communication, integration and homeostasis of the human body ranging from the cellular to organismal level. Laboratory activities focus on the knowledge of scientific methodologies necessary for the application, analysis and evaluation of major physiological principles using standard measuring equipment, bioelectronics, computer analysis, simulations and/or live organisms. C-ID BIOL 120B, CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-146 Principles of Microbiology

5 units SC

- IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II
- 54 hours lecture/108 hours laboratory per term
- Prerequisite: CHEM-107 or CHEM 108 or CHEM 109 or CHEM 120 or equivalents
- Advisory: College-level reading and writing are expected. High school or College biology or equivalents. MATH-119 or MATH-119SP or intermediate algebra or equivalent.

This course will explore the principles of microbiology with a molecular emphasis, as well as extensive laboratory experience. It is appropriate for allied health and biology majors. Topics include microscopy and staining, cell structure and function, cell biochemistry and metabolism, growth and control of microbes (with an emphasis on sterile technique), microbial genetics, biotechnology concepts and applications, classification and identification of microbes, immunology and applications, epidemiology, medical microbiology and public health microbiology. CSU, UC (credit limits may apply to UC - see counselor)

Biological science

BIOSC-150 Topics in Biology

.3-4 units SC

- *Variable hours*

A supplemental course in biology to provide a study of current concepts and problems in biology and related subdivisions. Specific topics will be announced in the schedule of classes.

CSU

BIOSC-161 Fundamentals of Marine Biology

3 units SC

- *IGETC: 5B; CSU GE: B2; DVC GE: II*
- *54 hours lecture per term*
- *Advisory: College-level reading and writing are expected.*
- *Note: This course does not include a laboratory. Students requiring or wanting a laboratory to accompany this course should enroll in BIOSC-162. Students who have successfully completed BIOSC-162 should not enroll in BIOSC-161. Students who have successfully completed BIOSC-162 will not receive credit for BIOSC-161.*

This course is an introduction to the diversity of marine organisms, the environments in which they live, and the relationships between species and organisms with their environments. Topics will include: the scientific method and its utilization in the marine sciences; properties of the marine environment; marine organisms (including their diversity and evolutionary adaptations; marine ecosystems with a focus on local estuarine and coastal environs; marine ecology;) and the sustainable use of marine biological resources. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-162 Fundamentals of Marine Biology with Laboratory

4 units SC

- *IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II*
- *54 hours lecture/54 hours laboratory per term*
- *Advisory: College-level reading and writing are expected.*
- *Note: Students who have successfully completed BIOSC-161 should not enroll in BIOSC-162. Students who have successfully completed BIOSC-161 will not receive credit for BIOSC-162. This course will include field trips outside of regularly scheduled class time. Formerly BIOSC-160.*

This course is an introduction to marine organisms, marine environments, and the ecological relationships that exist between them. Lecture topics will include: the scientific method and its utilization in the marine sciences; physical, chemical and geological properties of the marine environment; marine organisms (including their taxonomic classification, diversity and evolutionary adaptations); marine ecosystems; marine ecology. Laboratory topics will include: observation and dissection of representative marine organisms; and inquiry based comparison of organisms in different phyla and from different habitats. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-170 Environmental Science

3 units SC

- *IGETC: 5B; CSU GE: B2; DVC GE: II*
- *54 hours lecture per term*
- *Advisory: College-level reading and writing are expected. BIOSC-101 or 102 or equivalents*
- *Note: Students who have successfully completed BIOSC-171 should not enroll in BIOSC-170. Students who have successfully completed BIOSC-171 will not receive credit for BIOSC-170.*

This is an introductory course designed to expose students to environmental science. Human interactions with the environment and their consequences for living and nonliving systems will be examined. Topics will include evolution, ecology, biodiversity, human population dynamics, natural resource use, pollution, environmental degradation, climate change, marine and freshwater resources, and environmental policy. C-ID ENVS 100, CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-171 Environmental Science with Laboratory

4 units SC

- *IGETC: 5B, 5C; CSU GE: B2, B3; DVC GE: II*
- *54 hours lecture/54 hours laboratory per term*
- *Advisory: College-level reading and writing are expected. BIOSC-101 or BIOSC-102 or equivalents*
- *Note: Students who have successfully completed BIOSC-170 should not enroll in BIOSC-171. Students who have successfully completed BIOSC-170 will not receive credit for BIOSC-171. Class field trips will be organized to local sites related to course topics.*

This is an introductory course designed to expose students to environmental science. Human interactions with the environment and their consequences for living and nonliving systems will be examined. Topics will include evolution, ecology, biodiversity, human population dynamics, natural resource use, pollution, environmental degradation, climate change, marine and freshwater resources, and environmental policy. The laboratory component will introduce the scientific method, including experimental design, sampling methods, data collection and analysis techniques, as well as representing those data in graphical form. CSU, UC (credit limits may apply to UC - see counselor)

BIOSC-299 Student Instructional Assistant

.5-3 units SC

- *Variable hours*
- *Note: Applications must be approved through the Instruction Office. Students must be supervised by a DVC instructor.*

Students work as instructional assistants, lab assistants and research assistants in this department. The instructional assistants function as group discussion leaders, meet and assist students with problems and projects, or help instructors by setting up laboratory or demonstration apparatus. Students may not assist in course sections in which they are currently enrolled. CSU