ART-180 Internship in Art

30-300 total hours
.5-4 Units

PREREQUISITE: Approved online application and employer placement

ADVISORY: Eligibility for ENGL-095

This course is for students who have declared a major, have taken classes in the major, and are ready for on-the-job experience in a paid or unpaid position. An internship involves working in a skilled or professional level assignment in the area of a student's vocational or academic major or field of interest. Students, with faculty and employer approval, will apply college-acquired knowledge, skills and abilities as well as acquire new learning to prepare for a career in their chosen filed. Students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn a maximum of 16 units of occupational work experience internship during community college attendance which may be applied as electives toward graduation. 12 units are transferable to CSU. SC

LMC: DA

TRANSFER: CSU

ART-250 Introduction to Digital Art

36 total hours lecture, 54 total hours lab
3 Units

This course is an introduction to the fundamental concepts, practices and theories of digital art creation. Topics include integration of traditional design, color and compositional principles with contemporary digital tools like Adobe Photoshop, Illustrator, and InDesign. May not be repeated. SC

LMC: DA

TRANSFER: UC, CSU

ART-900s Selected Topics in Art

DA varies with course content.

Astronomy

COURSE DESCRIPTIONS

ASTRO-010 Introduction to Astronomy

54 total hours lecture
3 Units

ADVISORY: Eligibility for ENGL-100

A survey of current concepts of the Universe and their historical evolution. Emphasis is placed on the process of scientific inquiry by which current scientific understanding has been achieved, on the aesthetics of science, and on the limitations and implications of scientific knowledge. The material is presented throughout with the aid of the planetarium for Pittsburg sections. Interdisciplinary connections, ethical implications, and multicultural perspectives are infused throughout the course. May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area B1; IGETC Area 5A

ASTRO-011 Astronomy Laboratory

54 total hours lab
1 Unit

PREREQUISITE: Prior or concurrent enrollment in ASTRO-010

ADVISORY: Eligibility for ENGL-100

This course provides laboratory experience in astronomical observation. It involves the study of fundamental concepts of astronomy, including investigations of the moon, sun, planets and stars and offers practical experience in the use of telescopes and other tools. ASTRO-010 and ASTRO-011, if both completed, meet the CSU lab science requirement. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B3; IGETC Area 5A, 5C

ASTRO-098 Independent Study in Astronomy

Provides students an opportunity to design and pursue their own interests within a particular area. Projects reflecting cultural diversity and/or societal issues will be greatly encouraged. A contract must be drawn between the student and the instructor stipulating the goals of the independent study, the content, the method of approach, the estimated time involved, and the periodic evaluation to be used. Minimum 1 hour per week with instructor plus 54 hours of contracted work for each unit of credit. May not be repeated. SC

LMC: Independent study courses may be DA or transferable depending on specific course. See your counselor.

TRANSFER: Independent study courses may be DA or transferable depending on specific course. See your counselor.

ASTRO-900s Selected Topics in Astronomy

DA varies with course content.

AUTO-170 Occupational Work Experience Education in Automotive Technology

60-300 total hours
1-4 Units

PREREQUISITE: Approved online application

ADVISORY: Eligibility for ENGL-095

This course is for students whose work is related to their major. Occupational Work Experience Education provides students with opportunities to develop marketable skills in preparation for employment or advancement within their current job. To participate in cooperative work experience education, students must be employed or formally volunteer and undertake new or expanded responsibilities. Students, with faculty and employer approval, will develop and successfully complete one learning objective for each unit of credit in which they enroll. Additionally, students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn up to 8 units per semester and may repeat for a maximum of 16 units of occupational work experience during community college attendance which may be applied as electives toward graduation. SC

LMC: DA

TRANSFER: CSU

AUTO-180 Internship in Automotive Technology

30-300 total hours
.5-4 Units

PREREQUISITE: Approved online application and employer placement

ADVISORY: Eligibility for ENGL-095

This course is for students who have declared a major, have taken classes in the major, and are ready for on-the-job experience in a paid or unpaid position. An internship involves working in a skilled or professional level assignment in the area of a student's vocational or academic major or field of interest. Students, with faculty and employer approval, will apply college-acquired knowledge, skills and abilities as well as acquire new learning to prepare for a career in their chosen filed. Students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn a maximum of 16 units of occupational work experience internship during community college attendance which may be applied as electives toward graduation. 12 units are transferable to CSU. SC

LMC: DA

TRANSFER: CSU

AUTO-900s Selected Topics in Automotive Technology

DA varies with course content.

Biological Science

DEGREE–Associate in Science for Transfer
Biology

Associate Degree for Transfer

The Associate in Science in Biology for Transfer degree at Los Medanos College prepares students to transfer into a curriculum at a CSU to pursue a baccalaureate degree in biology. The ADT in Biology will introduce students to many areas of study including cytology, biochemical cycles, proteonomics, genenomics, reproduction, embryonic development, ecology, comparative anatomy and physiology and evolution.

To earn the Associate Degree for Transfer:
1. Complete the CSU General Education Breadth (CSU GE Breadth) or the Intersegmental General Education Transfer Curriculum (IGETC) requirements.
2. Complete the required major requirements listed below. All courses in the major must be completed with a grade of C or better or a "P" if the course is taken on a "pass-no pass" basis.
3. Complete 60 CSU transferable units (including the General Education and major requirements).

Students choosing to transfer are strongly encouraged to see an LMC Counselor since four year college requirements vary widely and are subject to change.

REQUIRED COURSES:		UNITS
BIOSC-020	Principles of Biology: Cellular Processes	**5**
BIOSC-021	Principles of Biology: Organismic	**5**
TOTAL UNITS		**10**
LIST A (22 UNITS):		
CHEM- 025	General College Chemistry	**5**
CHEM- 026	General College Chemistry	**5**
MATH-050	Calculus and Analytic Geometry I	**4**
or		
MATH-037	Applied Calculus	**4**
PHYS- 035	College Physics I	**4**
PHYS -036	College Physics II	**4**
or		
PHYS -040	Physics for Scientists and Engineers I	**4**
PHYS -041	Physics for Scientists and Engineers II	**4**
TOTAL UNITS FOR THE MAJOR		**32**
TOTAL UNITS FOR THE DEGREE		**60**

Program Student Learning Outcomes
1. Utilize the scientific method to develop hypotheses, conduct scientific experiments, critically analyze experimental data, and communicate results through written reports and oral presentations.
2. Analyze the relationship of structure & function at and across molecular, cellular, and organismal levels.
3. Describe how evolutionary processes explain the similarities and differences among organisms.
4. Illustrate the interdependency among living and non-living things in diverse and changing ecosystems.

COURSE DESCRIPTIONS

BIOSC-005 Biology of Health

54 total hours lecture, 18 total hours lab
3 Units

This is an introductory course that covers the biological concepts and principles underlying human health and fitness. We will cover not only the basic functions of the human cardiovascular, respiratory, nervous, digestive, immune, and reproductive systems, but also the effects of diet, exercise, prescription, illicit drugs, and stress on these systems and how you can make changes to improve your health. The course includes up-to-date information on biological and medical discoveries related to human health. In addition, we will discuss issues related to mental health, addiction, sexually transmitted diseases. The impact of human beings on the environment, and resulting health consequences will also be emphasized. Hands-on assignments will serve to demonstrate concepts that are critical to the health and wellbeing of the whole individual. May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area E

BIOSC-007 Ecology and the Environment

54 total hours lecture, 54 total hours lab
4 Units

ADVISORY: Eligibility for ENGL-100

This course provides an introduction to the biological concepts and principles underlying ecology and environmental science. Problem solving and critical thinking skills will be practiced as students explore biodiversity, the relationships between organisms and their environments, and current issues facing our global ecosystem. Lab experiments, field exercises, and trips to local environmental sites will help facilitate an interdisciplinary understanding of ecological topics and provide hands-on experience throughout the course. This course meets the General Education Requirement for Science. May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C

BIOSC-008 Human Biology

54 total hours lecture, 54 total hours lab
4 Units

ADVISORY: Eligibility for ENGL-100

This is an introductory course for non-science majors that explore major biological principles as they apply to human beings. Problem solving and critical thinking skills will be emphasized as students investigate the structure and function of the human organism. Areas of study include the major body systems, human evolution, homeostasis, cells, tissues, heredity, gene expression, biotechnology and the interaction of humans and the environment. Weekly laboratory experiments on all major topics will allow the student to use the scientific method to gain knowledge and practical experience in the collection and analysis of data, and in drawing appropriate conclusions. This course meets the LMC General Education Requirement for Science.May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C

BIOSC-010 General Biology

54 total hours lecture, 72 total hours lab
4 Units

ADVISORY: MATH-012 or higher; eligibility for ENGL-100

An integrated study of life forms with weekly laboratory activities. The course will focus on biological concepts, principles, and laws pertaining to life processes, as well as the scientific method used to investigate these processes. Throughout the course students will be encouraged to apply their critical thinking abilities to investigate the connections between biological theories and real world observations. This course meets the General Education Requirement for Lab Science. May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C

BIOSC-020 Principles of Biology: Cellular Processes

54 total hours lecture, 108 total hours lab
5 Units

PREREQUISITE: MATH-029, MATH-030 or equivalent

ADVISORY: AP High School Biology, AP High School Chemistry, BIOSC-010, eligibility for ENGL-100

This is an integrated study of the fundamental concepts of biology. Using laboratory methods and techniques, the principles and laws underlying plant and animal life processes are addressed on the molecular and cellular levels. An interdisciplinary approach will be used to treat cytology, biochemical cycles, proteonomics, genenomics, reproduction, and embryonic development. The critical and creative process of scientific inquiry and the implications of scientific knowledge will be emphasized. Skills in critical thinking, problem solving, and effective learning will be employed throughout the course. Required for biological science majors. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C; C-ID BIOL 135S

BIOSC-021 Principles of Biology: Organismal

54 total hours lecture, 108 total hours lab
5 Units

PREREQUISITE: MATH-029, 030 or equivalent

ADVISORY: BIOSC-010, High school biology, chemistry; eligibility for ENGL-100

This course is an integrated study of the biodiversity on this planet and focuses on biological processes and principles that lead to increasingly higher levels of organization. An interdisciplinary approach guides the study of three major areas: evolutionary principles, unity and diversity of life, and ecology. Major topics explored include origins of life, evolutionary mechanisms, evidence of evolution, speciation, unity and diversity of life, plant and animal form and function, population and community ecology, and environmental challenges and solutions. Skills in critical thinking, problem solving, and collaborative learning will be practiced through the course, in addition to laboratory methods and field work. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C; C-ID BIOL 135S

BIOSC-030 Introduction to Anatomy and Physiology

54 total hours lecture, 54 total hours lab
4 Units

ADVISORY: Eligibility for ENGL-100

This course is designed to cover basic anatomy and physiology. Fundamentals of body structure and function and the elegant interrelationships between body organs and how they perform will be explored. All of the systems of the body, including very basic microscopic anatomy and simple physiological chemistry will be covered in this one semester course. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

BIOSC-040 Human Anatomy

54 total hours lecture, 108 total hours lab
5 Units

ADVISORY: BIOSC-030 or equivalent; eligibility for ENGL-100

This course is a comprehensive exploration of gross and microscopic anatomy from cellular to systems that presents the human body as an integrated organism. Extensive dissection of human cadavers and preserved animal organs will constitute the bulk of the lab. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C

BIOSC-045 Human Physiology

54 total hours lecture, 108 total hours lab
5 Units

ADVISORY: BIOSC-040 and CHEM-007; eligibility for ENGL-100

A comprehensive exploration of general human physiology that begins with a discussion of the molecular and cellular basis of physiology, followed by an analysis of molecular, cellular, and tissue functions as they relate to each of the systems of the body and the total human organism. Critical and quantitative thinking and problem solving will be emphasized, and modern physiological recording instruments will be utilized extensively to analyze human physiological function. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C

BIOSC-050 Microbiology

36 total hours lecture, 108 total hours lab
4 Units

PREREQUISITE: CHEM-006, 007, 008, 020, 021 or 025, or equivalent

ADVISORY: Eligibility for ENGL-100

Explores the fundamental principles related to bacteria, viruses, and other microorganisms. Examines the microbial world with an emphasis on bacteria and their role in disease. Basic areas to be studied in the classroom and the laboratory include microbial characteristics, microbial metabolism, microbial growth and its control, microbial genetics and biotechnology, interactions between microbes and host, microorganisms and human disease, and industrial and environmental applications of microbiology. The process of scientific inquiry will be emphasized, and opportunities for analytical thinking and problem solving will be interwoven throughout the course. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B2, B3; IGETC Area 5B, 5C

BIOSC-098 Independent Study in Biological Science

Provides students an opportunity to design and pursue their own interests within a particular area. Projects reflecting cultural diversity and/or societal issues will be greatly encouraged. A contract must be drawn between the student and the instructor stipulating the goals of the independent study, the content, the method of approach, the estimated time involved, and the periodic evaluation to be used. Minimum 1 hour per week with instructor plus 54 hours of contracted work for each unit of credit. May not be repeated. SC

LMC: Independent study courses may be DA or transferable depending on specific course. See your counselor.

TRANSFER: Independent study courses may be DA or transferable depending on specific course. See your counselor.

BIOSC-900s Selected Topics in Biological Science

DA varies with course content.

Business

DEGREES–Associate in Science for Transfer

Business Administration

Associate Degree for Transfer

DEGREES–Associate of Science

Accounting
Small Business Operations

CERTIFICATES OF ACHIEVEMENT–Business

Accounting
Small Business Operations

COLLEGE SKILLS CERTIFICATES

Business Information Professional Level I
Business Information Professional Level II

ASSOCIATE IN SCIENCE

BUSINESS ADMINISTRATION FOR TRANSFER DEGREE

The Associate in Science in Business Administration for Transfer Degree is designed for students desiring advanced degrees in business administration. The LMC Business Administration courses meet lower division transfer requirements for business degrees such as accounting, marketing, management, international business, or finance. The curriculum includes the first and second year requirements for transfer to a four-year institution. A baccalaureate degree is the recommended preparation for those considering professional careers in business.

To earn the Associate Degree for Transfer:

1. Complete the CSU General Education Breadth (CSU GE Breadth) or the Intersegmental General Education Transfer Curriculum (IGETC) requirements.
2. Complete the required major requirements listed below. All courses in the major must be completed with a grade of C or better or a "P" if the course is taken on a "pass-no pass" basis.
3. Complete 60 CSU transferable units (including the General Education and major requirements).

REQUIRED CORE COURSES:		
BUS-186	Financial Accounting	**4**
BUS-187	Managerial Accounting	**4**
ECON-010	Principles of Microeconomics	**3**
ECON-011	Principles of Macroeconomics	**3**
BUS-294	Business Law	**3**

LIST A - SELECT ONE OF THE FOLLOWING:		
MATH-037	Applied Calculus	**4**
MATH-034	Introduction to Statistics	**4**

LIST B - SELECT TWO OF THE FOLLOWING OR ONE OF THE MATH CLASSES NOT ALREADY USED IN LIST A AND ONE OF THE FOLLOWING:		
BUS-109	Introduction to Business	**3**
BUS-059	Business Communications	**3**
COMSC-040	Introduction to Computers	**4**
TOTAL UNITS FOR THE MAJOR		**26- 28**

BUS-186 Financial Accounting

72 total hours lecture
4 Units

ADVISORY: BUS-181 and/or BUS-185; MATH-012 or BUS-003; eligibility for ENGL-100

This course explores what financial accounting is, why it is important, and how it is used by investors and creditors to make decisions. It covers the accounting information system and the recording and reporting of business transactions with a focus on the accounting cycle, the application of generally accepted accounting principles, classified financial statements, and statement analysis. Issues related to asset, liability, and equity valuation, revenue and expense recognition, cash flow, internal control and ethics are included. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU; C-ID ACCT 110

BUS-187 Managerial Accounting

72 total hours lecture
4 Units

PREREQUISITE: BUS-186

ADVISORY: MATH-012; eligibility for ENGL-100

This course continues the study of accounting theory with special emphasis on the types of accounting information used by managers, sources of information, and how managers use this information to make business decisions. Topics include cost systems, the analysis and use of cost information, cost-volume-profit analysis, contribution margin, profit planning, standard costs, capital budgeting, and statement analysis. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU; C-ID ACCT 120

BUS-294 Business Law

54 total hours lecture
3 Units

ADVISORY: BUS-109; eligibility for ENGL-100

This course includes a study of the legal environment of business and the basic principles of business law. Included are contracts, agency, employment, sales, property, forms of ownership, courts, and court procedures. May not be repeated. SC

LMC: DA

TRANSFER: UC, CSU; C-ID BUS 120

BUS-900s Selected Topics in Business

DA varies with course content.

Chemistry

DEGREE–Associate in Science for Transfer
Chemistry

Associate Degree for Transfer™

The Associate in Science in Chemistry for Transfer Degree is designed for students desiring advanced degrees in Chemistry. The Los Medanos College Chemistry courses meet the lower division transfer requirements for Chemistry. The curriculum includes the first and second year requirements to prepare students to transfer and study at a California State University. Transferring and completing a baccalaureate degree in Chemistry can lead to careers as agricultural and food scientists; chemists and materials scientists; elementary, middle, and high school teachers; environmental scientists; forensic scientists; materials engineers; occupational health and safety specialists; research technicians; government laboratory technicians; medical technicians; petroleum chemists; pharmacists; scientific writers and/or artists.

To achieve the Associate Degree for Transfer:

1. Completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University, including both of the following:
   a. The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breadth Requirements.
   b. A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
2. Obtainment of a minimum grade point average of 2.0.

ADTs also require that students must earn a C or better in all courses required for the major or area of emphasis.

LMC students must follow and complete IGETC for STEM in order to achieve the Associate in Science in Chemistry for Transfer Degree.

REQUIRED COURSES:		UNITS
CHEM-025	General College Chemistry I	**5**
CHEM-026	General College Chemistry II	**5**
CHEM-028	Organic Chemistry I	**5**
CHEM-029	Organic Chemistry II	**5**
MATH-050	Calculus and Analytic Geometry I	**4**
MATH-060	Calculus and Analytic Geometry II	**4**
PHYS-040	Physics for Scientists and Engineers I	**4**
PHYS-041	Physics for Scientists and Engineers II	**4**
TOTAL UNITS FOR THE MAJOR		**36**
TOTAL UNITS FOR THE DEGREE		**60**

Program Student Learning Outcomes

1. Demonstrated a mastery of a broad set of chemical knowledge concerning the fundamentals in the basic areas of analytical, inorganic, organic, and physical chemistry.
2. Solved problems by applying a comprehensive understanding of chemistry. Such types of chemistry problems include those concerning the atomic and molecular structure of matter, the periodic table plus quantum mechanics, stoichiometry (including those complicated by the presence of limiting reagents), and the principles of thermodynamics and kinetics (involving the principles of equilibrium, energy and entropy changes, as well as rates and mechanisms of chemical reactions).
3. Demonstrated proficiency in basic chemical laboratory skills, in the operation and interpretation of data from chemical instrumentation and measurement, and in the safe chemical practices in the laboratory, including waste handling and safety equipment.

COURSE DESCRIPTIONS

CHEM-006 Introduction to Inorganic and Physical Chemistry

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: MATH-025, MATH-029 or equivalent or one year of high school algebra

An introduction to inorganic chemistry and physical concepts relevant to chemistry, focused toward the understanding of structure and properties of matter. Topics include scientific measurements, metric units, unit conversions, atomic structure, naming chemical compounds, types of chemical reactions, chemical formulas, mole, stoichiometry, chemical bonding, gases, solutions and acid-base chemistry. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C

CHEM-007 Introduction to General, Organic and Biochemistry

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: MATH-025, MATH-029 or its equivalent or one year of high school algebra

This course is a one-semester survey of the principles of general, organic, and biochemistry. Satisfies the chemistry prerequisite of health career programs requiring only one semester of chemistry, including Kinesiology and most nursing programs at CSUs and four-year colleges. It is one option to fulfill the chemistry prerequisite for LMC Microbiology (BIOSC-050). May not be repeated. LR

LMC: DA

TRANSFER: CSU Gen. Ed. Area B1, B3

CHEM-025 General College Chemistry I

54 total hours lecture, 108 total hours lab
5 Units

PREREQUISITE: CHEM-006 or (one year of High School chemistry); MATH-029, MATH-030

Chemistry 25 is the first semester of a one year sequence focused on the fundamental principles of chemistry that fulfills the general chemistry requirement for students in chemistry, biochemistry, engineering, life science, physics, pre-dental, and pre-medical programs. Students will gain knowledge in the foundations of atomic and molecular structure, nomenclature, physical and chemical changes of matter, fundamentals of chemical reactivity, chemical bonding, thermochemistry and the properties of gases. Throughout the course, skills in critical thinking, problem-solving, analysis skills, and effective learning will be developed. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID CHEM 110, C-ID CHEM 120S

CHEM-026 General College Chemistry II

54 total hours lecture, 108 total hours lab
5 Units

PREREQUISITE: CHEM-025 or equivalent

CHEM-026 is the second semester of a one year course and fulfills the general chemistry requirement for students in chemistry, biochemistry, engineering, life science, physics, pre-dental, and pre-medical programs. Topics include solutions, colligative properties, equilibrium, acids and bases, kinetics, thermodynamics, electrochemistry, coordination chemistry, nuclear, organic and biological chemistry. Laboratory emphasizes quantitative techniques, including instrumentation, and qualitative analysis. May not be repeated. SC

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID CHEM 120S, C-ID CHEM 110

CHEM-028 Organic Chemistry

54 total hours lecture, 108 total hours lab
5 Units

PREREQUISITE: CHEM-026

CHEM-028 is a study of the physical and chemical properties of organic compounds. The principles and practice of common synthetic and analytical procedures will be introduced. This is the first semester of a two-semester organic chemistry sequence. CHEM-028 explores the chemistry of alkanes, alkenes, alkynes, and alkyl halides, along with stereochemistry and modern techniques of spectroscopy. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID CHEM 150, C-ID CHEM 160S

CHEM-029 Organic Chemistry

54 total hours lecture, 108 total hours lab
5 Units

PREREQUISITE: CHEM-028

CHEM-029 is a study of the physical and chemical properties of organic compounds. The principles and practice of common synthetic and analytical procedures will be introduced especially retrosynthetic analysis. This is the second semester of a two-semester organic chemistry sequence. CHEM-029 explores the chemistry of aromatics, alcohol's, ethers, aldehydes, ketones, carboxylic acids & derivatives, carbonyl substitution & condensation reactions, retrosynthesis and selected biomolecules. The techniques of instrumental analysis that were introduced in CHEM-028 will be further explored in the context of these new organic families. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID CHEM 160S

CHEM-098 Independent Study in Chemistry

Provides students an opportunity to design and pursue their own interests within a particular area. Projects reflecting cultural diversity and/or societal issues will be greatly encouraged. A contract must be drawn between the student and the instructor stipulating the goals of the independent study, the content, the method of approach, the estimated time involved, and the periodic evaluation to be used. Minimum 1 hour per week with instructor plus 54 hours of contracted work for each unit of credit. May not be repeated. SC

LMC: Independent study courses may be DA or transferable depending on specific course. See your counselor.

TRANSFER: Independent study courses may be DA or transferable depending on specific course. See your counselor.

CHEM-900s Selected Topics in Chemistry

DA varies with course content.

Child Development

DEGREE–Associate in Science for Transfer
Early Childhood Education

Associate Degree for Transfer™

CERTIFICATE OF ACHIEVEMENT–Child Development

COLLEGE SKILLS CERTIFICATES–Child Development

- Assistant Teacher Permit Coursework
- Associate Teacher Permit Coursework
- Specialization: Infant Toddler Care
- Curriculum in Early Childhood Specialization Certificate
- Specialization: Special Needs Care & Education
- Specialization: Administration of Director Early Childhood Programs
- Specialization: School Age Care
- School-Age Development and Education Skill Certificate
- School-Age Associate Teacher

The Child Development Department prepares you for careers with children, such as early childhood educator, Head Start teacher, family child care provider, center director/site supervisor and elementary school teacher. Courses in our department also ready you for transfer to four year universities in majors such as human development, child development, liberal studies towards a teaching credential, and early childhood education. Parents and future parents will also benefit from the coursework as it prepares all adults to work successfully with children. We also offer specialization coursework as it prepares you to work with infants and toddlers, children with special needs and school age children in addition to coursework that meets the requirement to become a center director/site supervisor. The curriculum is a combination of classroom teaching, laboratory practicum experiences and community site visits based on a philosophy of active learning. Many courses are also available in an online format.

ASSOCIATE IN SCIENCE

EARLY CHILDHOOD EDUCATION FOR TRANSFER DEGREE

The Associate in Science Degree in Early Childhood Education for Transfer is a 60-unit degree program designed to prepare students to transfer and study child development, human development, early childhood education, liberal Studies, family and consumer science, sociology and family studies. The program, which requires 25 units of lower division work in child development is combined with the California State University General Education pattern of 40-42 units. Up to 6 units may be double-counted toward the 25 unit major coursework in the CSU GE pattern so the degree can be achieved in 60 units. Students will be prepared to take upper division courses their first semester after transferring. Typically, students who complete this program will be able to complete their upper division coursework in only two additional years.

EMS-180 Internship in Emergency Medical Services

30-300 total hours
.5-4 Units

PREREQUISITE: Approved online application and employer placement

ADVISORY: Eligibility for ENGL-095

This course is for students who have declared a major, have taken classes in the major, and are ready for on-the-job experience in a paid or unpaid position. An internship involves working in a skilled or professional level assignment in the area of a student's vocational or academic major or field of interest. Students, with faculty and employer approval, will apply college-acquired knowledge, skills and abilities as well as acquire new learning to prepare for a career in their chosen filed. Students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn a maximum of 16 units of occupational work experience internship during community college attendance which may be applied as electives toward graduation. 12 units are transferable to CSU. SC

LMC: DA

TRANSFER: CSU

EMS-900s Selected Topics in Emergency Medical Services

DA varies with course content.

Engineering

DEGREE–Associate of Science
Engineering

Engineers design and oversee the construction of the structures, vehicles, devices, and processes that solve the technological problems facing society. Engineering is a profession with both licensing requirements and a code of ethics.

The LMC Engineering Program offers a solid foundation for upper division studies in most engineering fields, including mechanical engineering, civil engineering, electrical engineering, aerospace engineering, industrial engineering, and many other engineering disciplines. Students who complete the program will have finished most or all of the lower division courses required for transfer to four-year engineering programs. Graduates of the Engineering Program at LMC will also be able to: identify and solve engineering problems, perform and interpret experiments, produce designs to meet various needs, demonstrate professional ethics, communicate effectively, judge how engineering projects affect society and the environment, engage in lifelong learning, and use the tools and techniques necessary for modern engineering practice.

For the Associate of Science Degree in Engineering, complete 55 units of coursework listed below as well as the General Education requirements. Consult a Los Medanos College counselor to develop your education plan.

REQUIRED COURSES:		UNITS
ENGIN-010	Introduction to Engineering	**3**
ENGIN-020	Programming with C++ for Engineers and Scientists	**4**
or		
ENGIN-022	Programming with MATLAB for Engineers and Scientists	**4**
ENGIN-025	Engineering Graphics	**3**
ENGIN-030	Materials Science	**4**
ENGIN-045	Engineering Circuits	**3**
CHEM-025	General College Chemistry	**5**
PHYS-040	Physics for Scientists and Engineers I	**4**
PHYS-041	Physics for Scientists and Engineers II	**4**
PHYS-042	Physics for Scientists and Engineers III	**4**
MATH-050	Calculus and Analytic Geometry I	**4**
MATH-060	Calculus and Analytic Geometry II	**4**
MATH-070	Calculus and Analytic Geometry III	**4**
MATH-080	Differential Equations	**3**
TOTAL UNITS		**49**

AND SELECT TWO RESTRICTED ELECTIVES FROM:		
ENGIN-036	Engineering Statics	**3**
ENGIN-038	Manufacturing Processes	**3**
ENGIN-046	Engineering Dynamics	**3**
MATH-075	Linear Algebra	**3**
TOTAL UNITS FOR THE MAJOR		**55**
TOTAL UNITS FOR THE DEGREE		**60+**

The courses required for transfer vary depending on the transfer destination institution and the desired engineering discipline.

IGETC is NOT appropriate for this major. Students interested in engineering should meet with a counselor to plan their schedules as soon as possible.

Program Student Learning Outcomes

1. Apply knowledge of math, science, and engineering to identify, formulate, and solve engineering problems.
2. Design and perform experiments, as well as to analyze and interpret data.
3. Design a system, component, or process to meet desired needs.
4. Demonstrate professional ethical responsibility.
5. Communicate effectively and perform on multi-disciplinary teams.
6. Judge the effects of engineering projects on society and the environment.
7. Engage in life-long learning and explain contemporary issues.
8. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

COURSE DESCRIPTIONS

ENGIN-010 Introduction to Engineering

54 total hours lecture, 18 total hours lab
3 Units

PREREQUISITE: MATH-040 or equivalent

ADVISORY: Eligibility for ENGL-100

This course introduces the engineering profession. It includes the worldwide history of engineering and its influences on society and reviews the major engineering disciplines and the requirements for becoming an engineer. The course also introduces engineering reports, graphics, and presentations. Engineering calculations and a design project are an integral part of the course. Engineering ethics and the need for lifelong learning are also discussed. "An optional materials fee may be required." May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC, CSU

ENGIN-020 Programming with C++ for Engineers and Scientists

54 total hours lecture, 54 total hours lab
4 Units

PREREQUISITE: MATH-050

ADVISORY: Eligibility for ENGL-100

This course teaches computer programming using the C++ programming language's syntax, control, and data structures. It includes object oriented programming techniques, introduces numerical techniques for scientific and engineering applications, and emphasizes optimal programming practices. Various aspects of the software life-cycle, including design, documentation, implementation, debugging, testing, and maintenance are introduced. Case studies and software projects are significant parts of the course. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

ENGIN-022 Programming with MATLAB for Engineers and Scientists

54 total hours lecture, 54 total hours lab
4 Units

CO-REQUISITE: MATH-060

ADVISORY: Eligibility for ENGL-100

This course teaches computer programming using the MATLAB's syntax, control, and data structures. It includes object oriented programming techniques, introduces numerical techniques for scientific and engineering applications, and emphasizes optimal programming practices. Various aspects of the software life-cycle, including design, documentation, implementation, debugging, testing, and maintenance are introduced. Case studies and software projects are significant parts of the course. Offered in the Fall semester. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

ENGIN-025 Engineering Graphics

36 total hours lecture, 72 total hours lab
3 Units

ADVISORY: ENGIN-010; eligibility for ENGL-100

This course introduces descriptive geometry and engineering graphics techniques. Techniques include freehand and instrument drawing, while the primary emphasis is on computer aided drafting. Applications of descriptive geometry include orthographic drawings, sectional views, and auxiliary views. Axonometric, oblique, and perspective drawings are also covered. Other topics include revolutions, tolerances, dimensions, fasteners, springs, detail drawings, and assembly drawings. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

ENGIN-030 Materials Science

54 total hours lecture, 54 total hours lab
4 Units

PREREQUISITE: CHEM-025 and PHYS-040

ADVISORY: Eligibility for ENGL-100

This is a lecture and lab course that investigates the relationships between microscopic structures and the macroscopic properties of engineering materials--including metals, ceramics, glasses, polymers, and composites. Mechanical, thermal, electrical, magnetic, and optical properties are also examined. Processes for producing and strengthening various materials are introduced. Certain failure mechanisms are also studied. "An optional materials fee may be applied." Offered in the Fall semester. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

ENGIN-036 Engineering Statics

54 total hours lecture, 18 total hours lab
3 Units

PREREQUISITE: PHYS-040

ADVISORY: Eligibility for ENGL-100

This course is an introduction to the application of the concept of mechanical equilibrium to engineering problems. This course covers force systems in the context of supports, two force members and multi-force members, cables, truss structures, frames, and machines; geometrical properties, such as centroids and moments of inertia; friction, the method of virtual work, and sketching shear and bending moment diagrams. Problem solving methods include analytical, graphical, and computer techniques. "An optional materials fee may be applied." Offered in the Fall semester. May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

ENGIN-038 Manufacturing Processes

36 total hours lecture, 54 total hours lab
3 Units

PREREQUISITE: ENGIN-025

CO-REQUISITE: Prior or concurrent enrollment in ENGIN-030

ADVISORY: Eligibility for ENGL-100

This course is an introduction to manufacturing processes, including: CNC machining, casting, forcible deformation processes, sintering, microfabrication, 3D printing, injection molding, and joining processes. Economic, environmental, and workability issues are examined to determine optimal manufacturing processes. An optional materials fee may be applied. May not be repeated. LR

LMC: DA

TRANSFER: *UC, CSU*

ENGIN-045 Engineering Circuit Analysis

54 total hours lecture, 54 total hours lab
4 Units

PREREQUISITE: PHYS-041

CO-REQUISITE: Prior or concurrent enrollment in MATH-080

ADVISORY: Eligibility for ENGL-100

This is an introduction to electrical circuit analysis. It starts with passive d.c. circuits, includes controlled sources, and progresses to network analysis, including superposition, Thevenin and Norton equivalents, node and mesh analysis techniques. The course also includes analysis of circuits with energy storage elements, along with transient responses that are described by first- and second-order differential equations. The ideal op-amp model is introduced. Alternating current circuit analysis is developed, including the use of phasors, and applications are made to transformers, single phase, and three phase circuits. The course includes computer modeling of circuits. "An optional materials fee may be applied". May not be repeated. LR

LMC: DA

TRANSFER: UC, CSU

ENGIN-046 Engineering Dynamics

54 total hours lecture
3 Units

PREREQUISITE: ENGIN-036

ADVISORY: Eligibility for ENGL-100

This course covers dynamics for engineering applications. It includes the kinematics and dynamics of particles, systems of particles, and rigid bodies in two and three dimensions. Also included are orbital motion, vibrations, Euler angles, and variable mass systems. May not be repeated. LR

LMC: DA

TRANSFER: *UC, CSU*

ENGIN-098 Independent Study in Engineering

Provides students an opportunity to design and pursue their own interests within a particular area. Projects reflecting cultural diversity and/or societal issues will be greatly encouraged. A contract must be drawn between the student and the instructor stipulating the goals of the independent study, the content, the method of approach, the estimated time involved, and the periodic evaluation to be used. Minimum 1 hour per week with instructor plus 54 hours of contracted work for each unit of credit. May not be repeated. SC

LMC: Independent study courses may be DA or transferable depending on specific course. See your counselor.

TRANSFER: Independent study courses may be DA or transferable depending on specific course. See your counselor.

ENGIN-170 Occupational Work Experience Education in Engineering

60-300 total hours
1-4 Units

PREREQUISITE: Approved online application

ADVISORY: Eligibility for ENGL-095

This course is for students whose work is related to their major. Occupational Work Experience Education provides students with opportunities to develop marketable skills in preparation for employment or advancement within their current job. To participate in cooperative work experience education, students must be employed or formally volunteer and undertake new or expanded responsibilities. Students, with faculty and employer approval, will develop and successfully complete one learning objective for each unit of credit in which they enroll. Additionally, students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn up to 8 units per semester and may repeat for a maximum of 16 units of occupational work experience during community college attendance which may be applied as electives toward graduation. SC

LMC: DA

TRANSFER: CSU

ENGIN-180 Internship in Engineering

30-300 total hours
.5-4 Units

PREREQUISITE: Approved online application and employer placement

ADVISORY: Eligibility for ENGL-095

This course is for students who have declared a major, have taken classes in the major, and are ready for on-the-job experience in a paid or unpaid position. An internship involves working in a skilled or professional level assignment in the area of a student's vocational or academic major or field of interest. Students, with faculty and employer approval, will apply college-acquired knowledge, skills and abilities as well as acquire new learning to prepare for a career in their chosen filed. Students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn a maximum of 16 units of occupational work experience internship during community college attendance which may be applied as electives toward graduation. 12 units are transferable to CSU. SC

LMC: DA

TRANSFER: CSU

ENGIN-900s Selected Topics in Engineering

DA varies with course content.

English

DEGREE–Associate in Arts Degree for Transfer
English

Associate Degree for Transfer™

The Associate in Arts in English for Transfer at Los Medanos College is designed to prepare students to transfer and study at a California State University.

To earn the Associate in Arts Degree for Transfer:

1. Complete the CSU General Education Breadth (CSU GE Breadth) or the Intersegmental General Education Transfer Curriculum (IGETC) requirements.
2. Complete the required major requirements listed below. All courses in the major must be completed with a grade of C or better or a "P" if the course is taken on a "pass-no pass" basis.
3. Complete 60 CSU transferable units (including the General Education and major requirements).

REQUIRED CORE COURSES:		UNITS
ENGL-221	Advanced Composition and Critical Thinking	3
ENGL-230	Thinking/Writing Critically about Literature	3
TOTAL UNITS		6
LIST A: SELECT TWO COURSES (6 UNITS)		
ENGL-140	Survey of World Literature 1	3
ENGL-145	Survey of World Literature 2	3
TOTAL UNITS		6
LIST B: SELECT ONE COURSE (3 UNITS)		
ENGL-111	Creative Writing	3
ENGL-127	The Mythology of Ethnic Americans	3
ENGL-128	Asian American Literature	3
ENGL-129	Introduction to Contemporary African-American Literature	3
ENGL-132	Literature of the Imagination	3
ENGL-133	Reflections: Representations of Race	3
ENGL-205	California Literature	3
ENGL-220	Critical Analysis and Literature	3
ENGL-231	Mystery & Detective Fiction	3
TOTAL UNITS		3
LIST C: SELECT ONE COURSE OR ONE COURSE NOT ALREADY USED FROM LIST B		
ENGL-112	Genres in Creative Writing	3
HUMAN-024	Shakespeare's English Kings	3
JOURN-110	Writing for the Media	3
DRAMA-016	Theatre Appreciation	3
TOTAL UNITS		3
TOTAL UNITS FOR THE MAJOR		18
TOTAL UNITS FOR THE DEGREE		60

PE-170 Occupational Work Experience Education in Physical Education

60-300 total hours
1-4 Units

PREREQUISITE: Approved online application

ADVISORY: Eligibility for ENGL-095

This course is for students whose work is related to their major. Occupational Work Experience Education provides students with opportunities to develop marketable skills in preparation for employment or advancement within their current job. To participate in cooperative work experience education, students must be employed or formally volunteer and undertake new or expanded responsibilities. Students, with faculty and employer approval, will develop and successfully complete one learning objective for each unit of credit in which they enroll. Additionally, students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn up to 8 units per semester and may repeat for a maximum of 16 units of occupational work experience during community college attendance which may be applied as electives toward graduation. SC

LMC: DA

TRANSFER: CSU

PE-180 Internship in Physical Education

30-300 total hours
.5-4 Units

PREREQUISITE: Approved online application and employer placement

ADVISORY: Eligibility for ENGL-095

This course is for students who have declared a major, have taken classes in the major, and are ready for on-the-job experience in a paid or unpaid position. An internship involves working in a skilled or professional level assignment in the area of a student's vocational or academic major or field of interest. Students, with faculty and employer approval, will apply college-acquired knowledge, skills and abilities as well as acquire new learning to prepare for a career in their chosen filed. Students must work 75 paid hours or 60 non-paid hours for each unit of credit earned. Students may earn a maximum of 16 units of occupational work experience internship during community college attendance which may be applied as electives toward graduation. 12 units are transferable to CSU. SC

LMC: DA

TRANSFER: CSU

PE-900s Selected Topics in Physical Education

DA varies with course content.

Physical Science

COURSE DESCRIPTIONS

PHYSC-005 General Physical Science

54 total hours lecture, 18 total hours lab
3 Units

ADVISORY: Eligibility for ENGL-100

This is an introduction to the major disciplines of physical science; physics, chemistry, earth science, and astronomy. Overarching ideas of disciplines will be emphasized, including energy and its transformations, the periodic table, plate tectonics, and the life cycles of stars. Critical thinking, relationships between the disciplines, and applications to everyday life are also emphasized. May not be repeated. LR

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area B1; IGETC Area 5A

PHYSC-098 Independent Study in Physical Science

Provides students an opportunity to design and pursue their own interests within a particular area. Projects reflecting cultural diversity and/or societal issues will be greatly encouraged. A contract must be drawn between the student and the instructor stipulating the goals of the independent study, the content, the method of approach, the estimated time involved, and the periodic evaluation to be used. Minimum 1 hour per week with instructor plus 54 hours of contracted work for each unit of credit. May not be repeated. SC

LMC: Independent study courses may be DA or transferable depending on specific course. See your counselor.

TRANSFER: Independent study courses may be DA or transferable depending on specific course. See your counselor.

Physics

DEGREE–Associate in Science for Transfer
Physics

The Associate in Science in Physics for Transfer Degree at Los Medanos College prepares students to transfer into a curriculum at a 4-year institution to pursue a baccalaureate degree in physics. This major will introduce students to many areas of study including engineering, physics, chemistry, astronomy, geology, and certain specialized majors such as architecture.

To earn the Associate Degree for Transfer:

1. Complete the CSU General Education Breadth (CSU GE Breadth) or the Intersegmental General Education Transfer Curriculum (IGETC) requirements.
2. Complete the required major requirements listed below. All courses in the major must be completed with a grade of C or better or a "P" if the course is taken on a "pass-no pass" basis.
3. Complete 60 CSU transferable units (including the General Education and major requirements).

REQUIRED COURSES:		UNITS
PHYS-040	Physics for Scientists and Engineers I	**4**
PHYS-041	Physics for Scientists and Engineers II	**4**
PHYS-042	Physics for Scientists and Engineers III	**4**
MATH-050	Calculus and Analytic Geometry I	**4**
MATH-060	Calculus and Analytic Geometry II	**4**
MATH-070	Calculus and Analytic Geometry III	**4**
TOTAL UNITS FOR THE MAJOR		**24**
TOTAL UNITS FOR THE DEGREE		**60**

8 units may double count toward the 24 unit major preparation and the CSU GE pattern. The major requires 60 total units; double counting units does not lower the required unit count for the degree. The balance of double counted units would be made up with CSU or IGETC transferable elective classes. If you are double counting units between the major and the CSU GE or IGETC pattern, you must take an additional 8 elective units to reach the 60-unit requirement for the Associate in Science in Physics for Transfer. See a counselor or department faculty for more information on suggested electives.

Program Student Learning Outcomes

1. Explain both the concerns and the main ideas of the major subfields of physics (including Mechanics, Waves and Optics, Electromagnetism, Thermodynamics and Statistical Physics, Quantum Mechanics, and other topics of Modern Physics).
2. Apply critical thinking skills to solve physics problems using theoretical, experimental, and computational techniques.
3. Explain how the ideas of physics apply to everyday situations encountered by individuals (e.g. How a heat engine works.) as well as issues facing society (e.g. How does global warming occur?).
4. Show how important physics ideas are represented, derived, and connected to each other through the language of mathematics.
5. Perform both qualitative and quantitative reasoning, along with knowledge of the relative magnitudes of physical quantities, to estimate the magnitude of certain effects upon the situation under study.
6. Design and perform simple experiments, interpret the results, and give estimates of uncertainties.
7. Synthesize multiple ideas of physics to solve problems.
8. Apply the ideas of physics to astronomy, chemistry, medicine, engineering and/or other disciplines.

COURSE DESCRIPTIONS

PHYS-015 Introduction to Physics

54 total hours lecture, 54 total hours lab
4 Units

PREREQUISITE: MATH-029, MATH-025 or equivalent; or one year high school algebra

ADVISORY: Eligibility for ENGL-100

An integrated study of physical concepts and principles with laboratory methods and techniques. An interdisciplinary approach will be used to develop an understanding of the nature of energy and matter interactions through a study of such topics as motion, thermal physics, electromagnetism, wave phenomena, and modern physics. Emphasis is placed on the creative process of scientific inquiry, on the aesthetics of science, and on the limitations and implications of scientific knowledge. Skills in critical thinking, problem-solving, and effective learning will be developed through the course. May not be repeated. SC

LMC: ADR: Natural Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C

PHYS-035 College Physics I

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: MATH-040 or equivalent

ADVISORY: PHYS-015

This course is an integrated study of the basic concepts, principles, and laws underlying physical phenomena and processes. Energy will be the unifying theme in treating mechanics, thermodynamics, and oscillations. This is the first semester of a year long course in general college physics. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID PHYS 105

PHYS-036 College Physics II

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: PHYS-035 or equivalent

This course is a continuation of PHYS-035, covering the areas of electricity and magnetism, geometrical and physical optics, fluids, sound, quantum physics, relativity, and nuclear physics. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID PHYS 110

PHYS-037 General College Physics Calculus Supplement I

9 total hours lecture
.5 Unit

CO-REQUISITE: PHYS-035; MATH-037 or MATH-050

This course, taken with PHYS-035, is equivalent to a calculus-based physics course. Students learn how to solve calculus-based physics problems in mechanics and thermodynamics, such as center of mass, moments of inertia, and the work done by a gas undergoing various types of expansion. Students will also learn how to convert from approximate, non-calculus formulas to the exact, calculus-based formulas. May not be repeated. LR

LMC: DA

TRANSFER: CSU, UC

PHYS-038 General College Physics Calculus Supplement II

9 total hours lecture
.5 Unit

CO-REQUISITE: PHYS-036, MATH-060

This course, taken with PHYS-036, is equivalent to a calculus-based physics course. Students learn how to solve calculus-based physics problems in fluid dynamics, wave phenomena, electromagnetism, and modern physics, such as atmospheric pressure variations, determining the electric field and voltage around a particular charge distribution, or determining radiation exposure. Students will also learn how to convert from approximate, non-calculus formulas to the exact, calculus based formulas. May not be repeated. LR

LMC: DA

TRANSFER: CSU, UC

PHYS-040 Physics for Scientists and Engineers I

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: Prior or concurrent enrollment in MATH-060

This is an introduction to Newtonian mechanics. Topics will include vectors, rectilinear and planar motion, Newton's Laws, work and energy, linear and angular momentum, rotational kinematics and dynamics, equilibrium, oscillations, and gravitation. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID PHYS 205

PHYS-041 Physics for Scientists and Engineers II

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: PHYS-040 and prior or concurrent enrollment in MATH-070

This course is an introduction to electricity and magnetism. Topics will include Coulomb's Law, Gauss' Law, electric fields, electric potential, Ohm's Law, DC circuits, Capacitance, magnetic fields, Faraday's Law, electric oscillations, electromagnetic waves, Maxwell's equations and AC circuits. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID PHYS 210

PHYS-042 Physics for Scientists and Engineers III

54 total hours lecture, 72 total hours lab
4 Units

PREREQUISITE: PHYS-040 and prior or concurrent enrollment in MATH-070

This course is an introduction to fluids, waves, sound, heat and thermodynamics, geometrical and physical optics and quantum physics. May not be repeated. LR

LMC: DA

TRANSFER: UC; CSU Gen. Ed. Area B1, B3; IGETC Area 5A, 5C; C-ID PHYS 215

PHYS-098 Independent Study in Physics

Provides students an opportunity to design and pursue their own interests within a particular area. Projects reflecting cultural diversity and/or societal issues will be greatly encouraged. A contract must be drawn between the student and the instructor stipulating the goals of the independent study, the content, the method of approach, the estimated time involved, and the periodic evaluation to be used. Minimum 1 hour per week with instructor plus 54 hours of contracted work for each unit of credit. May not be repeated. SC

LMC: Independent study courses may be DA or transferable depending on specific course. See your counselor.

TRANSFER: Independent study courses may be DA or transferable depending on specific course. See your counselor.

PHYS-900s Selected Topics in Physics

DA varies with course content.

Political Science

COURSE DESCRIPTIONS

POLSC-010 Introduction to American Government: Institutions and Ideals

54 total hours lecture
3 Units

ADVISORY: Eligibility for ENGL-100

A comprehensive introduction to the issues, institutions and ideals of American government, with special emphasis on the Constitutions of the United States and the State of California. The historic development of national, state and local government since the eighteenth century will be emphasized. Special attention will be paid to the rights and obligations of citizenship and our heritage of social and ethnic diversity. The completion of Political Science (POLSC) 10 partially satisfies the American History and Institutions CSU transfer requirement. May not be repeated. SC

LMC: ADR: Social and Behavioral Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area D; IGETC Area 4H; C-ID POLS 110

POLSC-020 Introduction to Politics: Institutions and Ideals

54 total hours lecture
3 Units

ADVISORY: ENGL-100

A comprehensive introduction to the issues, institutions and ideals of modern politics, with emphasis on the constitutional systems of the United States and the State of California. This course offers a thorough, fundamental survey of the basic methods, concepts and theories of political science, and the ways in which they can foster a deeper understanding of our local, national and global communities. Special attention will be paid to the rights and obligations of citizenship and the political effects of social diversity. The completion of POLSC-020 partially satisfies the U.S. History, Constitution and American Ideals CSU requirements. May not be repeated. SC

LMC: ADR: Social and Behavioral Sciences; DA

TRANSFER: UC; CSU Gen. Ed. Area D; IGETC Area 4H