COURSES

STEM COURSES

ASTRONOMY (AST)

AST 001 Astronomy (3.0 Units) 3.0 UNITS
This course covers the entire panorama of the universe including early human observations, the solar system, stars, galaxies and cosmology. Grade Only.

AST 003 Astronomy With Lab (3.0 Units/1.0 Unit) 4.0 UNITS
This course covers the entire panorama of the universe including the observations of the night sky, the solar system, stars, galaxies and cosmology. Grade Only.

AST 003H Astronomy With Lab - Honors (3.0 Units/1.0 Unit) 4.0 UNITS
This course covers the entire panorama of the universe including the observations of the night sky, the solar system, stars, galaxies and cosmology. Students cannot get credit for both ASTRO 003 and ASTRO 003H. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

AST 004 Astrobiology - Life in the Universe (3.0 Units) 3.0 UNITS
This course examines the astronomical influences on life on Earth and the possibility of life other places in the Universe. We study the chemical basis for life, the origin, evolution, and constraints of life on Earth, and the markers of life that may be seen in the Universe.

BIOLOGICAL SCIENCES (BIO)

BIO 001A General Biology: Cells (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite CHM 001A ; Prerequisite MAT 000C or any higher math ; and Prerequisite BIO 010 or Prerequisite BIO 011 ; Advisory CHM 001B This course is a comprehensive introduction to cell and molecular biology, and is designed for students intending to transfer to majors in the biological sciences as well as for those seeking to enter professional programs such as medicine or pharmacy. Grade Only.

BIO 001AH General Biology: Cells-Honors (3.0 Units/2.0 Lab) 5.0 UNITS
This honors course is a comprehensive introduction to cell and molecular biology, and is designed for students intending to transfer to majors in the biological sciences as well as for those seeking to enter professional programs such as medicine or pharmacy. Students may not receive credit for both BIOSC 001A and BIOSC 001AH. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

BIO 001B General Biology: Organisms (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite BIO 001A This course examines the unity and diversity of multicellular life, ecological and evolutionary principles, and form/function relationships in plants and animals. The course is designed for students majoring in the biological sciences or seeking entry to professional programs such as Medicine, Pharmacy, and Dentistry.

BIO 004 Microbiology (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite CHM 001A or Prerequisite CHM 060 or Prerequisite CHM 030A or Prerequisite CHM 030B ; and Prerequisite BIO 010 and Prerequisite BIO 010L , or Prerequisite BIO 011 or Prerequisite BIO 022 or Prerequisite BIO 041 or Prerequisite BIO 043 or Prerequisite BIO 048 This course is intended for nursing and other health-science majors. Lecture topics include the morphology and physiology of the major groups of microorganisms, microbial genetics, mechanisms of infection and disease, and the human immune response to infection. Laboratory activities focus on the culture and identification of bacteria of medical importance.

BIO 010 Introduction to Biology (3.0 Units) 3.0 UNITS
BIO 010 is an introductory course in biology designed for the non-biological sciences major. Topics include cell structure and function, energy exchange and life processes, taxonomy, ecology, heredity, diversification and evolution. This lecture course may be taken with or without BIOSC 010L, Introduction to Biology Lab.

BIO 010L Introduction to Biology Lab (1.0 Unit) 1.0 UNIT
Corequisite BIO 010 or Prerequisite BIO 010 This is an introductory general biology laboratory course designed for non-science majors. All students who enroll in this lab course must also enroll in a BIO 010 lecture.

BIO 011 Human Biology (3.0 Units/1.0 Unit) 4.0 UNITS
This course is an introduction to biology concepts and principles, using humans as a model. BIOSC 011 satisfies the same general education requirement as BIOSC 010.

BIO 012 Emerging Infectious Diseases (3.0 Units) 3.0 UNITS
In this introductory biology course, learn how infectious agents cause disease, and what factors are leading to the emergence of new diseases such as mad cow, SARS, and drug-resistant tuberculosis.

BIO 014 Introductory Neuroscience (3.0 Units) 3.0 UNITS
This course is an introduction to the organization and functions of the nervous system. The physiology of the brain and senses are discussed. Emotions, sleep, language, attention, memory, and a survey of nervous system disorders are explored.

BIO 014H Introductory Neuroscience Honors (3.0 Units) 3.0 UNITS
Total Lecture: 54 hours. Advisory: (ENG 001A or ENG 001AX) and REA 054. Acceptable for credit: University of California, California State University. This honors course is an introduction to the organization and functions of the nervous system. The physiology of the brain and senses are discussed. Emotions, sleep, language, attention, memory and a survey of nervous system disorders are explored. Pass/No Pass Option

BIO 016 Marine Biology (3.0 Units/1.0 Unit) 4.0 UNITS
This four unit course introduces students of all disciplines to ocean ecology and marine life. Topics are explored through classroom learning and seven required field trips to local marine habitats and research facilities in the San Francisco and Monterey Bays. Some field trips may extend beyond regularly scheduled class meeting time. Students arrange their own transportation to the field sites.

BIO 017 Genetics and Society (3.0 Units) 3.0 UNITS
This course is a broad survey of genetics, with a focus on the societal impacts of topics in genetics such as human genetic disease, biotechnology, reproductive technologies, and evolution. This course is a broad survey of genetics, with a focus on the societal impacts of topics in genetics such as human genetic disease, biotechnology, reproductive technologies, and evolution. It is designed for the general education student.

BIO 017H Genetics and Society - Honors (3.0 Units) 3.0 UNITS
This course is a broad survey of genetics, with a focus on the societal impacts of topics in genetics such as human genetic disease, biotechnology, reproductive technologies, and evolution. The honors component involves an in-depth analysis of specific topics, using current information from research journals. Students cannot get credit for both BIOSC 017 and BIOSC 017H. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

BIO 018 The Biology Of Cancer (3.0 Units) 3.0 UNITS
Total Lecture: 54 hours. Acceptable for credit: University of California, California State University. This course introduces the basic principles underlying the development and treatment of cancer. Normal cell biology processes are contrasted with the genetic and cellular changes that lead to the development of cancer. Current topics in scientific and clinical research on cancer biology will be explored. Pass/No Pass Option. CSUGE: B2; IGETC: 5B.

BIO 018H The Biology Of Cancer - Honors (3.0 Units) 3.0 UNITS
Total Lecture: 54 hours. Acceptable for credit: University of California, California State University. This honors course introduces the basic principles underlying the development and treatment of cancer. Normal cell biology processes are contrasted with the genetic and cellular changes that lead to the development of cancer. Current topics in scientific and clinical research

on cancer biology will be explored. This is the honors version of BIO 018. Students cannot get credit for both BIO 018 and BIO 018H. Enrollment in the Honors Program is required. Pass/No Pass Option. CSUGE: B2; IGETC: 5B.

BIO 019 Oceans: Life in the Sea (3.0 Units) 3.0 UNITS
This non-majors course surveys the biological principles of marine science. It provides an overview of the ocean environment, diversity of marine life, basic ecological principles and types of marine ecosystems. The relationship between humans and the ocean is emphasized, focusing on conservation biology and sustainability.

BIO 022 Anatomy & Physiology for Allied Health Workers (3.0 Units/1.0 Unit) 4.0 UNITS
This course is an overview of the normal structure and function of the human body and is designed to provide a foundation for the study of disease and dysfunction in the clinical setting. BIOSC 022 is designed to meet the state board requirements for VN and PT programs.

BIO 025 Environmental Biology (3.0 Units) 3.0 UNITS
This course is designed for student of all disciplines to introduce a wide range of contemporary biological topics that will affect their lives; e.g., population growth and control, environmental problems, genetic manipulation, nutrition, energy issues, etc.

BIO 030 Tropical Ecology (3.0 Units) 3.0 UNITS
The amazing diversity of life in the tropics is the subject of this introductory level class. Students explore rainforest inhabitants and their relationships, and learn about their value and conservation. This lecture course may be taken with or without BIOSC 030L, Tropical Ecology Lab.

BIO 031L Tropical Ecology Field Studies (1.0 Unit) 1.0 UNIT
Total Lab: 54 hours Acceptable for credit: University of California (Pending), California State University In this introductory level laboratory class, students carry out research methods that ecologists use to observe and investigate tropical ecosystems. This course includes a field trip to Costa Rica. Students who take this course are not required to complete BIO 30, the lecture course in Tropical Ecology. Pass/No Pass Option.

BIO 032 California Plants and Animals (3.0 Units/1.0 Unit) 4.0 UNITS
This field course explores the ecology of California flora and fauna through studies of plants and animals in terrestrial and aquatic ecosystems within the San Francisco Bay region.

BIO 042 Principles of Plant Biology (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite High School or College biology course and Prerequisite MAT 000C and Prerequisite CHM 001A This is a course for biology majors that examines principles of botany through comprehensive studies of the major plant, fungi and algal phyla, with emphasis on structure, function and evolution of vascular plants. Ecological principles are also discussed.

BIO 047 Human Anatomy (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite BIO 010 and Prerequisite BIO 010L ; or Prerequisite BIO 011 , or Prerequisite BIO 022 , or Prerequisite BIO 041 , or Prerequisite BIO 043 This course is a detailed lecture and laboratory study of the gross and microscopic structures of the human body in preparation for careers in nursing,physical therapy, occupational therapy, kinesiology, etc.

BIO 048 Human Physiology (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite BIO 047 ; and Prerequisite CHM 001A or Prerequisite CHM 001AH or Prerequisite CHM 030A or Prerequisite CHM 060 ; Advisory MAT 000C or Advisory MAT 000CM This course provides students with a basic understanding of the physiological mechanisms underlying body function, including the chemical and cellular basis for the workings of the nervous, muscular, cardiovascular, respiratory, renal and digestive systems. The laboratory portion familiarizes students with scientific analysis and research techniques.

BIO 048H Human Physiology - Honors (3.0 Units/2.0 Lab) 5.0 UNITS
This course provides students with a basic understanding of the physiological mechanisms underlying body function, including the chemical and cellular basis for the workings of the nervous, muscular, cardiovascular, respiratory, renal and digestive systems. The laboratory portion familiarizes students with scientific analysis and research techniques. The honors component involves an in-depth analysis of specific topics, using current information from research journals. Students cannot get credit for both BIOSC 48 and BIOSC 48H. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

CHEMISTRY (CHM)

CHM 001A General Chemistry (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite: CHM 002 or High School Chemistry with a "B" or better ; and MAT 000C or MAT 000CM. This course is pre-professional chemistry for students planning a career in science related fields. High school Chemistry with a B or better is required.

CHM 001AH General Chemistry I - Honors (3.0 Units/2.0 Lab) 5.0 UNITS
Chemistry 001A is the first of a two-semester of general college-level inorganic chemistry series designed for students majoring in biology, chemistry, engineering, pre-med, and other fields demanding rigorous scientific preparation. Not recommended for nursing. Students cannot get credit for both CHM 001A and CHM 001AH. High school Chemistry with a B is also required. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

CHM 001B General Chemistry (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite: CHM 001A or CHM 001AH. This course is a continuation of CHM 001A (General Chemistry I) and is intended for majors in chemistry, biological sciences, engineering, and professional programs in medicine and pharmacy. Topics include chemical kinetics, chemical equilibrium, thermodynamics, electrochemistry, chemistry of the transition elements, and selected topics in nuclear chemistry.

CHM 001BH General Chemistry II - Honors (3.0 Units/2.0 Lab) 5.0 UNITS
This course is a continuation of CHEM 001A (General Chemistry I) and is intended for majors in chemistry, biological sciences, engineering, and professional programs in medicine and pharmacy. Topics include chemical kinetics, chemical equilibrium, thermodynamics, electrochemistry, chemistry of the transition elements, and selected topics in nuclear chemistry. Students cannot get credit for both CHEM 001B and CHEM 001BH. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

CHM 002 Introductory Chemistry (3.0 Units) 3.0 UNITS
Prerequisite MAT 000C or any MAT course higher than MAT 000C. This is a preprofessional chemistry course designed for students planning a career in science-related fields and to prepare students for CHM 001A.

CHM 002L Introductory Chemistry Laboratory (1.0 Unit) 1.0 UNIT
Corequisite CHM 002 or Prerequisite CHM 002 This course is a laboratory component to accompany CHM 002: Introductory Chemistry.

CHM 012A Organic Chemistry I (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite: CHM 001B or CHM 001BH. This course is a study of the fundamentals of organic chemistry with emphasis on underlying concepts. It is recommended for chemistry majors, chemical engineering majors, and most biology majors, pre-pharmacy, pre-medical and pre-dental students.

CHM 012AH Organic Chemistry I - Honors (3.0 Units/2.0 Lab) 5.0 UNITS
This course is a study of the fundamentals of organic chemistry with emphasis on underlying concepts. It is recommended for chemistry majors, chemical engineering majors, and most biology majors, pre-pharmacy, pre-medical and pre-dental students. Students cannot get credit for both CHEM 012A and CHEM 012AH. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

CHM 012B Organic Chemistry II (3.0 Units/2.0 Lab) 5.0 UNITS
Prerequisite: CHM 012A or CHM 012AH. This course is the continuing study of the fundamentals of organic chemistry with emphasis on underlying concepts. It is recommended for chemistry majors, chemical engineering

majors, and most biology majors, pre-pharmacy, pre-medical and pre-dental students.

CHM 012BH Organic Chemistry II - Honors (3.0 Units/2.0 Lab) 5.0 UNITS

This honors course is the continuing study of the fundamentals of organic chemistry with emphasis on underlying concepts. It is recommended for chemistry majors, chemical engineering majors, and most biology majors, pre-pharmacy, pre-medical and pre-dental students. Students cannot get credit for both CHM 012B and CHM 012BH. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

CHM 030A Fundamentals of Chemistry (3.0 Units/1.0 Unit) 4.0 UNITS

Prerequisite MAT 903 or Prerequisite MAT 903M or higher CHM 030A is an introductory chemistry course designed for nursing and allied-health majors. Topics include dimensional analysis, inorganic nomenclature, atomic and molecular structure, bonding, chemical reactions, gas laws, solutions, acids-bases, oxidation-reduction, equilibrium and electrolyte systems. This course is not recommended for students majoring in biology or chemistry or for those seeking entry to professional programs in medicine or pharmacy.

CHM 060 Survey of General, Organic, and Biological Chemistry (3.0 Units/1.0 Unit) 4.0 UNITS

Prerequisite MAT 903 or Prerequisite MAT 903M or any higher math Chemistry 060 is a one-semester survey of General, Organic, and Biological Chemistry designed for students majoring in health sciences such as nursing or physical therapy.

COMPUTER INFORMATION SYSTEMS (CIS)

CIS 001 Introduction To Computer Science And Technology (4.0 Units) 4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Acceptable for credit: University of California, California State University. This course is an introduction to the concepts of computer science and information technology. It covers computer architecture, the Internet and networking, and basic programming and data manipulation. Students develop a practical, realistic understanding of computer science and information technology. This course is recommended for students in any major who want to learn about computers and programming. Pass/No Pass Option.

CIS 008 Advanced Python Programming (3.0 Units/1.0 Unit) 4.0 UNITS

This is an advanced course in Python programming that covers features of the language and its libraries. Students learn about parallel programming using threads and processes, network programming (client-side and server-side), database programming and persistence, text processing and regular expressions, and HTML and XML parsing.

CIS 033 Robotics and Embedded System (3.0 Units/1.0 Unit) 4.0 UNITS

Advisory: CIS 037A and CIS 039 This course is an introduction to microcontrollers and interfacing. It covers the basic hardware components such as LEDs, switches, motors and sensors needed to build a robot and introudces the components needed for the drone hardware. In addition it includes programming of the microcontroller.

CIS 034 Robotics and Embedded System (4.0 Units) 4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Advisory: CIS 033. Acceptable for Credit: California State University. This is an intermediate course in Robotics and embedded systems. This course covers Raspberry PI and Python programs to control the robot camera, get sensor information and send control signals to the robot. It covers remote communication using Zigbee, graphical LCD, locating robot using GPS, interfacing I2C and SPI devices. Robot Operating System (ROS) and artificial intelligence applied to robots is introduced. Pass/No Pass Option.

CIS 037A Introduction to C Programming (3.0 Units/1.0 Unit) 4.0 UNITS

This course is an introduction to the concepts and methods of computer programming using C language. The course covers data types, expressions, control structures, functions, sequential files, arrays, pointers, strings, string library and ADTs. It also covers low level programming elements such as memory manipulations, pass-by reference pointers, structs and bit level manipulation.

CIS 039 Introduction to Computer Systems (2.5 Unitss/0.5 Lab) 3.0 UNITS

This course provides a solid introduction to computer systems and machine language programming. Students learn the inner working of computer systems, instruction sets, assembly language programming, and data representation. Students also learn how to understand the code that a compiler generates, the memory layout and hierarchy, and the details of linking and loading.

CIS 040 C++ Programming (3.0 Units/1.0 Unit) 4.0 UNITS

Advisory: CIS 037A This is an introductory course in programming using C++. Students learn to design, code, and execute programs using the C++ programming language. This class includes control structures, functions, object-oriented programming concepts and topics.

CIS 043 Software Development With Java Programming (3.0 Units/1.0 Unit) 4.0 UNITS

This course is an introduction to the concepts and methods of computer programming with an emphasis on OOP (Object-Oriented Programming), using Java programming language. This course also includes applets, GUI (graphical user interface), arrays lists, arrays, streams and exception handling.

CIS 044 Intro to Data Structures Using Java (3.0 Units/1.0 Unit) 4.0 UNITS

This course is an advanced course in Java Programming Language. It covers basic data structures such as stacks, lists, dynamic arrays, trees, and the algorithms of their implementation.

CIS 045 Linux Essentials I (2.5 Unitss/0.5 Lab) 3.0 UNITS

This is an introductory course in the Linux operating system. Students learn the basic Linux commands and utilities, including files, editors and shell scripting.

CIS 047 Linux System Administration I (3.0 Units/1.0 Unit) 4.0 UNITS

This is an introductory course in Linux system administration. Students learn hands-on skills for Linux administration, including system initialization, file system management, user and services administration and network configuration.

CIS 051 Introduction To Data Analysis (4.0 Units)4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Advisory: CIS 007. Acceptable for credit: California State University. This is an introductory course on data analysis. It provides a foundation for understanding data analysis principles, tools and applications. Topics include data loading and storage, data manipulation, data cleaning and preparation, data wrangling, plotting, visualization and analysis. Students will use Python programming language and Python libraries such as NumPy, Pandas, Matplotlib in the course. Pass/No Pass Option.

CIS 052 Data Visualization (4.0 Units) 4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Acceptable for credit: California State University. In this course students will learn how to become a master at communicating business-relevant implications of data analyses. After finishing this course, students will be able to effectively import data, clean and transform it and convey the results of the analysis to the stakeholders. Students will learn how to best convey the story behind the data using the most effective visuals as well as using Tableau to make effective and interactive dashboards. Pass/No Pass Option.

CIS 053 Introduction To Machine Learning (4.0 Units) 4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Advisory: CIS 051. Acceptable for credit: California State University. This course is an introductory course in machine learning and predictive analytics. Students will learn the fundamentals of developing models with cleaned and prepared data. They will gain an understanding of the algorithms of machine learning and learn to build predictive models using Python. Topics included-supervised learning, forecasting numeric values with multiple linear regression, decision trees and unsupervised learning. Students will use machine learning Python libraries such as scikit-learn to implement machine learning algorithms. Pass/No Pass Option.

CIS 055 Introduction to Database and SQL (2.5 Unitss/0.5 Lab) 3.0 UNITS

This course covers the concepts of relational databases and SQL query language. Students learn to create tables, insert data, update data and retrieve records in a database. This course introduces students to widely used database systems such as Oracle, Microsoft SQL server, and MySQL.

CIS 056 Database Essentials - PL/SQL (2.5 Unitss/0.5 Lab) 3.0 UNITS

Advisory: CIS 055 This course is an introduction to database programming and management. It builds upon the basic database and SQL course to cover stored procedures, functions, packages, and database triggers.

CIS 063 Mobile Apps Programming - Android (3.0 Units/1.0 Unit) 4.0 UNITS

This course is an introduction to programming applications for the Android operating system. Students learn to develop simple to more advanced applications using the latest Java technologies and the Android SDK.

COMPUTER INFORMATION TECHNOLOGY (CIT)

CIT 011 Introduction to Computer Hardware and Software (A+) (3.0 Units/1.0 Unit) 4.0 UNITS

Advisory: MAT 903. This course covers the fundamentals of computer hardware and software and advanced concepts such as security, networking, mobile devices such as tablets and smartphones, client side virtualization, and the responsibilities of an IT professional. It helps students prepare for entry-level career opportunities in ICT and for the CompTIA A+ certification. It also provides a learning pathway to Cisco CCNA.

CIT 012 Introduction to Networking (Network+) (3.0 Units/1.0 Unit) 4.0 UNITS

This course introduces the fundamental building blocks that form the modern network, such as protocols, media, topologies and hardware. It then provides in-depth coverage of the most important concepts in contemporary networking, such as TCP/IP, Ethernet, wireless transmission, virtual networks, security and troubleshooting. This course helps students prepare for entry-level career opportunities in ICT and the CompTIA Network+ certification. It also provides a learning pathway to Cisco CCNA.

CIT 013 AWS 1 Cloud Practitioner - Foundational (3.0 Units) 3.0 UNITS

Total Lecture: 45 hours, Total Lab: 27 hours. Prerequisite: CIT 021. Acceptable for credit: California State University. This introductory course provides an overall understanding of cloud computing concepts, AWS core services, security, architecture, storage, networking, pricing, and support. Pass/No Pass Option.

CIT 014 AWS 2 Cloud Practitioner - Associate (4.0 Units) 4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Prerequisite: CIT 013. Acceptable for credit: California State University. This course will help students develop technical expertise in cloud computing and prepare them for the AWS Certified Solutions Architect – Associate certification exam. The curriculum is delivered through instructor-led classes, knowledge assessments, hands-on labs, and project work. The course covers AWS Cloud, management console, S3 storage, Networking and VPC, cloud migration, continuity, Scalability, database. Pass/No Pass Option.

CIT 016 CyberSecurity and Ethical Hacking (3.0 Units/1.0 Unit) 4.0 UNITS

This course is an introduction to IT security and ethical hacking using the latest operating systems, security techniques, and wireless standards. It also covers the fundamentals of system security, network infrastructure, access control, assessments and audits, cryptography, and organizational security. Students gain hands-on experience with various ethical hacking methods and techniques.

CIT 017 Cyber Security Essentials (4.0 Units) 4.0 UNITS

Total Lecture: 54 hours, Total Lab: 54 hours. Prerequisite: CIT 021. Acceptable for credit: California State University. The Cybersecurity Essentials course develops foundational understanding of cybersecurity and how it relates to information and network security. This course explores the importance of cybersecurity, data confidentiality, and best practices for using the internet and social media safely. This course introduces students to characteristics of cybercrime, security principles, technologies, and procedures to defend networks. Through interactive, multimedia content, lab activities, and multi-industry case studies, students build t

CIT 018 CCNA Cyber Security Operations (4.0 Units) 4.0 UNITS

CIT 018 CCNA CYBER SECURITY OPERATIONS 4.0 units. Total Lecture: 54 hours, Total Lab: 54 hours. Prerequisite: CIT 017. Acceptable for credit: California State University. The CCNA Cybersecurity Operations course introduces the knowledge and skills needed for a Security Analyst working with a Security Operations Center team. It teaches core security skills needed for monitoring, detecting, investigating, analyzing, and responding to security events, thus protecting systems and organizations from cybersecurity risks, threats, and vulnerabilities. Pass/No Pass Option.

CIT 021 Cisco Network Fundamentals (CISCO-1) (3.0 Units/1.0 Unit) 4.0 UNITS

This course is the first of four courses leading to the CCNA designation. This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks.

CIT 022 Routing and Switching Essentia (CISCO-2) (3.0 Units/1.0 Unit) 4.0 UNITS

Prerequisite CIT 021 This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality.

CIT 023 Scaling Networks (CISCO-3) (3.0 Units/1.0 Unit) 4.0 UNITS

Prerequisite CIT 022 This course is the third of four courses leading to the Cisco Certified Network Associate Routing and Switching (CCNA Routing and Switching) designation. It describes the architecture,components, and operations of routers and switches in a larger and more complex network. Students learn how to configure routers and switches for advanced functionality.

CIT 024 Connecting Networks (CISCO-4) (3.0 Units/1.0 Unit) 4.0 UNITS

Prerequisite CIT 023 This course is the fourth of four courses leading to the CCNA designation. This course discusses the WAN technologies and network services required in Enterprise networks.

CIT 078 Microsoft Server Essentials 1 (3.0 Units/1.0 Unit) 4.0 UNITS

Advisory: CIT 011 This course focuses primarily on the installation, storage, “compute features and functionality” and the “networking features and functionality” available in Windows Server 2016. It covers general installation tasks and considerations and the installation and configuration of Nano Server, in addition to the creation and management of images for deployment. It also covers DFS and BranchCache solutions, high performance network features and functionality, and implementation of software-defined networking (SDN) solutions, such as Hyper-V Network Virtualization (HNV) and Network Controller.

ENGINEERING ENGINEERING (EGR)

EGR 010 Introduction to Engineering (3.0 Units/1.0 Unit) 4.0 UNITS

Advisory MAT 903 or Advisory MAT 903M Students explore the field of engineering and develop skills to succeed in engineering. Hands-on design projects introduce engineering design and evaluation as well as the problem-solving process. Tours and guest speakers are included.

EGR 010H Introduction to Engineering - Honors (3.0 Units/1.0 Unit) 4.0 UNITS

This course is the honors version of Introduction to Engineering. Students explore the field of engineering and develop skills to succeed in engineering. Hands-on design projects introduce engineering design and evaluation. Tours and guest speakers are included. Students may not receive credit for both ENGR 010 and ENGR 010H. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

EGR 023 Mechanics - Statics (3.0 Units) 3.0 UNITS
Prerequisite MAT 003B or any higher level math, and Prerequisite PHY 004A This course applies the principles of mechanics to evaluate the static equilibrium of two- and three- dimensional engineering structures.

EGR 024 Introduction to Circuit Analysis (3.0 Units) 3.0 UNITS
Prerequisite MAT 003B , Prerequisite PHY 004B Advisory MAT 004A This is an introductory course in the analysis of DC and AC electric circuits using techniques based on Kirchoff's laws, Ohm's law, and Thevenin's and Norton's Theorems.

EGR 024L Introduction to Circuit Analysis Lab Laboratory (1.0 Unit) 1.0 UNIT
Prerequisite MAT 003B Prerequisite PHY 004B Corequisite EGR 024 This course is an introduction to the construction and measurement of electrical circuits. Students use electrical test and measurement instruments including multimeters, oscilloscopes, power supplies, and function generators. Some labs require the use of circuit simulation software. This course is primarily for engineering transfer students.

EGR 025 Engineering Graphics and Design (3.0 Units/1.0 Unit) 4.0 UNITS
Prerequisite MAT 000D ; or Prerequisite MAT 002 ; or Prerequisite MAT 003A ; or Prerequisite MAT 003AH Engineering graphics based on conceptual sketching and computer aided design (CAD) are used to develop visualization tools for design. Graphics principles are taught and integrated into the design projects.

EGR 026 Engineering Materials (3.0 Units/1.0 Unit) 4.0 UNITS
Prerequisite CHM 001A Prerequisite PHY 004A This course presents the internal structures and resulting behaviors of materials used in engineering applications, including metals, ceramics, polymers, composites, and semiconductors. The emphasis is upon developing the ability both to select appropriate materials to meet engineering design criteria and to understand the effects of heat, stress, imperfections, and chemical environments upon material properties and performance. Laboratory work is included.

EGR 030 Introduction to Computing for Engineers (3.0 Units/1.0 Unit) 4.0 UNITS
Advisory:Eligibility for ENG 001A and REA 054, CIS 002, MAT 003A. This course introduces students to engineering problem solving using computer programming. A high level language, such as C/C++, is used. Pass/No Pass Option.

MATH (MAT)

MAT 000C Intermediate Algebra (5.0 Lecture) 5.0 UNITS
Prerequisite MAT 903 or placement into the course by the Mission College Mathematics Placement Exam. ; or Prerequisite MAT 903M or placement into the course by the Mission College Mathematics Placement Exam. and Prerequisite MAT 903MX or placement into the course by the Mission College Mathematics Placement Exam. The student will study fundamental laws of exponents and radicals, quadratic equations, graphical representations, complex numbers, functions and inverses, logarithmic and exponential functions, conic sections, sequences and series, linear systems and inequalities, and applied problems.

MAT 000D Trigonometry (3.0 Units) 3.0 UNITS
Prerequisite Placement into Math D or higher by the Mission College Mathematics Placement Exam , or Prerequisite MAT 000C ; or Prerequisite MAT 000CM and Prerequisite MAT 00CMX Students study trigonometric functions including applications to triangles, circular functions, radian measure, graphs and polar coordinates, trigonometric identities, inverse trigonometric functions, vectors, and complex numbers.

MAT 000G Mathematics for the Liberal Arts Student (4.0 Units) 4.0 UNITS
Prerequisite Placement into Math G or higher by the Mission College Mathematics Placement Exam ; or Prerequisite MAT 000C or Prerequisite MAT 000CM This course introduces creative thinking skills using fascinating examples, problem solving, self-exploration, and expository work. Topics may include: sequences and series, probability and statistics, countable and uncountable sets, and the Pythagorean Theorem.

MAT 001 College Algebra (4.0 Units) 4.0 UNITS
Prerequisite MAT 000C or satisfactory score on an appropriate Mathematics Placement Exam or Prerequisite MAT 000CM This college-level course in algebra covers the following topics: polynomial, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; and analytic geometry.

MAT 001X College Algebra With Additional Support (6.0 Units) 6.0 UNITS
Total Lecture: 108 hours. Prerequisite: Completion of the Mission College Placement Process prior to registration. Acceptable for credit: University of California, California State University. This is a college-level course in preparation for the Calculus sequence. Its contents include real and complex number systems, polynomials, algebraic fractions, exponents and radicals, linear and quadratic equations, simultaneous equations, inequalities, functions, theory of equations, exponential and logarithmic equations, sequence and series, induction, and the binomial theorem. Areas of support will include review algebraic and basic geometric topics that underlie College Algebra concepts and practice reading skills and other study skills that promote success in College Algebra. Pass/No Pass Option. CSUGE: B4; IGETC: 2A.

MAT 002 Precalculus and Trigonometry (6.0 Units) 6.0 UNITS
Prerequisite MAT 000C or Prerequisite MAT 000CM or Prerequisite Satisfactory score on an appropriate Mathematics Placement Exam. This course incorporates all topics found in pre-calculus algebra (MAT 001) and trigonometry (MAT 000D). This is an intensive course for the highly motivated and very well prepared student.

MAT 003A Analytic Geometry and Calculus I (5.0 Lecture) 5.0 UNITS
Prerequisite MAT 002 or placement into the course by the Mission College Mathematics Placement Exam. ; or Prerequisite MAT 000D or higher or satisfactory score on an appropriate Mathematics Placement Exam. and Prerequisite MAT 001 or placement into the course by the Mission College Mathematics Placement Exam. This is the first part of the three-semester calculus sequence. Topics include functions,limits, continuity, differentiation and integration, and applications for polynomial and transcendental functions.

MAT 003AH Analytic Geometry and Calculus I - Honors (5.0 Lecture) 5.0 UNITS
This course is the honors version of the Calculus I course and is the first part of the three-semester calculus sequence. Topics include functions, limits, continuity, differentiation and integration, and applications for polynomial and transcendental functions. Students may not receive credit for both MATH 003A and MATH 003AH. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

MAT 003B Analytic Geometry and Calculus II (5.0 Lecture) 5.0 UNITS
Prerequisite MAT 003A or Prerequisite MAT 003AH This is the second part of the three-semester calculus sequence. Topics include infinite series, vectors in the plane, parametric equations, conic sections, polar coordinates and integration techniques with applications.

MAT 004A Multivariable Calculus (4.0 Units) 4.0 UNITS
This course covers vector-valued functions, calculus of functions of more than one variable, partial derivatives, multiple integration, Green's Theorem, Stokes' Theorem, and the divergence theorem.

MAT 004B Differential Equations (4.0 Units) 4.0 UNITS
Topics include ordinary differential equations, with emphasis on linear equations, and partial differential equations. Methods include Laplace Transforms, power series, Fourier series, numerical solutions and applications.

MAT 004C Linear Algebra (4.0 Units) 4.0 UNITS
This course covers basic linear algebra including systems of linear equations, Gaussian elimination, determinants, matrices, vector spaces, transformations, eigenvalues, and eigenvectors.

MAT 005 Programming and Problem-Solving in MATLAB (3.0 Units) 3.0 UNITS
Prerequisite MAT 003A or Prerequisite MAT 003AH or higher. This course utilizes the MATLAB environment to provide students with a working knowledge of computer-based problem-solving methods relevant to mathematics, science and engineering. Topics include procedural and object-oriented programming, two- and three-dimensional graphing, data import and export, curve fitting, recursion and applications in engineering, physics, and mathematics.

MAT 010 Elementary Statistics (4.0 Units) 4.0 UNITS
Prerequisite MAT 000C or Prerequisite MAT 000CM or successful placement into the course based on the Mission College Mathematics Placement Exam , or Prerequisite Completion of, or placement into, any higher-level math. Students study probability, descriptive and inferential statistics including probability distribution, hypothesis testing, linear regression and applications. Current statistical computer packages are used.

MAT 010H Elementary Statistics - Honors (4.0 Units) 4.0 UNITS
This course is the honors version of Elementary Statistics. This course provides students with a comprehensive introduction to statistical methods and research. Current statistical computer packages are used. Students may not receive credit for both MATH 010 and MATH 010H. This section requires enrollment in the Honors Transfer Project. More information and the online application can be found at http://honors.missioncollege.edu.

MAT 010X Elementary Statistics with Additional Support (6.0 Units) 6.0 UNITS
Total Lecture: 108 hours. Prerequisite: Completion of the Mission College Placement Process prior to registration. Acceptable for credit: University of California, California State University Students study and demonstrate knowledge and understanding of descriptive and inferential statistics including data analysis, correlation and linear regression, probability, probability distributions and assorted hypothesis testing. Particular emphasis is placed on applications. Current technology is used. Areas of support will include review of arithmetic and algebra topics that underlie statistical procedures and concepts, hands-on activities that promote a deeper understanding of statistical ideas, and study skills that promote success in statistics. Pass/No Pass Option. C-ID # MATH 110. CSUGE: B4; IGETC: 2A.

MAT 012 Calculus for Business (4.0 Units) 4.0 UNITS
Prerequisite MAT 000C or placement into MAT 12 or higher by the Mission College Mathematics Placement Exam. ; or Prerequisite or placement into MAT 12 or higher by the Mission College Mathematics Placement Exam. Course topics include the intuitive concept of a limit, and simple techniques of differential and integral calculus and their most common applications in business. This course is not equivalent to MAT 003A.

MAT 019 Discrete Mathematics (4.0 Units) 4.0 UNITS
Prerequisite MAT 001 or successful placement into the course based on the Mission College Mathematics Placement Exam, or Prerequisite MAT 002 This course covers discrete mathematics appropriate for computer applications. Topics may include graphs, sets, logic, mathematical induction, functions and relations, sequences and series, matrices, combinatorics, Boolean algebra, algebraic structures,and computer implementation.

NUTRITIONAL SCIENCE (NTR)

NTR 006 Personal Health and Wellness (3.0 Units) 3.0 UNITS
Total Lecture: 54 hours. Acceptable for credit: University of California, California State University This course focuses on the exploration of major health issues and behaviors in the various dimensions of health. Emphasis is placed on individual responsibility for personal health and the promotion of informed, positive health behaviors. Topics include nutrition, exercise, weight control, mental health, stress management, violence, substance abuse, reproductive health, disease prevention, aging, healthcare, and environmental hazards and safety. Pass/No Pass Option. C-ID # PHS 100. CSUGE: E.

NTR 015 Human Nutrition (3.0 Units) 3.0 UNITS
Basic scientific principles of human nutrition in maintaining health & preventing disease are discussed. Biochemical functions & interrelationships of nutrients are examined. Designed for the student with no science background.

NTR 015H Human Nutrition Honors (3.0 Units) 3.0 UNITS
Total Lecture: 54 hours. Advisory: ENG 001A or ENG 001AX. Acceptable for credit: University of California, California State University. This honors course introduces scientific principles as they apply to human nutrition. It explores the functions of essential nutrients, the chemical composition of foods, as well as psychological and social issues related to food intake. Students will explore current topics in nutrition and evaluate nutrient intake as it relates to maintaining health and preventing disease throughout the lifecycle. Students may not receive credit for both NTR 015 and NTR 015H. Enrollment in the Honors Program is required.

NTR 040 Nutrition and Disease (3.0 Units) 3.0 UNITS
This course covers basic scientific principles of human nutrition as they relate to disease. This course is designed for individuals entering the health care field or for those with an interest in diet and disease. Eligibility for ENG 001A and REA 054

NTR 040H Nutrition and Disease - Honors (3.0 Units) 3.0 UNITS
Total Lecture: 54 hours. Acceptable for credit: California State University, University of California. This honors nutrition course is intended for students interested in entering the health fields with an emphasis on physiology, metabolism of nutrients, metabolic diseases, and dietary modification to optimize recovery and health. Students will understand and evaluate dietary intake, nutritional assessment, and nutrition care commonly used at clinics and hospitals. Students may not receive credit for both NTR 040 and NTR 040H. Enrollment in the Honors Program is required. Pass/No Pass Option.

PHYSICS (PHY)

PHY 002A General Physics - Mechanics and Thermodynamics (5.0 Units) 5.0 UNITS
Prerequisite MAT 000D Prerequisite MAT 002 or higher This is a first lecture/lab course in physics for non-majors. Topics covered include Newton's laws of force, the concepts of potential and kinetic energy, momentum, thermodynamics, hydrodynamics, and wave motion.

PHY 002B General Physics - Electricity, Magnetism And Optics (5.0 Units) 5.0 UNITS
Prerequisite PHY 002A This lecture/lab course is a continuation of PHY 002A as a lecture/lab course with the study of electricity, magnetism, geometrical and wave optics and atomic physics.

PHY 004A Engineering Physics-Mechanics (5.0 Units) 5.0 UNITS
Prerequisite MAT 003A This course is a calculus-based study of forces, energy, momentum and gravity.

PHY 004B Engineering Physics-Electricity and Magnetism (3.0 Units/1.0 Unit) 4.0 UNITS
Prerequisite PHY 004A Prerequisite MAT 003B This lecture/laboratory course, the second in the engineering physics series, is a calculus-based study of electricity and magnetism that develops the concepts and applications of Maxwell's equations, including DC and AC circuits.

PHY 004C Engineering Physics-Light and Heat (3.0 Units/1.0 Unit) 4.0 UNITS
Prerequisite MAT 003B Prerequisite PHY 004A This lecture/laboratory course is the third course in the calculus-based engineering physics series. Topics include classical thermodynamics, geometrical and wave optics and modern physics.

PHY 004D Engineering Physics-Atomic (2.0 Units) 2.0 UNITS
Prerequisite: PHY 004B. This course is an introduction to quantum physics, the electronic structure of atoms, solids, band theory, radiation, and relativity.

PHY 010 Introduction to Physics (3.0 Units/1.0 Unit) 4.0 UNITS
Prerequisite: MATH 903 This course is a descriptive, conceptual approach to mechanics, thermodynamics, electricity and magnesium, optics, and modern physics.