

Astronomy, Chemistry, Engineering, Geology, Mathematics, Meteorology, Physics

De Anza College

Date: 01-14-2024

Phys. Science, Math, Eng.
ASTR - Astronomy
CSLO
ASTRD004. - Solar System Astronomy <ul style="list-style-type: none">• Appraise the benefits to society of planetary research and exploration.• Compare and contrast the development of planetary systems and of the major planet types, including those factors that have led to Earth's unique characteristics.• Evaluate astronomical news items or theories concerning solar system astronomy based upon the scientific method.
ASTRD010. - Stellar Astronomy <ul style="list-style-type: none">• Appraise the benefits to society of astronomical research concerning stars and stellar systems.• Evaluate the impact on Earth's characteristics of the evolution of stars and stellar systems.• Evaluate astronomical news items or theories about stellar astronomy based upon the scientific method.
ASTRD015L - Astronomy Laboratory <ul style="list-style-type: none">• Evaluate claims about the nature of the physical universe using the scientific method of hypothesis testing.• Compare and contrast the histories of solar-system bodies (e.g. moons, planets, asteroids, comets, meteorites) by integrating data from spacecraft and Earth-based observatories.
CHEM - Chemistry
CSLO
CHEMD001A - General Chemistry <ul style="list-style-type: none">• Identify and explain trends in the periodic table.• Construct balanced reaction equations and illustrate principles of stoichiometry.• Apply the first law of thermodynamics to chemical reactions.
CHEMD01AH - General Chemistry - HONORS <ul style="list-style-type: none">• Identify and explain trends in the periodic table.• Construct balanced reaction equations and illustrate principles of stoichiometry.• Apply the first law of thermodynamics to chemical reactions.
CHEMD001B - General Chemistry <ul style="list-style-type: none">• Evaluate the principles of molecular kinetics.• Apply principles of chemical equilibrium to chemical reactions.• Apply the second and third laws of thermodynamics to chemical reactions.
CHEMD01BH - General Chemistry - HONORS <ul style="list-style-type: none">• Evaluate the principles of molecular kinetics.• Apply principles of chemical equilibrium to chemical reactions.• Apply the second and third laws of thermodynamics to chemical reactions.
CHEMD001C - General Chemistry and Qualitative Analysis <ul style="list-style-type: none">• Apply the principles of equilibrium and thermodynamics to electrochemical systems.• Apply the principles of transition metal chemistry to predict outcomes of chemical reactions and physical properties.

- Evaluate isotopic decay pathways.
- Demonstrate a knowledge of intermolecular forces.

CHEMD01CH - General Chemistry and Qualitative Analysis - HONORS

- Apply the principles of equilibrium and thermodynamics to electrochemical systems.
- Apply the principles of transition metal chemistry to predict outcomes of chemical reactions and physical properties.
- Evaluate isotopic decay pathways.
- Demonstrate a knowledge of intermolecular forces.

CHEMD010. - Introductory Chemistry

- Develop problem solving techniques by applying the "Scientific Method" to chemical data.
- Analyze and solve chemical questions utilizing information presented in the periodic table of the elements.
- Evaluate current scientific theories and observations utilizing a scientific mindset and an understanding of matter and the changes it undergoes.

CHEMD012A - Organic Chemistry

- Predict products in reactions of alkanes, haloalkanes and alkenes by applying concepts from General Chemistry.
- Generate logical stepwise reaction mechanisms for simple organic reactions.
- Construct molecular structures from IR and ¹H NMR data.

CHEMD012B - Organic Chemistry

- Construct logical multi-step syntheses for organic molecules.
- Use Molecular Orbital theory and Resonance to explain reactions of benzene and other molecules with conjugated systems.
- Increase breadth of knowledge of organic reactions to include functional groups containing oxygen, benzene and more complex systems.
- Construct molecular structures of increasingly complex molecules from IR, ¹H NMR, and ¹³C NMR data.

CHEMD012C - Organic Chemistry

- Apply the principles of thermodynamics, kinetics, equilibrium to biologically important molecules.
- Conduct spectroscopic analysis and identify structures of biologically important molecules.
- Generate stepwise reaction mechanisms of biologically important molecules.
- Design logical syntheses and structural modifications of biologically important molecules.

CHEMD025. - Preparation Course for General Chemistry

- Assess the fundamental concepts of modern atomic and molecular theory.
- Evaluate the standard classes of chemical reactions.
- Demonstrate a fundamental understanding of mathematical concepts pertaining to chemical experimentation and calculations.

CHEMD030A - Introduction to General, Organic and Biochemistry I

- Solve stoichiometric problems by applying appropriate molar relationships.
- Identify the differences between elements and compounds and describe the chemical bonding in compounds- ionic vs. covalent.

CHEMD030B - Introduction to General, Organic and Biochemistry II

- Differentiate the general reactions of the principle organic functional groups.
- Evaluate the major classes of biological compounds from a chemical perspective.

CHEMD077. - Special Projects in Chemistry

- Dependent on the nature of the project as determined in sections 3&4 of the Special Projects Contract.

CHEMD077X - Special Projects in Chemistry

- Dependent on the nature of the project as determined in sections 3&4 of the Special Projects Contract.

CHEMD077Y - Special Projects in Chemistry

- Dependent on the nature of the project as determined in sections 3&4 of the Special Projects Contract.

ENGR - Engineering

CSLO

ENGRD010. - Introduction to Engineering

- Analyze, graph and develop a formula for a given data set.
- Prepare and write technical specifications and documentation, and be able to orally present them.
- Work collaboratively on an engineering team.

ENGRD035. - Statics

- Analyze two- and three-dimensional force systems on rigid bodies in static equilibrium using vector and scalar analysis methods.

ENGRD037. - Introduction to Circuit Analysis

- Analyze circuits containing resistive, capacitive, inductive passive elements, along with op-amps interconnected to voltage and current sources.
- Use circuit laws and network theorems to solve DC steady state circuits, RC, RL, and RLC DC circuit transients and sinusoidal AC steady state circuits.

ENGRD077. - Special Projects in Engineering

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

ENGRD077X - Special Projects in Engineering

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

ENGRD077Y - Special Projects in Engineering

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

ENGRD078X - Special Projects in Electrical Engineering

- Investigate an area of special interest in the fields of Electrical Engineering and demonstrate an appropriate level of understanding and expertise.

ENGRD078Y - Special Projects in Electrical Engineering

- Investigate an area of special interest in the fields of Electrical Engineering and demonstrate an appropriate level of understanding and expertise.

ENGRD078Z - Special Projects in Electrical Engineering

- Investigate an area of special interest in the fields of Electrical Engineering and demonstrate an appropriate level of understanding and expertise.

ENGRD079X - Special Projects in Mechanical Engineering

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

ENGRD079Y - Special Projects in Mechanical Engineering

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

ENGRD079Z - Special Projects in Mechanical Engineering

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

GEOL - Geology

CSLO

GEOLD010. - Introductory Geology

- Apply the principles of scientific methodology to evaluate hypotheses on how the earth works as an integrated system.
- Use data and observations to track and predict changes in the Earth system resulting from dynamic Earth Processes.
- Use observations from the crust and lithosphere of the Earth to determine geologic history at hand-sample, outcrop, local, and regional scales.
- Apply scientific methodology and geologic principles to analyze the impact of the Earth system on humanity, from specific natural hazards and the availability, use, and distribution of Earth resources.

GEOLD020. - General Oceanography

- Apply the principles of scientific methodology to test hypotheses as to how the Earth's oceans work as an integrated system.
- Use observations and data to characterize the dynamic Earth processes that act to shape the ocean floor and analyze the record of these processes within marine sediments and oceanic crust.
- Analyze the dynamic movement of the water column of the oceans, through an application of the physical principles of ocean currents, waves, and tides and their effect on coastal systems and processes.
- Apply scientific methodology and the principles of oceanography to analyze the impact of the ocean system on humanity, from specific natural hazards and the availability, use, and distribution of ocean resources.

MATH - Mathematics**CSLO****EDUCD046. - Mathematics for Elementary Education**

- Analyze mathematical problems from elementary mathematics, apply problem solving techniques using a variety of methods, solve these problems individually and in groups, and communicate results mathematically through a variety of forms.
- Utilize ideas from number theory, distinguish types and properties of numbers, and employ mathematical rules for operating on rational and irrational numbers using verbal, symbolic, geometric, and numerical methods.
- Examine and evaluate myths and realities about the contemporary discipline of mathematics and its practitioners.
- Identify and discuss developments in the history of elementary mathematics from a variety of cultures.

MATHD001A - Calculus

- Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision.
- Evaluate the behavior of graphs in the context of limits, continuity and differentiability.
- Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation.

MATHD01AH - Calculus - HONORS

- Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision.
- Evaluate the behavior of graphs in the context of limits, continuity and differentiability.
- Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation.

MATHD001B - Calculus

- Analyze the definite integral from a graphical, numerical, analytical, and verbal approach, using correct notation and mathematical precision.
- Formulate and use the Fundamental Theorem of Calculus.
- Apply the definite integral in solving problems in analytical geometry and the sciences.

MATHD01BH - Calculus - HONORS

- Analyze the definite integral from a graphical, numerical, analytical, and verbal approach, using correct notation and mathematical precision.
- Formulate and use the Fundamental Theorem of Calculus.
- Apply the definite integral in solving problems in analytical geometry and the sciences.

MATHD001C - Calculus

- Analyze infinite sequences and series from the perspective of convergence, using correct notation and mathematical precision.
- Apply infinite sequences and series in approximating functions.
- Synthesize and apply vectors, polar coordinate system and parametric representations in solving problems in analytic geometry, including motion in space.

MATHD01CH - Calculus - HONORS

- Analyze infinite sequences and series from the perspective of convergence, using correct notation and mathematical precision.
- Apply infinite sequences and series in approximating functions.

- Synthesize and apply vectors, polar coordinate system and parametric representations in solving problems in analytic geometry, including motion in space.

MATHD001D - Calculus

- Apply analytic, graphical and numerical methods to study multivariable and vector-valued functions and their derivatives, using correct notation and mathematical precision.
- Use double, triple and line integrals in applications, including Green's Theorem, Stokes' Theorem and Divergence Theorem.
- Synthesize the key concepts of differential, integral and multivariate calculus.

MATHD01DH - Calculus - HONORS

- Apply analytic, graphical and numerical methods to study multivariable and vector-valued functions and their derivatives, using correct notation and mathematical precision.
- Use double, triple and line integrals in applications, including Green's Theorem, Stokes' Theorem and Divergence Theorem.
- Synthesize the key concepts of differential, integral and multivariate calculus.

MATHD002A - Differential Equations

- Construct and evaluate differential equation models to solve application problems.
- Classify, solve and analyze differential equation problems by applying appropriate techniques and theory.

MATHD02AH - Differential Equations - HONORS

- Construct and evaluate differential equation models to solve application problems.
- Classify, solve and analyze differential equation problems by applying appropriate techniques and theory.

MATHD002B - Linear Algebra

- Construct and evaluate linear systems/models to solve application problems.
- Solve problems by deciding upon and applying appropriate algorithms/concepts from linear algebra.
- Apply theoretical principles of linear algebra to define properties of linear transformations, matrices and vector spaces.

MATHD02BH - Linear Algebra - HONORS

- Construct and evaluate linear systems/models to solve application problems.
- Solve problems by deciding upon and applying appropriate algorithms/concepts from linear algebra.
- Apply theoretical principles of linear algebra to define properties of linear transformations, matrices and vector spaces.

MATHD010. - Introductory Statistics

- Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.
- Identify, evaluate, interpret and describe data distributions through the study of sampling distributions and probability theory.
- Collect data, interpret, compose and evaluate conjectures, and communicate the results of random data using statistical analyses such as interval and point estimates, hypothesis tests, and regression analysis.

MATHD010H - Introductory Statistics - HONORS

- Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.
- Identify, evaluate, interpret and describe data distributions through the study of sampling distributions and probability theory.
- Collect data, interpret, compose and defend conjectures, and communicate the results of random data using statistical analyses such as interval and point estimates, hypothesis tests, and regression analysis.

MATHD011. - Finite Mathematics

- Identify, evaluate, and utilize appropriate linear, probability, and optimization models and communicate results.
- Compare, evaluate, judge, make informed decisions, and communicate results about various financial opportunities by applying the mathematical concepts and principles of the time value of money.

MATHD011H - Finite Mathematics - HONORS

- Identify, evaluate, and utilize appropriate linear, probability, and optimization models and communicate results.
- Compare, evaluate, judge, make informed decisions, and communicate results about various financial opportunities by applying the mathematical concepts and principles of the time value of money.

MATHD012. - Introductory Calculus for Business and Social Science

- Use correct notation and mathematical precision in the evaluation and interpretation of derivatives and integrals.
- Evaluate, solve, interpret and communicate business and social science applications using appropriate differentiation and integration methodologies.

MATHD017. - Integrated Statistics 2

- Identify, evaluate, interpret and describe data distributions through the study of sampling distributions.
- Collect data, interpret, compose and defend conjectures, and communicate the results of random data using statistical analyses such as interval and point estimates, hypothesis tests, and regression analysis.

MATHD022. - Discrete Mathematics

- Critique a mathematical statement for its truth value, defend choice by formulating a mathematical proof or constructing a counterexample.
- Analyze and apply patterns of discrete mathematical structures to demonstrate mathematical thinking.

MATHD022H - Discrete Mathematics - HONORS

- Critique a mathematical statement for its truth value, defend choice by formulating a mathematical proof or constructing a counterexample.
- Analyze and apply patterns of discrete mathematical structures to demonstrate mathematical thinking.

MATHD023. - Engineering Statistics

- Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.
- Use calculus based mathematics to construct, analyze, apply, and simulate probability and sampling distributions in theory and applications, and to justify appropriate statistical analyses and inferential methods.
- Collect data, interpret, compose and defend conjectures, and communicate the results of random data using statistical analyses such as interval and point estimates, hypothesis tests, and regression analysis.

MATHD031. - Precalculus I

- Investigate, evaluate, and differentiate between algebraic and transcendental functions in their graphic, formulaic, and tabular representations.
- Synthesize, model, and communicate real-life applications and phenomena using algebraic and transcendental functions.

MATHD031A - Precalculus I (Part 1)

- Investigate, evaluate and differentiate between algebraic functions in their graphic, formulaic, and tabular representations.
- Synthesize, model, and communicate real-life applications and phenomena using algebraic functions.

MATHD031B - Precalculus I (Part 2)

- Investigate, evaluate, and differentiate between algebraic and transcendental functions in their graphic, formulaic, and tabular representations.
- Synthesize, model, and communicate real-life applications and phenomena using algebraic and transcendental functions.

MATHD032. - Precalculus II

- Formulate, construct, and evaluate trigonometric models to analyze periodic phenomena, identities, and geometric applications.

MATHD044. - Mathematics in Art, Culture, and Society: A Liberal Arts Math Class

- Analyze contemporary mathematical problems, apply problem solving techniques using a variety of methods, and communicate the results mathematically through a variety of forms.
- Demonstrate and correctly apply basic mathematical techniques in at least five of the following ten areas: symmetry, graph theory, fractals and chaos theory, topology, number theory, geometry, combinatorics, methods of social choice, probability and statistics, economics and personal finance.
- Examine and evaluate myths and realities about the contemporary discipline of mathematics and its practitioners.

MATHD046. - Mathematics for Elementary Education

- Analyze mathematical problems from elementary mathematics, apply problem solving techniques using a variety of methods, solve these problems individually and in groups, and communicate results mathematically through a variety of forms.
- Utilize ideas from number theory, distinguish types and properties of numbers, and employ mathematical rules for operating on rational and irrational numbers using verbal, symbolic, geometric, and numerical methods.
- Examine and evaluate myths and realities about the contemporary discipline of mathematics and its practitioners.
- Identify and discuss developments in the history of elementary mathematics from a variety of cultures.

MATHD076. - Special Projects in Probability and Statistics

- Investigate an area of special interest in the fields of probability and statistics and demonstrate an appropriate level of understanding and expertise.

MATHD076X - Special Projects in Probability and Statistics

- Investigate an area of special interest in the fields of probability and statistics and demonstrate an appropriate level of understanding and expertise.

MATHD076Y - Special Projects in Probability and Statistics

- Investigate an area of special interest in the fields of probability and statistics and demonstrate an appropriate level of understanding and expertise.

MATHD077. - Special Projects in Mathematics

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

MATHD077X - Special Projects in Mathematics

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

MATHD077Y - Special Projects in Mathematics

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

MATHD078. - Special Projects in Pure Mathematics

- Investigate an area of special interest in pure mathematics and demonstrate an appropriate level of understanding and expertise.

MATHD078X - Special Projects in Pure Mathematics

- Investigate an area of special interest in pure mathematics and demonstrate an appropriate level of understanding and expertise.

MATHD078Y - Special Projects in Pure Mathematics

- Investigate an area of special interest in pure mathematics and demonstrate an appropriate level of understanding and expertise.

MATHD079. - Special Projects in Applied Mathematics

- Investigate an area of special interest in applied mathematics and demonstrate an appropriate level of understanding and expertise.

MATHD079X - Special Projects in Applied Mathematics

- Investigate an area of special interest in applied mathematics and demonstrate an appropriate level of understanding and expertise.

MATHD079Y - Special Projects in Applied Mathematics

- Investigate an area of special interest in applied mathematics and demonstrate an appropriate level of understanding and expertise.

MATHD109. - Intermediate Algebra for Statistics

- Evaluate real-world situations and distinguish between and apply linear and exponential function models appropriately.
- Analyze, interpret, and communicate results of linear and exponential models in a logical manner.
- Organize sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.

MATHD114. - College Math Preparation Level 3: Intermediate Algebra

- Evaluate real-world situations and distinguish between and apply exponential, logarithmic, rational, and discrete function models appropriately.

- Analyze, interpret, and communicate results of exponential, logarithmic, and rational models in a logical manner from four points of view - visual, formula, numerical, and written.

MATHD130. - Intermediate Algebra for Precalculus

- Evaluate real-world situations by applying linear, quadratic and exponential function models appropriately.
- Distinguish between and manipulate linear, quadratic and exponential models.

MATHD210. - College Math Preparation Level 1: Pre-Algebra

- Demonstrate and apply a systematic and logical approach to solving arithmetic and geometric problems.

MATHD210X - Support for Statistics

- Demonstrate mathematical concepts, skills and numeracy needed for understanding Probability and Statistics.

MATHD211X - Algebra Support for Finite Mathematics

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving functions.

MATHD212. - College Math Preparation Level 2: Beginning Algebra

- Evaluate real-world situations and distinguish between and apply linear and quadratic function models appropriately.
- Analyze, interpret, and communicate results of linear and quadratic models in a logical manner from four points of view - visual, formula, numerical, and written.

MATHD217. - Integrated Statistics 1

- Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.
- Analyze and describe data distributions through the study of probability theory.
- Evaluate real-world situations and apply linear, quadratic and exponential function models appropriately.

MATHD231. - Algebra Support for Precalculus I

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving functions.

MATHD231A - Algebra Support for Precalculus I (Part 1)

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving algebraic functions.

MATHD231B - Algebra Support for Precalculus I (Part 2)

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving transcendental functions.

MATHD232. - Algebra Support for Precalculus II

- Demonstrate sound algebraic techniques by applying proper mathematical notation to trigonometric problems.

MATHD241. - Academic Excellence in Precalculus I

- Analyze and develop linear, polynomial, exponential and logarithmic function models.
- Communicate concepts and solutions for problems both verbally and in writing.

MATHD242. - Academic Excellence in Precalculus II

- Formulate, construct, and evaluate trigonometric models to analyze periodic phenomena, identities, and geometric applications.
- Communicate concepts and solutions for problems both verbally and in writing.

MATHD243. - Academic Excellence in Precalculus III

- Analyze and develop trigonometric, matrix, and discrete models for problems within two- and three- dimensional Cartesian or polar coordinate systems.
- Communicate concepts and solutions for problems both verbally and in writing.

MATHD309. - Intermediate Algebra for Statistics

- Evaluate real-world situations and distinguish between and apply linear and exponential function models appropriately.
- Analyze, interpret, and communicate results of linear and exponential models in a logical manner.
- Organize sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.

MATHD314. - College Math Preparation Level 3: Intermediate Algebra

- Evaluate real-world situations and distinguish between and apply linear and exponential function models appropriately.
- Analyze, interpret, and communicate results of linear and exponential models in a logical manner.
- Organize sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.

MATHD330. - Intermediate Algebra for Precalculus

- Evaluate real-world situations by applying linear, quadratic and exponential function models appropriately.
- Distinguish between and manipulate linear, quadratic and exponential models.

MATHD410. - College Math Preparation Level 1: Pre-Algebra

- Demonstrate and apply a systematic and logical approach to solving arithmetic and geometric problems.

MATHD410X - Support for Statistics

- Demonstrate mathematical concepts, skills, and numeracy needed for understanding Probability and Statistics.

MATHD412. - College Math Preparation Level 2: Beginning Algebra

- Evaluate real-world situations and distinguish between and apply linear and quadratic function models appropriately.
- Analyze, interpret, and communicate results of linear and quadratic models in a logical manner from four points of view - visual, formula, numerical, and written.

MATHD431. - Algebra Support for Precalculus I

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving functions.

MATHD431A - Algebra Support for Precalculus I (Part 1)

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving algebraic functions.

MATHD431B - Algebra Support for Precalculus I (Part 2)

- Demonstrate sound algebraic techniques by applying proper mathematical notation to problems involving transcendental functions.

MATHD432. - Algebra Support for Precalculus II

- Demonstrate sound algebraic techniques by applying proper mathematical notation to trigonometric problems.

MET - Meteorology**CSLO****METD010. - Weather and Climate Processes**

- Analyze and explain the objective techniques used by synoptic meteorologists and climatologists to forecast our planet's weather and to predict future changes in our planet's climate. .
- Assess and critique the impact of meteorology and climatology as sciences on local, national and international economic, environmental, ethical and political issues including climate change.

METD010L - Meteorology Laboratory

- Assess and evaluate the analysis and decision-making skills employed by meteorologists to diagnose air patterns, understand air motions and predict future atmospheric conditions.

METD012. - Introduction to Climate Change

- Distinguish Science from Pseudoscience.
- Assess the tools and procedures used by climate scientists to reconstruct earth's previous climate and to predict future climate shifts.
- Explain the terms and concepts of climate science and use those terms and concepts to communicate local and global issues of climate concern.

METD020L - Climate Change Laboratory

- Identify the primary reasons for studying Earth's climate system and how it functions and to become more aware of the significance of climate, climate variability and climate change for our well being wherever we live.
- Distinguish the main anthropogenic and natural causes of climate change, and to determine the main causes of current climate change.

PHYS - Physics**CSLO****PHYS002A - General Introductory Physics**

- Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of mechanics.
- Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS002B - General Introductory Physics

- Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of electricity and magnetism.
- Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS002C - General Introductory Physics

- Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of optics, thermodynamics, fluids, and modern physics.

- Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS004A - Physics for Scientists and Engineers: Mechanics

- Examine new, previously un-encountered problems by critically analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of mechanics.
- Acquire skill and confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS004B - Physics for Scientists and Engineers: Electricity and Magnetism

- Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of electricity and magnetism.
- Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS004C - Physics for Scientists and Engineers: Fluids, Waves, Optics and Thermodynamics

- Critically examine new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of waves, fluids, optics, and thermodynamics.
- Acquire confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS004D - Physics for Scientists and Engineers: Modern Physics

- Examine critically new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of modern physics.
- Gain confidence in taking precise and accurate scientific measurements, with their uncertainties, and then with calculations from them, analyze their meaning as relative, in an experimental context, to the verification and support of physics theories.

PHYS010. - Concepts of Physics

- Examine critically new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of physics in general.

PHYS050. - Preparatory Physics

- Examine critically new, previously un-encountered problems, analyzing and evaluating their constituent parts, to construct and explain a logical solution utilizing, and based upon, the fundamental laws of mechanics.

PHYS077. - Special Projects in Physics

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

PHYS077X - Special Projects in Physics

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.

PHYS077Y - Special Projects in Physics

- Investigate an area of special interest and demonstrate an appropriate level of understanding and expertise.