



# CESM

## **Classification of Educational Subject Matter**

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and environmental chemistry; metals toxicology; environmental mutagens and biotransformation; nutrient interaction; chemical sensitivity, disorders and disease; risk assessment; animal waste management; environmental health; and hazardous materials management.

**130907 Pharmacology and Toxicology**

An area of study with an integrated, combined approach to the study of pharmacological and toxicological issues in biology and the biomedical sciences. Includes instruction in topics such as solvents, xenobiotic metabolism, chemical toxicity, neurotoxicology, immunopharmacology, biotransformation, tissue culture and in vitro studies, biomolecular analysis, bio activation and inactivation, enzyme regulation, chemoprevention and chemotherapy, industrial and chemical studies, radiation health, and bioinformatics.

**130999 Pharmacology and Toxicology, Other**

Any area of study in pharmacology and toxicology not listed above.

**1310 Biomathematics and Bioinformatics**

**131001 Biometry/Biometrics**

An area of study which focuses on the application of statistics and other computational methods to the study of problems in the biological sciences and related fields in agriculture and natural resources. Includes instruction in computational biology, mathematical statistics, matrix algebra, applied calculus, experimental design, linear modelling, sampling theory, stochastic processes, spatial and temporal analysis, longitudinal analysis, sparse/unbalanced data and complex error, and applications to such topics as population genetics, animal breeding, forest genetics, population dynamics, wildlife biometry, ecology, and agricultural and natural resource management.

**131002 Biostatistics**

An area of study which focuses on the application of descriptive and inferential statistics to biomedical research and clinical, public health, and industrial issues related to human populations. Includes instruction in mathematical statistics, modelling, clinical trials methodology, disease and survival analysis, longitudinal analysis, spatial analysis, computer tomography, biostatistics consulting, and applications to such topics as genetics, oncology, pharmacokinetics, physiology, neurobiology, and biophysics.

**131003 Bioinformatics**

An area of study which focuses on the application of computer-based technologies and services to biological, biomedical, and biotechnology research. Includes instruction in algorithms, network architecture, principles of software design, human interface design, usability studies, search strategies, database management and data mining, digital image processing, computer graphics and animation, computer-aided design (CAD), computer programming, and applications to experimental design and analysis and to specific quantitative, modelling, and analytical studies in the various biological specialisations.

**131004 Mathematical Biology**

An area of study which focuses on modelling natural, biological processes using mathematical techniques and tools. Includes population dynamics, mathematical epidemiology, modelling cell and molecular biology and the modelling of physiological systems.

**131099 Biomathematics and Bioinformatics, Other**

Any area of study in biomathematics and bioinformatics not listed above.

## **1311 Biotechnology**

### **131101 Biotechnology**

An area of study which focuses on the application of the biological sciences, biochemistry, and genetics to the preparation of new and enhanced agricultural, environmental, clinical, and industrial products, including the commercial exploitation of microbes, plants and animals. Includes instruction in bioinformatics, gene identification, phylogenetics and comparative genomics, bioinorganic chemistry, immunoassaying, DNA sequencing, xenotransplantation, genetic engineering, industrial microbiology, drug and biologic development, enzyme-based production processes, patent law, biotechnology management and marketing, applicable regulations, and biotechnology ethics.

## **1312 Ecology, Evolution, Systematics and Population Biology**

### **131201 Ecology**

An area of study which focuses on the scientific study of the relationships and interactions of biological systems, such as organisms, to each other, to complex and whole systems, and to the physical and other non-biological aspects of their environments. Includes instruction in biogeochemistry; landscape and/or marine/aquatic dynamics; decomposition; global and regional elemental budgets; biotic and abiotic regulation of nutrient cycles; ecophysiology; phytosociology, ecosystem resilience, disturbance and succession; community and habitat dynamics; organismal interactions (co-evolution, competition, predation, paleoecology, and evolutionary ecology.

### **131202 Marine Biology and Biological Oceanography**

An area of study which focuses on the scientific study of the ecology and behaviour of microbes, algae, plants, and animals inhabiting oceans, coastal waters and saltwater wetlands, and their interactions with the physical environment. Includes instruction in chemical, physical and geological oceanography; molecular, cellular and biochemical studies; marine microbiology; marine botany; phycology, ichthyology; mammalogy, marine population dynamics and biodiversity; reproductive biology; studies of specific species, phyla, habitats and ecosystems; marine paleoecology and palaeontology; and applications to fields such as fisheries science and biotechnology.

### **131203 Evolutionary Biology**

An area of study which focuses on the scientific study of the genetic, developmental, functional and morphological patterns and processes, and theoretical principles; and the emergence and mutation of morphological systematics; genetics and development; evolutionary transformation; paleobiology and palaeontology; morphogenesis; mutation; locomotor, biomechanical and craniodental form and function; evolutionary theory; and systematic biology.

### **131204 Aquatic Biology/Limnology**

An area of study which focuses on the scientific study of the ecology and behaviour of microbes, algae, plants, and animals inhabiting inland fresh waters such as lakes, ponds, rivers, creeks, estuaries, and wetlands. Includes instruction in geology and hydrology; aquatic ecosystems; microbiology; mycology; botany; ichthyology; mammalogy; population biology and biodiversity; studies of specific species, phyla and habitats; and applications to fields such as natural resources conservation, fisheries science, and biotechnology.

### **131205 Environmental Biology**

An area of study which focuses on the scientific study of the origins, functions, relationships, interactions, and natural history of living populations, communities, species and ecosystems in relation to dynamic environmental processes.

Includes instruction in biodiversity, molecular genetic and genomic evolution, mesoscale ecology, computational biology and modelling, conservation biology, local and global environmental change, and restoration ecology.

**131206 Population Biology**

An area of study which focuses on the scientific study of the natural history, life cycle behaviour, and ecosystem dynamics of single species and multi-species communities, and the patterns and causes of diversity within and among such populations. Includes instruction in biostatistics, population dynamics, population and quantitative genetics, RNA and DNA sequences, genomics, evolutionary ecology, natural adaptation and hybridization, geographic differentiation, life history and life cycle studies, and animal and plant demography.

**131207 Conservation Biology**

An area of study which focuses on the application of the biological sciences to the specific problems of biodiversity, species preservation, ecological sustainability, and habitat fragmentation in the face of advancing human social, economic and industrial pressures. Includes instruction in ecology, environmental science, biological systems, extinction theory, human-animal and human-plant interaction, ecosystem science and management, wetland conservation, field biology, forest and wildlife biology, and natural history.

**131208 Systematic Biology/Biological Systematics**

An area of study which focuses on the theoretical and empirical study of the principles and processes underlying the origin and maintenance of biological taxonomic diversity; related biogeographical and evolutionary patterns; and studies of the origin, diversification, distribution, and extinction of species and lineages. Includes instruction in phylogenetic analysis, structural development and molecular evolution, classification and taxonomic theory, biological nomenclature, taxonomic assignment, evolutionary theory, biological surveys and inventories, computer modelling and database building.

**131209 Epidemiology**

An area of study which focuses on the scientific study of disease, disability, and trauma patterns within and across populations and the development of health management mechanisms to prevent and control disease outbreaks and injurious behaviours. Includes instruction in biostatistics, biochemistry, molecular biology, immunology, disease and injury determinants, genetic disease and disability factors, behavioural studies, health services research, environmental disease and injury factors, and population studies.

**131299 Ecology, Evolution, Systematics and Population Biology, Other**

Any area of study in ecology, evolution, systematics and population biology not listed above.

**1399 Life Sciences, Other**

Any area of study in life sciences not listed above.

## **CESM 14: PHYSICAL SCIENCES**

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A broad area of study which focuses on the scientific inanimate objects, processes of matter and energy and associated phenomena.

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### **1401 Physical Sciences, General**

#### **140101 Physical Sciences, General**

An area of study which focuses on the major topics, concepts, processes, and interrelationships of physical phenomena as studied in any combination of physical science disciplines.

### **1402 Astronomy and Astrophysics**

#### **140201 Astronomy**

A general area of study that focuses on the planetary, galactic, and stellar phenomena occurring in outer space. Includes instruction in celestial mechanics, cosmology, stellar physics, galactical evolution, quasars, stellar distribution and motion, interstellar medium, atomic and molecular constituents of astronomical phenomena, planetary science, solar system evolution, and specific methodologies such as optical astronomy, radioastronomy, and theoretical astronomy.

#### **140202 Astrophysics**

An area of study which focuses on the theoretical and observational study of the structure, properties, and behaviour of stars, star systems and clusters, stellar life cycles, and related phenomena. Includes instruction in cosmology, plasma kinetics, stellar physics, convolution and non-equilibrium radiation transfer theory, non-Euclidean geometries, mathematical modelling, galactic structure theory, and relativistic astronomy.

#### **140203 Planetary Astronomy and Science**

An area of study which focuses on the scientific study of planets, small objects, and related gravitational systems. Includes instruction in the structure and composition of planetary surfaces and interiors, planetary atmospheres, satellites, orbital mechanics, asteroids and comets, solar system evolution and dynamics, planetary evolution, gravitational physics, and radiation physics.

#### **140204 Space physics**

A general area of study that focuses on the study of physical processes in Earth's ionosphere and magnetosphere, the sun's corona, the heliosphere and the heliopause where local interstellar matter is encountered. Includes instruction in plasma physics, transport theory, mathematical and computational modelling, observations and data analysis, the structure of the heliosphere and adjacent regions, space weather and space climate.

#### **140299 Astronomy and Astrophysics, Other**

Any area of study in astronomy and astrophysics not listed above.

### **1403 Atmospheric Sciences and Meteorology**

#### **140301 Atmospheric Sciences and Meteorology, General**

A general area of study that focuses on the scientific study of the composition and behaviour of the atmospheric envelopes surrounding the earth, the effect of earth's atmosphere on terrestrial weather, and related problems of environment

and climate. Includes instruction in atmospheric chemistry and physics, atmospheric dynamics, climatology and climate change, weather simulation, weather forecasting, climate modelling and mathematical theory; and studies of specific phenomena such as clouds, weather systems, storms, and precipitation patterns.

**140302 Atmospheric Chemistry and Climatology**

An area of study which focuses on the scientific study of atmospheric constituents, reactions, measurement techniques, and processes in predictive, current and historical contexts. Includes instruction in climate modelling, gases and aerosols, trace gases, aqueous phase chemistry, sinks, transport mechanisms, computer measurement, climate variability, paleoclimatology, climate diagnosis, numerical modelling and data analysis, ionisation, recombination, photoemission, and plasma chemistry.

**140303 Atmospheric Physics and Dynamics**

An area of study which focuses on the scientific study of the processes governing the interactions, movement, and behaviour of atmospheric phenomena and related terrestrial and solar phenomena. Includes instruction in cloud and precipitation physics, solar radiation transfer, active and passive remote sensing, atmospheric electricity and acoustics, atmospheric wave phenomena, turbulence and boundary layers, solar wind, geomagnetic storms, coupling, natural plasma and energisation.

**140304 Meteorology**

An area of study which focuses on the scientific study of the prediction of atmospheric motion and climate change. Includes instruction in general circulation patterns, weather phenomena, atmospheric predictability, parameterisation, numerical and statistical analysis, large- and mesoscale phenomena, kinematic structures, precipitation processes, and forecasting techniques.

**140399 Atmospheric Sciences and Meteorology, Other**

Any area of study in atmospheric sciences and meteorology not listed above.

**1404 Chemistry**

**140401 Chemistry, General**

A general area of study that focuses on the scientific study of the composition and behaviour of matter, including its micro- and macrostructure, the processes of chemical change, and the theoretical description and laboratory simulation of these phenomena.

**140402 Analytical Chemistry**

An area of study which focuses on the scientific study of techniques for analysing and describing matter, including its precise composition and the interrelationships of constituent elements and compounds. Includes instruction in spectroscopy, chromatography atomic absorption, photometry, chemical modelling, mathematical analysis, laboratory analysis procedures and equipment maintenance, and applications to specific research, industrial and health problems.

**140403 Inorganic Chemistry**

An area of study which focuses on the scientific study of the elements and their compounds, other than the hydrocarbons and their derivatives. Includes instruction in the characterisation and synthesis of non-carbon molecules, including their structure and their bonding, conductivity, and reactive properties;

research techniques such as spectroscopy, X-ray diffraction, and photoelectron analysis; and the study of specific compounds, such as transition metals, and compounds composed of inorganic and organic molecules.

**140404 Organic Chemistry**

An area of study which focuses on the scientific study of the properties and behaviour of hydrocarbon compounds and their derivatives. Includes instruction in molecular conversion and synthesis, the molecular structure of living cells and systems, the mutual reactivity of organic and inorganic compounds in combination, the spectroscopic analysis of hydrocarbon compounds, and applications to specific problems in research, industry and health.

**140405 Physical and Theoretical Chemistry**

An area of study which focuses on the scientific study of the theoretical properties of matter, and the relation of physical forces and phenomena to the chemical structure and behaviour of molecules and other compounds. Includes instruction in reaction theory, calculation of potential molecular properties and behaviour, computer simulation of structures and actions, transition theory, statistical mechanics, phase studies, quantum chemistry, and the study of surface properties.

**140406 Polymer Chemistry**

An area of study which focuses on the scientific study of synthesised macromolecules and their interactions with other substances. Includes instruction in molecular bonding theory, polymerisation, properties and behaviour of unstable compounds, the development of tailored polymers, transition phenomena, and applications to specific industrial problems and technologies.

**140407 Chemical Physics**

An area of study which focuses on the scientific study of structural phenomena combining the disciplines of physical chemistry and atomic/molecular physics. Includes instruction in heterogeneous structures, alignment and surface phenomena, quantum theory, mathematical physics, statistical and classical mechanics, chemical kinetics, liquid crystals and membranes, molecular synthesis and design, and laser physics.

**140499 Chemistry, Other**

Any area of study in chemistry not listed above.

**1405 Geography and Cartography**

**140501 Geography**

An area of study which focuses on the systematic study of the spatial distribution and interrelationships of people, natural resources, plant and animal life. Includes instruction in historical and political geography, cultural geography, economic and physical geography, regional science, cartographic methods, remote sensing, spatial analysis, and applications to areas such as land-use planning, development studies, and analyses of specific countries, regions, and resources.

**140502 Cartography**

An area of study which focuses on the systematic study of map making and the application of mathematical, computer, and other techniques to the science of mapping geographic information. Includes instruction in cartographic theory and map projections, computer-assisted cartography, map design and layout, photogrammetry, air photo interpretation, remote sensing, cartographic editing, and applications to specific industrial, commercial, research, and governmental mapping problems.



**140503 Environmental Science**

An area of study which focuses on the application of biological, chemical, and physical principles to the study of the physical environment and the solution of environmental problems, including subjects such as abating or controlling environmental pollution and degradation; the interaction between human society and the natural environment; and natural resources management. Includes instruction in biology, chemistry, physics, geosciences, climatology, statistics, and mathematical modelling.

**140504 Natural Resources and Environmental Management and Policy**

An area of study which prepares individuals to plan, develop, manage, and evaluate programmes to protect natural habitats and renewable natural resources. Includes instruction in the principles of wildlife and conservation biology, environmental science, animal population surveying, natural resource economics, management techniques for various habitats, applicable law and policy, administrative and communications skills, and public relations.

**140599 Geography and Cartography, Other**

Any area of study in geography and cartography not listed above.

**1406 Geology and Earth Sciences/Geosciences****140601 Geology/Earth Science, General**

An area of study which focuses on the scientific study of the earth; the forces acting upon it; and the behaviour of the solids, liquids and gases comprising it. Includes instruction in historical geology, geomorphology and sedimentology, the chemistry of rocks and soils, stratigraphy, mineralogy, petrology, geostatistics, volcanology, glaciology, geophysical principles, and applications to research and industrial problems.

**140602 Geochemistry**

An area of study which focuses on the scientific study of the chemical properties and behaviour of the silicates and other substances forming, and formed by geomorphological processes of the earth and other planets. Includes instruction in chemical thermodynamics, equilibrium in silicate systems, atomic bonding, isotopic fractionation, geochemical modelling, specimen analysis, and studies of specific organic and inorganic substances.

**140603 Geophysics and Seismology**

An area of study which focuses on the scientific study of the physics of solids and its application to the study of the earth and other planets. Includes instruction in gravimetric, seismology, earthquake forecasting, magnetometry, electrical properties of solid bodies, plate tectonics, active deformation, thermodynamics, remote sensing, geodesy, and laboratory simulations of geological processes.

**140604 Palaeontology**

An area of study which focuses on the scientific study of extinct life forms and associated fossil remains, and the reconstruction and analysis of ancient life forms, ecosystems and geologic processes. Includes instruction in sedimentation and fossilisation processes, fossil chemistry, evolutionary biology, paleoecology, paleoclimatology, trace fossils, micropaleontology, invertebrate palaeontology, vertebrate palaeontology, paleobotany, field research methods, and laboratory research and conservation methods.

**140605 Hydrology and Water Resources Science**

An area of study which focuses on the scientific study of the occurrence, circulation, distribution, chemical and physical properties, and environmental interaction of surface and subsurface waters, including groundwater. Includes instruction in geophysics, thermodynamics, fluid mechanics, chemical physics, geomorphology, mathematical modelling, hydrologic analysis, continental water processes, global water balance, and environmental science.

**140606 Geochemistry and Petrology**

An area of study which focuses on the scientific study of the igneous, metamorphic, and hydrothermal processes within the earth and the mineral, fluid, rock and ore deposits resulting from them. Includes instruction in mineralogy, crystallography, petrology, volcanology, economic geology, meteoritics, geochemical reactions, deposition, compound transformation, core studies, theoretical geochemistry, computer applications, and laboratory studies.

**140607 Oceanography, Chemical and Physical**

An area of study which focuses on the scientific study of the chemical components, mechanisms, structure, and movement of ocean waters and their interaction with terrestrial and atmospheric phenomena. Includes instruction in material inputs and outputs, chemical and biochemical transformations in marine systems, equilibrium studies, inorganic and organic ocean chemistry, oceanographic processes, sediment transport, zone processes, circulation, mixing, tidal movements, wave properties, and seawater properties.

**140699 Geology and Earth Sciences/Geosciences, Other**

Any area of study in geology and earth sciences/geosciences not listed above.

**1407 Physics****140701 Physics, General**

A general area of study that focuses on the scientific study of matter and energy, and the formulation and testing of the laws governing the behaviour of the matter-energy continuum. Includes instruction in classical and modern physics, electricity and magnetism, thermodynamics, mechanics, wave properties, nuclear processes, relativity and quantum theory, quantitative methods, and laboratory methods.

**140702 Atomic/Molecular Physics**

An area of study which focuses on the scientific study of the behaviour of matter-energy phenomena at the level of atoms and molecules. Includes instruction in chemical physics, atomic forces and structure, fission reactions, molecular orbital theory, magnetic resonance, molecular bonding, phase equilibria, quantum theory of solids, and applications to the study of specific elements and higher compounds.

**140703 Elementary Particle Physics**

An area of study which focuses on the scientific study of the basic constituents of sub-atomic matter and energy, and the forces governing fundamental processes. Includes instruction in quantum theory, field theory, single-particle systems, perturbation and scattering theory, matter-radiation interaction, symmetry, quarks, capture, Schrodinger mechanics, methods for detecting particle emission and absorption, and research equipment operation and maintenance.

**140704 Plasma and High Temperature Physics**

An area of study which focuses on the scientific study of properties and behaviour of matter at high temperatures, such that molecular and atomic structures are in a disassociated ionic or electronic state. Includes instruction in

magnetohydrodynamics, free electron phenomena, fusion theory, electromagnetic fields and dynamics, plasma and non-linear wave theory, instability theory, plasma shock phenomena, quantitative modelling, and research equipment operation and maintenance.

**140705 Nuclear Physics**

An area of study which focuses on the scientific study of the properties and behaviour of atomic nuclei instruction in nuclear reaction theory, quantum mechanics, energy conservation, nuclear fission and fusion, strong and weak atomic forces, nuclear modelling, nuclear decay, nucleon scattering, pairing, photon and electron reactions, statistical methods, and research equipment operation and maintenance.

**140706 Optics/Optical Sciences**

An area of study which focuses on the scientific study of light energy, including its structure, properties and behaviour under different conditions. Includes instruction in wave theory, wave mechanics, electromagnetic theory, physical optics, geometric optics, quantum theory of light, photon detecting, laser theory, wall and beam properties, chaotic light, non-linear optics, harmonic generation, optical systems theory, and applications to engineering problems.

**140707 Solid State and Low Temperature Physics**

An area of study which focuses on the scientific study of solids and related states of matter at low energy levels, including liquids and dense gases. Includes instruction in statistical mechanics, quantum theory of solids, many-body theory, low temperature phenomena, electron theory of metals, band theory, crystalline structures, magnetism and superconductivity, equilibria and dynamics of liquids, film and surface phenomena, quantitative modelling, and research equipment operation and maintenance.

**140708 Acoustics**

An area of study which focuses on the scientific study of sound, and the properties and behaviour of acoustic wave phenomena under different conditions. Includes instruction in wave theory, the acoustic wave equation, energy transformation, vibration phenomena, sound reflection and transmission, scattering and surface wave phenomena, singularity expansion theory, ducting, and applications to specific research problems such as underwater acoustics, crystallography and health diagnostics.

**140709 Theoretical and Mathematical Physics**

An area of study which focuses on the scientific and mathematical formulation and evaluation of the physical laws governing, and models describing, matter-energy physics, and the analysis of related experimental designs and results. Includes instruction in classical and quantum theory, computational physics, relativity theory, field theory, mathematics of infinite series, vector and coordinate analysis, wave and particle theory, advanced applied calculus and geometry, analyses of continuum, cosmology, and statistical theory and analysis.

**140799 Physics, Other**

Any area of study in physics not listed above

**1499 Physical Sciences, Other**

Any area of study in physical sciences not listed above.

## **CESM 15: MATHEMATICS AND STATISTICS**

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A broad area of study concerned with logical symbolic language and its applications to the solution of functional problems and to obtain and analyse data in order to make sound inferences in the face of uncertainty.

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### **1501 Mathematics**

#### **150101 Mathematics, General**

A general area of study that focuses on the analysis of quantities, magnitudes, forms, and their relationships, using symbolic logic and language. Includes instruction in algebra, calculus, functional analysis, geometry, number theory, logic, topology and other mathematical specialisations.

#### **150102 Algebra and Number Theory**

An area of study which focuses on the expression of quantities and their relationships by means of symbols, vectors, matrices and equations, and the properties of integers. Includes instruction in algebraic structures, quadratic and automorphic forms, combinatorics, linear algebra, and algebraic geometry.

#### **150103 Analysis and Functional Analysis**

An area of study which focuses on the properties and behaviour of equations, multivariate solutions, functions, and dynamic systems. Includes instruction in differential equations, variation, approximations, complex variables, integrals, harmonic analysis and wavelet theory, dynamic systems, and applications to mathematical physics.

#### **150104 Geometry/Geometric Analysis**

An area of study which focuses on the properties, measurements, and relationships pertaining to points, lines, angles, surfaces, and solids. Includes instruction in global analysis, differential geometry, Euclidian and Non-Euclidian geometry, set theory, manifolds, integral geometry, and applications to algebra and other topics.

#### **150105 Topology and Foundations**

An area of study which focuses on the properties of unaltered geometric configurations under conditions of continuous, multi-directional transformations. Includes instruction in mathematical logic, proof theory, model theory, set theory, combinatorics, continua, homotopy, homology, links, and transformation actions.

#### **150199 Mathematics, Other**

Any area of study in mathematics not listed above.

### **1502 Applied Mathematics**

#### **150201 Applied Mathematics, General**

An area of study which focuses on the application of mathematics and statistics to the solution of functional problems in fields such as engineering and the applied sciences. Includes instruction in natural phenomena modelling continuum mechanics, reaction-diffusion, wave propagation, dynamic systems, numerical analysis, controlled theory, asymptotic methods, variation, optimisation theory, inverse problems, and application to specific scientific and industrial topics.

#### **150202 Computational Mathematics**

An area of study which focuses on the application of mathematics to the theory, architecture, and design of computers, computational techniques, and algorithms.

Includes instruction in computer theory, cybernetics, numerical analysis, algorithm development, binary structures, combinatorics, advanced statistics, and related topics.

**150299 Applied Mathematics, Other**

Any area of study in applied mathematics not listed above.

**1503 Statistics**

**150301 Statistics, General**

A general area of study that focuses on the relationships between groups of measurements, and similarities and differences, using probability theory and techniques derived from it. Includes instruction in the principles in probability theory, binomial distribution, regression analysis, standard deviation, stochastic processes, Monte Carlo method, Bayesian statistics, non-parametric statistics, sampling theory, and other statistical techniques.

**150302 Mathematical Statistics and Probability**

An area of study which focuses on the mathematical theory underlying statistical methods and their use. Includes instruction in probability theory, parametric and non-parametric inference, sequential analysis, multivariate analysis, Bayesian analysis, experimental design, time series analysis, resampling, robust statistics, limit theory, infinite particle systems, stochastic processes, martingales, Markov processes, and Banach spaces.

**150399 Statistics, Other**

Any area of study in statistics not listed above.

**1599 Mathematics and Statistics, Other**

Any area of study in mathematics and statistics not listed above.

## **CESM 16: MILITARY SCIENCES**

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The scientific study of the socio-political and geo-spatial environment in which the defence system of the country operates; the organisational dynamics of the military as an institution; the human and material resources required to execute its mission, and the application of this knowledge in the management of the security challenges facing the country.

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### **1601 Defence Organisation and Resource Management**

#### **160101 Military Accounting and Auditing**

The study of accounting and auditing with specific reference to a military context. Includes instruction in financial accounting fundamentals and management accounting with reference to internal control and audit, cost accounting, control systems, performance measurement systems, strategic management accounting.

#### **160102 Military Economics**

The study of economics in a military context, including instruction in micro- and macro-economics, monetary economics, international economics, applied economics, quantitative economics and defence economics.

#### **160103 Military Management**

The study of management as it applies to a military context. Includes instruction in areas such as logistic, financial, strategic and systems management.

#### **160104 Military Public and Development Management**

An area of study incorporating budgeting, labour relations, development management, organisational science, administrative law, public management, public policy analysis and civil military relations.

#### **160199 Defence Organisation and Resource Management, Other**

Any area of study in defence organisation and resource management not listed above.

### **1602 Military Human Resource Management and Development**

#### **160201 Military Sociology**

An area of study covering the sociological implications such as the relationship between the armed forces and society, social change, organisational change and restructuring. Includes instruction in diversity, armed forces and social institutions and the sociology of war.

#### **160202 Military Industrial Psychology**

An area of study covering areas such as human and organisational development, military career psychology, cultural diversity, organisational psychology and management of operational psychopathology.

#### **160299 Military Human Resource Management and Development, Other**

Any area of study in military human resources management and development not listed above.

## **1603 Military Technology and Applied Physical Science**

### **160301 Military Aeronautical Science**

An area of study covering various aspects of aviation theory. Includes areas such as airmanship, aerodynamics, meteorology, flight simulation, instruments and magnetism, avionics, helicopter and high speed aerodynamics, and other aspects of military aeronautical science.

### **160302 Military Technology**

An area of study covering military technology areas such as fluid mechanics, numerical techniques, information and electronic warfare, military aerospace and related technologies.

### **160303 Military Nautical Science**

An area of study which prepares military students in navigational theory, navigation systems, marine engineering principles, ship stability and naval architecture.

### **160304 Military Mathematics**

An area of study covering areas of mathematics as applied to military technology and behaviour. Includes instruction in calculus, linear algebra, analysis topology, numerical analyses, probability theory and statistical inference.

### **160305 Military Physics**

An area of study covering the military applications of various areas of physical science. Includes instruction in mechanics, waves and optics, electricity and thermodynamics, nuclear physics and applied computer physics.

### **160306 Military Geography**

An area of study covering geographical concepts and techniques and their relevance to military training. Includes instruction in the physical environment, military conduct and the environment, the geography of Sub-Saharan Africa, military terrain analysis and political geography.

### **160307 Military Computer Information Systems**

An area of study which prepares individuals in various aspects of computer information systems as relevant to the military context. Includes instruction in information systems theory and practice, software engineering and object-oriented programming, cyber warfare and data communication networks, and digital economy and electronic commerce.

### **160399 Military Technology and Applied Physical Science, Other**

Any area of study in military technology and applied physical science not listed above.

## **1604 Military Security Studies**

### **160401 Military History**

An area of study covering the following areas: general military history to 1914, military history of Africa to 1945, South African military history, the first and second world wars, contemporary warfare 1946-1991, low-intensity conflict in Africa since 1945, philosophy and historiography.

### **160402 Military Strategy**

An area of study covering various aspects of military strategy. Includes instruction in strategic thoughts and concepts, African security and defence policy, the national security of Southern African states and advanced study of military and operational strategy.

**160403 Military Political Science**

An area of study covering the following areas: introduction to Political Science, international relations and civil-military relations, South Africa and the international community, African politics and political thought, African and international political economy, international political theory, South African political-military profile in Africa, international conflict resolution and peace keeping.

**160499 Military Security Studies, Other**

Any area of study in military security studies not listed above.

**1605 Military Professional Development**

**160501 Military Professional Development**

A generic area of study aimed at empowering all military science students with the knowledge, skills and attitudes to (irrespective of the specific programme enrolled for): (a) Understand the socio-political and geo-spatial environment within which the Department of Defence operates; (b) Understand the organisational environment with the Department of Defence, (c) Be able to interpret the contemporary security environment and react appropriately to it; (d) Be able to function as leaders within the security environment in Africa; (e) Practice values, norms and behaviour that are commensurate with the prevailing understanding of military professionalism.

**1699 Military Sciences, Other**

Any area of study in military science not listed above.



## **CESM 17: PHILOSOPHY, RELIGION AND THEOLOGY**

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A broad area of study concerned with the critical analysis of and reflection on the ideas, theories, categories, concepts and methods for describing and evaluating human experience and reality.

A broad area of study concerning religion and different theologies, namely Buddhism, Christianity, Hinduism, Islam, Judaism and African indigenous religions.

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### **1701 Philosophy**

#### **170101 Philosophy, General**

An area of study which focuses on ideas and their logical structure, including arguments and investigations about abstract and real phenomena. Includes instruction in logic, ethics, aesthetics, epistemology, metaphysics, symbolism, and history of philosophy, and applications to the theoretical foundations and methods of other disciplines.

#### **170102 Main Philosophical Currents and Trends**

The study of the main philosophical trends in philosophy, its presuppositions, ideas, strategies and categories for solving philosophical puzzles, and of the interrelationships between different philosophical currents. Includes philosophy of science which focuses on the objectives, methodology and limitations of science and the validity of scientific theories.

#### **170103 Logic**

An area of study which focuses on the systematic study of valid inference, argument, and sound reasoning. Includes instruction in classical logic, properties of argument, validity, proof, fallacies, formal and material logic, symbolic and mathematical logic, analysis, specific schools of logic, and applications to problems in other academic disciplines and professional fields.

#### **170104 Ethics**

An area of study which focuses on the systematic study of the theory of moral good and its application to various theoretical and practical problems. Includes instruction in ethical theory, history of ethics, belief and value systems, ethical constructs, and applications to specific topics, issues and problems.

#### **170199 Philosophy, Other**

Any area of study in Philosophy not listed above.

### **1702 Religion**

#### **170201 Religion**

A general area of study which focuses on the nature of religious belief and specific religious and quasi-religious systems. Includes instruction in phenomenology; the sociology, psychology, philosophy, anthropology, literature and art of religion; mythology; scriptural and textual studies; religious history and politics.

### **1703 Theology**

#### **170301 African Indigenous Religions**

An area of study which focuses on the cultural, religious and spiritual phenomena indigenous to the continent of Africa - such as African conceptions of God(s) and the cosmos.

**170302 Buddhism**

An area of study which focuses on the philosophy preached by Siddhartha Gautama, the Buddha, in ancient India and subsequently interpreted by his followers and evolving into a religion; together with the intellectual, cultural, social, and ritual developments of the faith and its branches. Includes instruction in Buddhist sacred literature (Tipitaka, etc.) and study of one or more of the main branches including Early Buddhism, Hinayana, Theravada, Madhyamaka, Yogacara, Pure Land, Shingon, Tendai, Nichiren Shu, Zen, Tibetan, Chinese, Korean, Vietnamese, and others.

**170303 Christianity**

The study of Christian theology focuses on the foundational documents, of the history and development, and of the faith, ethics and practices of the Christian church and tradition, and therefore includes scholarly disciplines like systematic theology/dogmatics, practical/pastoral theology (with its sub-disciplines), contextual theologies, theological ethics, hermeneutics, missiology, ecumenics, church law, church history, and Biblical studies (with its sub-disciplines Hebrew Bible/Old Testament and New Testament, making use of languages like Hebrew, Aramaic and Greek).

**170304 Hinduism**

An area of study which focuses on the group of South Asian theologies and philosophies collectively known as Hinduism; together with the religious history and cultural and social manifestations of the faith. Includes instruction in Hindu theology and philosophy (dharma); literature (Vedas, Upanishads, Epics, and commentaries); the Hindu Pantheon, sects, and movements; schools and disciplines; and related arts and sciences.

**170305 Islam**

An area of study which focuses on Islam as preached by the Prophet Muhammad in 7th century Arabia and subsequently interpreted and elaborated by Muslim scholars and others; together with the cultural and social milieu related to the faith in various periods, localities and branches. Includes instruction in Muslim scripture and related written authorities and commentaries (Qur'an, Tafsir, Hadith/Sunnah, Sirah); Islamic law and jurisprudence; the various branches of Muslim theology including Sunni, Shi'a, Sufism and others; as well as the development of the religion of Islam and Muslim society from the beginnings to the present.

**170306 Judaism**

An area of study which focuses on the history, culture, and religion of the Jewish people. Includes instruction in Jewish religious heritage, sacred texts, and law; Jewish philosophy and intellectual history; Jewish life and culture, both in Israel and the Jewish Diaspora; historical Jewish minority cultures such as the Yiddish, Sephardic, and other; anti-Semitism, gentile relations and Shoa; Zionism; and modern developments within Judaism.

**170399 Theology, Other**

Any area of study in theology not listed above.

**1799 Philosophy, Religion and Theology, Other**

Any area of study in philosophy, religion and theology not listed above.

## **CESM 18: PSYCHOLOGY**

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A broad area of study which focuses on the behaviour of individuals, independently or collectively, and the physical and environmental bases of mental, emotional and neurological development and processes.

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### **1801 Psychology, General**

#### **180101 Psychology, General**

A general area of study that focuses on the scientific study of individual and collective behaviour, the physical and environmental bases of behaviour, and the analysis and treatment of behaviour problems and disorders. Includes instruction in the principles of the various subfields of psychology, research methods, and psychological assessment and testing methods.

### **1802 Clinical Psychology**

#### **180201 Clinical Psychology, General**

An area of study which offers introductory undergraduate studies in clinical psychology, involving the analysis, diagnosis and clinical treatment of psychological disorders and behavioural pathologies.

#### **180202 Clinical Child Psychology**

An area of study which focuses on the developmental processes of children and associated disorders and that prepares individuals for the independent professional practice of clinical child psychology. Includes instruction in developmental neuropsychology, child psychopathology, testing of children and adolescents, paediatric psychology, psychosocial variables in child development, clinical skills, family therapy, behavioural assessment and intervention, clinical skills, consultation, professional standards and ethics, and applications to topics such as infancy, childhood and adolescence.

#### **180203 Clinical Psychology, Professional Studies**

A postgraduate area of study that prepares individuals for the independent professional practice of clinical psychology, involving the analysis, diagnosis, and clinical treatment of psychological disorders and behavioural pathologies. Includes instruction in clinical assessment and diagnosis, personality appraisal, psychopathology, clinical psychopharmacology, behaviour modification, therapeutic intervention skills, patient interviewing, personalised and group therapy, child and adolescent therapy, cognitive and behavioural therapy, supervised clinical practice, ethical standards and applicable regulations.

#### **180299 Clinical Psychology, Other**

An area of study in clinical psychology not listed above

### **1803 Cognitive Psychology and Psycholinguistics**

#### **180301 Cognitive Psychology and Psycholinguistics**

An area of study which focuses on the scientific study of the mechanisms and processes of learning and thinking, and associated information encoding, decoding, processing and transmitting systems. Includes instruction in theories of cognition and intelligence, studies of cognitive processes such as memory, sensation and perception, pattern recognition, problem solving, and conceptual

thinking, cybernetics, psycholinguistics, and the study of biological and social communications mechanisms and processes.

## **1804 Community Psychology**

### **180401 Community Psychology**

An area of study which prepares individuals to apply psychological principles to the analysis of social problems, and the implementation of intervention strategies for addressing these problems. Includes instruction in social ecology, primary and secondary prevention of social pathologies, social intervention strategies and tactics, large group counselling, social services systems behaviour, creating settings, cultural stress, and the dynamics of social change.

## **1805 Comparative Psychology**

### **180501 Comparative Psychology**

An area of study which focuses on the behaviour of members of particular species or groups and the relationship of the behaviours of the species or group to the evolutionary origins. Includes instruction in differential psychology, experimental and physiological psychology, psychopharmacology, psychology of individual differences, reinforcement theory, and neurophysiology.

## **1806 Counselling Psychology**

### **180601 Counselling Psychology**

An area of study which prepares individuals for the independent professional practice of psychological counselling, involving the rendering of therapeutic services to individuals and groups experiencing psychological problems and exhibiting distress symptoms. Includes instruction in counselling theory, therapeutic intervention strategies, patient/counsellor relationships, testing and assessment methods and procedures, group therapy, marital and family therapy, child methods and procedures, group therapy, marital and family therapy, child and adolescent therapy, supervised counselling practice, ethical standards, and applicable regulations.

### **180602 Family Psychology**

An area of study which prepares individuals to provide therapeutic, evaluative and research services to families and individuals in the family unit context. Includes instruction in natural and family systems theory, family and group rituals, family evaluation and assessment, marital and couples therapy, sex therapy, parenting, interviewing techniques, genogram construction, family sculpting, diversity issues, family violence, family law, and professional standards and ethics.

### **180603 Marriage and Family Therapy/Counselling**

An area of study which prepares individuals for the independent professional practice of marriage and family therapy, involving the diagnosis of cognitive, affective and behavioural domain disorders, both mental and emotional, within the context of marriage and family systems and the application of short- and long-term therapeutic strategies in family group contexts. Includes instruction in psychotherapy, family systems and studies, small group intervention and therapy, marital problems, depression, identification of psychopathologies and behavioural disorders, holistic health care, practice management, applicable regulations, and professional standards and ethics.

### **180699 Counselling Psychology, Other**

An area of study in counselling psychology not listed above.

## **1807 Developmental and Child Psychology**

### **180701 Developmental and Child Psychology**

An area of study which focuses on the scientific study of the psychological growth and development of individuals from infancy through to adulthood. Includes instruction in cognitive and perceptual development, emotional development, personality development, the effects of biological maturation on behaviour, theories of cognitive growth and related research methods, testing and assessment methods for different age levels, research on child and adolescent behaviour therapy and the psychology of ageing.

## **1808 Educational Psychology**

### **180801 Educational Psychology**

An area of study which focuses on the application of psychology to the study of the behaviour of individuals in the roles of teacher and learner, the nature and effects of learning environments, and the psychological effects of methods, resources, organisation and non-school experience on the educational process. Includes instruction in learning theory, human growth and development, research methods and psychological evaluation.

### **180802 School Psychology**

An area of study which prepares individuals to apply clinical and counselling psychology principles to the diagnosis and treatment of student behavioural problems. Includes instruction in child and/or adolescent development; learning theory; testing, observation and other procedures for assessing educational, personality, intelligence and motor skill development; therapeutic intervention strategies for students and families; identification and classification of disabilities and disorders affecting learning; school psychological services planning; supervised counselling practice; ethical standards; and applicable regulations.

### **180899 Educational Psychology, Other**

An area of study in educational psychology not listed above.

## **1809 Environmental Psychology**

### **180901 Environmental Psychology**

An area of study which focuses on the study of behavioural interactions between human beings and the environment in individual and group contexts, and ways to improve them. Includes instruction in contextual theory; statistics; physiological, social and psychological responses to natural and technological hazards and disease; environmental perception and cognition; loneliness and stress; psychological aspects of environmental design and planning.

## **1810 Research Methodology for Psychology**

### **181001 Research Methodology for Psychology**

An area of study focusing on theorising, concepts and hypotheses; the planning and execution of research projects, selection of research participants, ethical standards; hypothesis testing, power and control, statistical inferences and the writing of research reports; the various types of experimental design, such as designs for independent groups, dependent groups, mixed groups and single-participant studies; non-experimental designs, such as quasi-experimental, longitudinal, cross-sectional designs, case studies and correlational studies; observational research and surveys, as well as programme evaluation, archival research and meta-analytic designs.

## **1811 Forensic Psychology**

### **181101 Forensic Psychology**

An area of study which prepares individuals to apply clinical, counselling, school and neuropsychology skills to the provision of psychological services within the criminal justice and civil legal systems, including consultation, assessment and interventions. Includes instruction in the epidemiology of mental/behavioural disorders, risk factors for violence and criminality, profiling and patterning, psychological testing, prediction and intervention measurement, forensic assessment, criminal and civil law and procedures, secure environments, forensic treatment and intervention skills, and professional standards and ethics.

## **1812 Geropsychology**

### **181201 Geropsychology**

An area of study which focuses on the psychology of ageing and of elderly individuals and populations, with reference to growth and decline across the life span. Includes instruction in gerontology, developmental and adult psychology, age-related psychological and neurological disorders, social and personality development in ageing populations and individuals, and applications to the clinical treatment and care of older adults.

## **1813 Health/Medical Psychology**

### **181301 Health/Medical Psychology**

An area of study which focuses on the psychological study of health and illness, and recovery, from the perspective that these phenomena arise from a combination of physical, behavioural and social conditions. Includes instruction in abnormal and social psychology, psychophysiology, an introduction to psychopharmacology, learning processes, clinical and behavioural therapies, biopsychosocial modelling, clinical procedures and assessment, preventive education, psychotherapy, rehabilitation processes, and research methods.

### **181302 Psychopharmacology**

An area of study which focuses on the study of the behavioural effects of medications, drugs, nutrients, and chemicals (including natural and artificial toxins) in laboratory and clinical settings. Includes instruction in pharmacology, behavioural toxicology and pharmacology, neuroscience, physiology, clinical psychopharmacology, substance abuse treatments and antidotes, neurochemical mechanisms, epidemiology of chemicals and substances, biochemical interactions, and psychoactive drugs.

### **181399 Health/Medical Psychology, Other**

An area of study in health/medical psychology not listed above

## **1814 Industrial and Organisational Psychology**

### **181401 Industrial and Organisational Psychology, General**

An area of study which focuses on the scientific study of individual and group behaviour in organisational settings and the physical environmental context within which productive behaviour occurs; the application of the paradigms, theories, models, constructs and principles of psychology to issues related to the world of work in order to enhance the effectiveness of individual, group and organisational behaviour and the well-being of the participants.

### **181402 Occupational and Career Psychology**

An area of study which focuses on individual differences, developmental challenges, career models, career choice, entry into the world of work, career

development, career stages, occupational challenges, and management and support systems.

**181403 Organisational Psychology**

An area of study which focuses on intra-individual variables, like personality traits, perceptions, attitudes, values, and motivation which affect organisational behaviour; interpersonal, group and intergroup behaviours, like leadership, power relations, decision-making and communication; organisational structure and design, organisational culture, organisational change and development.

**181404 Occupational Health, Well-being and Performance Dysfunction in the Workplace**

An area of study which focuses on individual differences in health and well-being in organisations, improving worker health through interventions, group/team and normative influences on health and well-being, antisocial work behaviour and organisational health, employee assistance programmes, workplace health promotion, integration and future directions, the management of HIV/AIDS in the workplace. Why people fail in their jobs, a systematic performance analysis approach to the solution of ineffective performance, the development of taxonomy of work-related performance dysfunctions, broad areas of work dysfunction, dysfunctional working conditions, diagnosis of work-related dysfunctions, prevention and management of performance dysfunctions.

**181499 Industrial and Organisational Psychology, Other**

An area of study in industrial and organisational psychology not listed above.

**1815 Personality Psychology**

**181501 Personality Psychology**

An area of study which focuses on the unique organisation of fairly permanent characteristics that set the individual apart from other individuals and, at the same time, determine how others respond to that individual. Includes instruction in Freudian, Skinnerian, Rogerian, and Ellisonian psychology; neo-Freudian psychology; psychological systems, neurophysiology and psychopharmacology.

**1816 Physiological Psychology/Psychobiology**

**181601 Physiological Psychology/Psychobiology**

An area of study which focuses on the scientific course study of the biological bases of psychological functioning, and their application to experimental and therapeutic research problems. Includes instruction in functional neuroanatomy, neural system development, biochemical neural regulatory mechanisms, neurological biophysics, memory storage and retrieval, physiology of cognition and perception, physiological bases of psychopathology and behavioural disorders, psychopharmacology, comparative psychobiology, and specialised experimental design and research methods.

**181602 Biopsychology**

An area of study which focuses on biological and psychological linkages, especially the linkages between biochemical and biophysical activity and the functioning of the central nervous system.

**181603 Neuropsychology**

An area of study which focuses on brain-behaviour relations. Core elements are knowledge of neuroanatomy and pathology, psychological assessment of cognitive and emotional functioning (including psychometric assessments) and clinical skills.

**181699 Physiological Psychology/Psychobiology, Other**

An area of study in physiological psychology/psychobiology not listed above.

**1817 Psychometrics and Applied Psychological Assessment**

**181701 Psychometrics and Quantitative Psychology**

An area of study which focuses on the mathematical and statistical procedures used in psychological test construction and validation and the general problems associated with the measurement and prediction of behaviour.

**181702 Applied Psychological Assessment**

An area of study which focuses on the practical implementation of psychological tests and other assessment instruments in an appropriate, professional and ethical manner, based on the body of knowledge regarding the psychometric properties of the measuring instruments, good testing practices, and contextual factors that may influence the assessment, for the purposes of decision-making about the test-taker.

**181799 Psychometrics and Applied Psychological Assessment, Other**

An area of study in psychometrics and applied psychological assessment not listed above.

**1818 Social Psychology**

**181801 Social Psychology, General**

An area of study which focuses on the scientific study of individual behaviour in group contexts, group behaviour, and associated phenomena. Includes instruction in social learning theory, group theory and dynamics, sex roles, social cognition and inference, attribution theory, attitude formation, criminal behaviour and other social pathologies, altruistic behaviour, social development, human diversity, crisis intervention and social ecology.

**181802 Positive Psychology**

An area of study which focuses on the scientific study of the nature, manifestations, patterns, origins, dynamics and enhancement of strengths, resilience and psycho-social well-being (optimal functioning) on individual, group and community levels. This includes positive emotional states, traits and institutions, and instruction is on constructs, theories, measurements and applications in various phases of life and in different contexts.

**181899 Social Psychology, Other**

Any area of study in social psychology not listed above.

**1899 Psychology, Other**

Any area of study in psychology not listed above.



## **CESM 19: PUBLIC MANAGEMENT AND SERVICES**

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A broad area of study concerned with the formulation, implementation, administration, evaluation and management of public policies, programmes and services, including criminal justice and correctional services.

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### **1901 Human Services**

#### **190101 Human Services, General**

An area of study which focuses on the general study and provision of human and social services to individuals and communities and prepares individuals to work in public and private human services agencies and organisations. Includes instruction in the social sciences, psychology, principles of social service, human services policy, planning and evaluation, social services law and administration, and applications to particular issues, services, localities, and populations.

### **1902 Community Organisation and Advocacy**

#### **190102 Community Organisation and Advocacy**

An area of study which focuses on the theories, principles, and practice of providing services to communities, organising communities and neighbourhoods for social action, serving as community liaisons to public agencies, and using community resources to furnish information, instruction, and assistance to all members of a community. May prepare individuals to apply such knowledge and skills in community service positions.

### **1903 Public Administration**

#### **190301 Public Administration**

An area of study which prepares individuals to serve as managers in the executive arm of local, provincial and national government, and that focuses on the systematic study of executive organisation and management. Includes instruction in the roles, development, and principles of public administration; the management of public policy; executive-legislative relations; public budgetary processes and financial management; administrative law; public personnel management; professional ethics; and research methods.

### **1904 Public Policy Analysis**

#### **190401 Public Policy Analysis**

An area of study which focuses on the systematic analysis of public policy issues and decision processes. Includes instruction in the role of economic and political factors in public decision making and policy formulation; microeconomic analysis of policy issues; resource allocation and decision modelling; cost/benefit analysis; statistical methods; and applications to specific public policy topics.

### **1905 Criminal Justice and Corrections**

#### **190501 Corrections**

An area of study which prepares individuals to study the theories and principles, of correctional science and to function as professional corrections officers and other workers in public and/or private incarceration facilities.

#### **190502 Criminal Justice/Law Enforcement Administration**

An area of study which prepares individuals to apply theories and practices of criminal justice to structuring, managing, directing and controlling criminal justice

agencies, including police departments, law enforcement divisions and units, and private protective services.

**190503 Criminal Justice/Safety Issues**

An area of study which focuses on the criminal justice system, its organisational components and processes, and its legal and public policy contexts. Includes instruction in criminal law and policy, police and correctional systems organisation, the administration of justice and the judiciary, and public attitudes regarding criminal justice issues.

**190504 Forensic Science and Technology**

An area of study which focuses on the application of the physical, biomedical, and social sciences to the analysis and evaluation of physical evidence, human testimony and criminal suspects. Includes instruction in forensic medicine, forensic dentistry, anthropology, psychology, pathology, forensic laboratory technology, crime scene analysis, fingerprint technology, document analysis, pattern analysis, examination procedures, applicable law and regulations, and professional standards and ethics.

**190505 Criminal Justice/Police Science**

An area of study which prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control and public relations, witness interviewing, evidence collection and management, basic crime prevention methods, weapon and equipment operation and maintenance, report preparation and other routine law enforcement responsibilities.

**190506 Juvenile Corrections**

An area of study which prepares individuals to specialise in the provision of correction services to underage minor populations. Includes instruction in corrections, juvenile delinquency, juvenile development and psychology, juvenile law, and justice administration, social services, record-keeping procedures, and communication skills.

**190507 Criminalistics and Criminal Science**

An area of study which focuses on the application of clinical and criminal laboratory science, investigative techniques, and criminology to the reconstruction of crimes and the analysis of physical evidence. Includes instruction in laboratory science, laboratory procedures, criminology and police science, evidentiary testing and analysis, computer applications, record-keeping, reconstruction techniques, evidence handling and storage, and applications to specific types of evidence and crimes.

**190508 Corrections Management**

An area of study which prepares individuals to plan and manage institutional facilities and programmes for housing and rehabilitating prisoners in the public and/or private sectors. Includes instruction in the principles and practice of correction, facilities planning and management, safety and security, social and health services, staff and inmate management, budgeting, communication skills, correctional psychology, and applications to specific types of correctional facilities approaches.

**190599 Criminal Justice and Corrections, Other**

Any area of study in criminal justice and corrections not listed above.

**1999 Public Management and Services, Other**

An area of study in public management and services not listed above.

## **CESM 20: SOCIAL SCIENCES**

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A broad area of study of social sciences, social institutions, and social behaviour, as well as the interpretation of past events, issues and cultures.

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### **2001 Anthropology**

#### **200101 Social-Cultural Anthropology,**

An area of study that focuses on the systematic and comparative study across space and time of human social and cultural behaviour, milieus and institutions and of knowledge construction and application processes. Includes instruction in anthropological and comparative linguistics, economic anthropology, ethnography, ethnology, ethnohistory, indigenous knowledge systems, kinship, political and legal anthropology, psychological and medical anthropology, public anthropology, ethnographic research methods, and applications to social domains such as development, the environment, health, international affairs and justice, migration, organisations, religious life and modern science.

#### **200102 Physical (Biological) Anthropology**

An area of study which focuses on the application of the biological sciences and anthropology to the study of the adaptations, variability, and the evolution of human beings and their living and fossil relatives. Includes instructions in anthropology, human and mammalian anatomy, cell biology, palaeontology, human culture and behaviour, neuroscience, forensic anthropology, anatomical reconstruction, comparative anatomy, and laboratory science and methods.

#### **200199 Anthropology, Other**

Any area of study in anthropology not listed above.

### **2002 Archaeology**

#### **200201 Archaeology**

An area of study which focuses on the systematic study of extinct societies, and the past of living societies, via the excavation, analysis and interpretation of their artifactual, human, and associated remains. Includes instruction in archaeological theory, field methods, dating methods, conservation and museum studies, cultural and physical evolution, and the study of specific selected past cultures.

### **2003 History**

#### **200301 History, General**

An area of study which focuses on the general study and interpretation of the past, including the gathering, recording, synthesising and criticising of evidence and theories about past events. Includes instruction in historiography; historical research methods; studies of specific periods, issues and cultures; and applications to areas such as historic preservation, public policy, and records administration.

#### **200302 African History**

An area of study which focuses on the development, changes, past events, discoveries, trends, individuals, institutions, ideas, artefacts, and the systematic accounting of other phenomena associated with the continent of Africa and its inhabitants, but excluding the detailed history of South Africa and its inhabitants.

**200303 American (United States) History**

An area of study which focuses on the development of American society, culture, and institutions from the Pre-Columbian period to the present. Includes instruction in American historiography, American history sources and materials, historical research methods, and applications to the study of specific themes, issues, periods, and institutions.

**200304 Asian History**

An area of study which focuses on the development of the societies, cultures, and institutions of the Asian Continent from their origins to the present. Includes instruction in the historiography of specific cultures and periods; sources and materials; historical research methods; and applications to the study of specific themes, issues, periods, and institutions.

**200305 European History**

An area of study which focuses on the development of European society, culture, and institutions from the origins to the present. Includes instruction in European historiography, European history sources and materials, historical research methods, and applications to the study of specific themes, issues, periods, and institutions.

**200306 History and Philosophy of Science and Technology**

An area of study which focuses on the historical evolution of scientific theories and science applications and technologies, as well as the philosophy of science and its historical socio-economic context. Includes instruction in the construction and methods of philosophical inquiry, historiography of science research methods in the history of the scientific and engineering disciplines, including mathematics.

**200307 South African History**

The detailed study of the development, changes, past events, discoveries, trends, individuals, institutions, ideas, artefacts, and the systematic accounting of other phenomena associated with South Africa and its inhabitants.

**200308 History of Ancient Cultures**

An area of study which focuses on the history of the ancient cultures of the Near East; an overview of the history, culture and political development of Ancient Greece; the social history of Ancient Rome; the development of the Roman legal system, constitutional development in Rome, basic Latin terms (legal and other) in general use today; and an overview of the history of other ancient cultures.

**200399 History, Other**

Any area of study in history not listed above.

**2004 Library Science/Librarianship**

**200401 Library Science/Librarianship, General**

An area of study which focuses on the knowledge and skills required to develop, organise, store, retrieve, administer, and facilitate the use of local, remote, and networked collections of information in print, audiovisual, and electronic formats and that prepares individuals for professional service as librarians and information consultants.

**200402 Public/Applied History and Archival Administration**

An area of study which focuses on the application of history and administrative skills to the recording of public events and the management of related historical resources. Includes instruction in historical research methods, archives and records management, the planning and administration of public records services

and history projects, and applications to specific problems in public organisations, government agencies, foundations, and records facilities.

**200499 Library Science/Librarianship, Other**

Any area of study in library science/librarianship not listed above.

**2005 Museology/Museum Studies**

**200501 Museology/Museum Studies**

An area of study which focuses on the attitudes, knowledge, and skills required to develop, prepare, organise, administer, conserve, store and retrieve artefacts, exhibits and entire collections in museums and galleries, and that prepares individuals to assume curatorial, technical and managerial positions in museums. Includes instruction in institutional management, acquisition, exhibit design, conservation, packing techniques, and public relations.

**2006 Political Science and Government**

**200601 Political Science and Government, General**

An area of study which focuses on the systematic study of political institutions and behaviour. Includes instruction in political philosophy, political theory, comparative government and politics, political parties and interest groups, public opinion, political research methods, studies of the government and politics of specific countries, and studies of specific political institutions and processes.

**200602 Comparative Political Systems**

An area of study which focuses on the study and comparative analysis of the similarities and differences of political institutions, processes, and behaviour in different countries and political subdivisions.

**200603 Contemporary World Affairs**

An area of study which focuses on the study of economic, sociological, political, legal, cultural, and other factors which influence the present relations between nations.

**200604 International Relations and Affairs**

An area of study which focuses on the systematic study of international politics and institutions, and the conduct of diplomacy and foreign policy. Includes instruction in international relations theory, foreign policy analysis, national security and strategic studies, international law and organisation, the comparative study of specific countries and regions, and the theory and practice of diplomacy.

**200699 Political Science and Government, Other**

Any area of study in political science and government not listed above.

**2007 Sociology**

**200701 Sociology**

An area of study which focuses on the systematic study of human social institutions and social relationships. Includes instruction in industrial sociology, social theory, sociological research methods, social organisation and structure, social stratification and hierarchies, dynamics of social change, family structures, social deviance and control, and applications to the study of specific social groups, social institutions, and social problems. Focuses also on the human impact on the environment and the individual and group behaviours with respect to health and illness.

**200702 Demography and Population Studies.**

An area of study which focuses on the systematic examination of population models and population phenomena, and related problems of social structure and behaviour. Includes instruction in population growth, spatial distribution, mortality and fertility factors, migration and its effects, urbanisation, dynamic population modelling, population estimation and projection, mathematical and statistical analysis of population data, population policy studies, and applications to problems in economics and government planning.

**200703 The Sociology of Developing Societies**

An area of study which focuses on developing societies. Issues such as development, underdevelopment, poverty and global stratification are addressed.

**200799 Sociology, Other**

An area of study in sociology not listed above.

**2008 Social Work**

**200801 Social Work, General**

An area of study which prepares individuals for the professional practice of social welfare administration and counselling, and that focuses on the study of organised means of providing basic support services for vulnerable individuals, groups and communities. Includes instruction in social welfare policy; case work planning; social counselling and intervention strategies; administrative procedures and regulations; and specific applications in areas such as child welfare and family services, probation, employment services, and disability counselling.

**200802 Child and Youth Services/Administration**

An area of study which prepares individuals to plan, manage, and implement social services for children, youth, and families. Includes instruction in child development and psychology, adolescence, family studies, social work, social services administration, juvenile and family law, programme and facilities planning, youth leadership, counselling, probation, casework, applicable procedures, and regulations, and professional standards and ethics.

**200899 Social Work, Other**

Any area of study in social work not listed above.

**2099 Social Sciences, Other**

Any area of study in the social sciences not listed above.