

Science Courses Open to Non-Science Majors

- List taken from Winter 2024 Undergraduate Academic Calendar at the Office of the Registrar.
- No university pre-requisites are required for these courses.
- Not all courses are offered every term. Consult the relevant Timetable at the Office of the Registrar.

FRSC-2007. Overview of Forensic Science

This course will introduce students to the various specializations of forensic science including forensic pathology; entomology; anthropology; toxicology; digital forensics; as well as DNA, blood stain and fingerprint analysis. The students will learn the theory and practices of forensic evidence identification and analysis. The course may not be used to fulfill the major requirements of any major or concentration in a forensic program.

BIOM-1003. Biology of Organisms

Properties of living organisms from the level of the cell through tissues, organs and organ systems, genetics, to the functioning, integrated organism. This course is offered on-campus and as a distance course. (Intended for non-majors and students requiring preparation for BIOL-1111 and BIOL-1101) (Not counted for credit in any Faculty of Science program.) (2 lecture hours a week.)

CHEM-1003. Alchemy to Chemistry: Science Through the Ages

Science and technology shape the world in which we live. Nevertheless, sometimes the societal impact of scientific breakthroughs is not realized for a generation or more. In this course, key scientific discoveries and developments will be examined and discussed through the lens of a Chemist. Starting with the “ancients”, the course works through time to the present looking at how theories and the scientific method has developed and evolved over time. The course will focus on topics pertaining to chemistry, the science of substances and interactions. (It may be taken by Science students for credit, but does not count as a Science option towards the fulfilment of the specified requirements for a Science degree.) (3 lecture hours per week)

CHEM-1100. General Chemistry I

Introductory concepts in chemistry, including reactions of atoms, ions, and molecules, solution stoichiometry, thermochemistry, electronic structure of atoms, basic chemical bonding and molecular geometry, periodic properties of the elements, and the theory of gases. (Prerequisite: Grade 12“U” Chemistry or equivalent, or consent of the instructor.) (3 lecture, 3 laboratory/tutorial hours a week.)

CHEM-1103. Topics in General Chemistry

An introduction to selected topics in modern chemistry for engineering: atomic and molecular structure, properties of matter and the periodic table, macroscopic chemical systems, stoichiometry, properties of the equilibrium state and applications to thermochemistry and electrochemistry. (Prerequisite: Grade 12“U” Chemistry or equivalent.) (3 lecture, 3 laboratory hours a week.)

COMP-1047. Computer Concepts for End-Users

Introduction to the concepts of operation of a computer system, including hardware and software. Development of conceptual understanding of word processors, databases, spreadsheets, etc., and practical experience with their use. Networking concepts and data communication concepts will be introduced. The Internet will be introduced with students having access to internet resources. Management information systems including the systems development lifecycle will be discussed. Fundamental concepts of algorithm development and programming will be introduced. Hands-on experience with microcomputers as well as a distributed-computing environment will be involved. In addition to lecture time, laboratory/tutorial time may be scheduled as required. (May not be used to fulfill the major requirements of any major or joint major in Computer Science.) (3 lecture hours).

COMP-1400. Introduction to Algorithms and Programming I

This course is the first of a two-course sequence designed to introduce students to algorithm design and programming in a high-level language such as C. The main objectives of the course are to develop the ability to identify, understand and design solutions to a wide variety of problems. Topics include: computer system overview, hardware and software, problem solving steps, concepts of variables, constants, data types, algorithmic structure, sequential logic, decisions, loops, modular programming, one-dimensional arrays, text files. If possible, problems like searching/sorting will be addressed. (3 lecture hours and 1.5 laboratory hours a week).

ECON-1100. Introduction to Economics I

An introduction to microeconomics intended to provide students with the tools necessary to begin to understand and evaluate how resources are allocated in a market economy. Specific topics include how markets function, theories of the business firm, of consumer behaviour and of income distribution. The economic roles of labour unions and government are also covered. The theories are applied to contemporary Canadian economic problems.

ECON-1110. Introduction to Economics II

This course is an introduction to macroeconomics. The emphasis is upon measuring and explaining what determines economic aggregates such as the total national product (GDP) and the level of prices and employment. The role of money and financial institutions, the impact of international trade and the policy options available to governments for coping with inflation and unemployment are discussed in detail.

ECON-2000. Life Choices and Economics

The course is designed for Arts and Social Sciences students. It will introduce them to key concepts and methods in Microeconomics. The application and understanding of economic analysis as applied to individual decision-making and public policy will be emphasized. The course provides a non-technical and intuitive way for students to master an understanding of real world problems. (May not be taken for credit in any program within the School of Business, or Faculty of Engineering. Science students may take the course only as a Social Sciences option.) (Antirequisite: ECON-1100.)

ECON-2010. Life Choices and Economics II

The course is designed for Arts and Social Sciences students. It will introduce them to key concepts and methods in Macroeconomics. Key Macroeconomic concepts, such as unemployment, inflation, international trade, and investment will be examined. The course will be a non-technical look at the Canadian and world economies. (May not be taken for credit in any program within the School of Business, or Faculty of Engineering. Science students may take the course only as a Social Sciences option.) (Antirequisite: ECON-1110.)

ECON-2100. Games and Behaviour

The course is designed for Arts, Social Science and Business students. It is intended to introduce them to key concepts and methods in game theory. The application and understanding of behavioral analysis as applied to individual decision making and public policy will be emphasized. The course provides a non-technical and intuitive way for students to master an understanding of real world problems and decision making. Students will learn about strategies for conflict resolutions, Co-operation, social interaction, voting strategies, individual and business behaviour. (May not be taken for credit in Economics or joint programs with Economics, Science or the Faculty of Engineering.)

ESCI-1000. Natural Hazards and Disasters

The Earth's component systems and their interrelationships. Earth hazards and the Earth's interior processes: volcanism and earthquakes. Hazards and surface processes: landslides and floods. Atmospheric hazards: storms, hurricanes and tornadoes. (May be taken by Science students for credit, but does not count as a Science option towards the fulfillment of the specified requirements for a Science degree). (2 lecture hours per week)

ESCI-1010. Our Changing Earth

Origin of the universe and solar system; focus on the Earth and moon; earliest life forms. Measurement of geological time. Global climatic change in geological history; drifting continents; deserts, floods and ice sheets. Fossils and evolution; extinctions and probable causes. Human evolution and migrations; early technologies. (May be taken by Science students for credit, but does not count as a Science option towards the fulfillment of the specified requirements for a Science degree). (2 lecture hours a week)

ESCI-1020. Introduction to Planetary Science

An introduction to the origin of the Universe and Solar System. Topics include: the Big Bang theory; origin and organization of matter; and formation of galaxies, nebulae, stars, and planetary systems. The focus is on the geological features of planets, moons, asteroids, and comets. Coverage includes historical perspectives and current theory on astronomy, measurement of the ages of the Universe and Solar System, space exploration, Moon and Mars missions, analyses of NASA satellite images, the origin and evolution of life in the Solar System, and the search for possible extra-terrestrial life and intelligence in the Universe. (May be taken by Science students for credit, but does not count as a Science option towards the fulfillment of the specified requirements for a Science degree.) (3 lecture hours a week.)

ESCI-1120. Introduction to Geomorphology

The landscapes of the earth, with particular reference to the glaciers, coastlines, rivers, and northern permafrost regions of Canada. (3 lecture hours a week.)

ESCI-1130. Atmosphere and Climate

An introduction to the atmosphere and the basic principles of meteorology and climatology. Topics include weather systems, atmospheric pollution and inadvertent climate modification, climate change and relationships between climate and living organisms. (3 lecture hours a week.)

ESCI-1141. Cartography and Digital Mapping

This introductory course focuses on the key elements of map design, representation of spatial data and map interpretation. Topics will include projections, datums and coordinate reference systems, scale properties and unit calculations, map symbology and map accuracy. Different mapping approaches, such as choropleth, isoline and dot mapping will be utilized throughout the course. Web-based mapping will be introduced. Maps will be designed, generated, and interpreted using paper-based media and modern cartographic software in a laboratory setting. (2 lecture, 2 laboratory hours a week.)

ESCI-1151. Fundamentals of Geographic Information Systems and Science

This introductory course focuses on the basic principles, techniques, applications, and impacts of geographic information systems. Vector and raster data structures will be introduced, as well as methods for acquiring, storing, manipulating, and analyzing spatial and non-spatial data. Spatial data conversion, data reformatting, and basic database development techniques will also be explained. Geographic layers will be created and different overlay and spatial query procedures to address various real-world problems will be presented using proprietary and open source GIS software in a laboratory setting. (It is recommended that students take ESCI-1141 before taking this course.) (2 lecture, 2 laboratory hours a week.)

ESCI-2000. Science, Technology, and Society

This course is designed to explore the complex inter-relationships between science, technology, and society. The nature of science and scientific method and selected current issues in science and technology will be discussed. Topics may include chemicals in society, biotechnology and related issues, nuclear energy, and the impact of these technologies on society. Technology, as it relates to human values and public awareness, will also be considered. (Not open to Semester 1 and 2 students.) (May not be taken for credit towards a B.Sc. Degree in Environmental Science.) (3 lecture hours a week.)

ESCI-2010. Geology and the Environment

Effect of geological factors on the environment; pollution of groundwater, ground subsidence, nuclear waste disposal, subsurface disposal of liquid wastes, earthquake prediction and control. This course is designed specifically for the non-scientist. (May not be taken for credit towards a B.Sc. Degree in Environmental Science.) (2 lecture hours a week or equivalent.)

ESCI-2020. Discovering Dinosaurs

The origin, evolution, behaviour, ecology, and extinction of dinosaurs, and how these aspects of dinosaur science are understood through the study of their fossils. How the public perception and scientific interpretation of dinosaurs have changed over time as a result of new discoveries. (3 lecture hours per week)

There are more courses from the School of the Environment. Please consult the Academic Calendar for courses and course descriptions.

ESTU-1100. Humans and the Environment - An Introduction to Environmental Studies

Humans use energy and resources from our natural surroundings to live, and to develop our societies and cultures. This use has an impact on other animals and plants, and on the air, water, and land. Our impact is now so great that we are in danger of depleting or destroying many of the natural systems on which we depend. This course will examine our relationship with, and impact on, the environment; with reference to the physical, cultural, economic, political, and ethical elements. Sustainable practices will also be discussed. Topics may include: human sustainability and population growth, aquatic and terrestrial sustainability, food and agriculture, water resources, energy production, and climate change. (Can be taken as a Social Science option.) (Three lecture hours per week.)

ESTU-2100. Canadian Regional Environments

Canada is a complex and varied nation. The environmental issues that concern each region of the country are also complex and varied. This course surveys the dominant environmental issues and impacts in each region of Canada, and explores the reasons for the regional variation through a variety of lenses: its physical landscape, its resource opportunities and challenges, its historical settlement patterns and economic development, and its social, cultural, and demographic structure. This context is used to develop an understanding of current environmental news and events across the country. (Can be taken as a Social Science option.) (Three lecture hours per week.)

BIOL-1013. Organisms and the Environment

Organisms interacting with other organisms and with their physical environment. Ecological impacts of human activity. This course is offered on-campus and as a distance course. (Intended for non-majors and students requiring preparation for BIOL-1111 and BIOL-1101.)(Not counted for credit in any Faculty of Science program.) (2 lecture hours a week.)

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BIOL-1101. Cell Biology

Examination of the principles governing living systems, with emphasis on the molecular and cellular basis of life, molecular genetics, energetics, differentiation, and development. (Grade 12 "U" Biology or equivalent, or BIOM-1003 and BIOL-1013 are strongly recommended) (3 lecture, 3 laboratory hours a week.)

BIOL-1111. Biological Diversity

Principles governing living systems; the origins and diversity of life; evolution, reproduction, and heredity; the structure and function of viruses through plants and animals; basic principles of ecology. (Grade 12 "U" Biology or equivalent, or BIOM-1003 and BIOL-1013 are strongly recommended) (3 lecture, 3 laboratory hours a week.)

PHYS-1000. Introduction to Astronomy I

The solar system with emphasis on the results of recent space exploration. This is a descriptive course suitable for the non-scientist. (May be taken by B.Sc. students for credit, but does not count as a Physics course or other science course towards the fulfillment of the requirements for the B.Sc. degree.) (2 lecture hours a week.)

PHYS-1010. Introduction to Astronomy II

The stars, galaxies, including pulsars, black holes, and quasars. Current theories of the structure of the universe will be discussed. This is a descriptive course suitable for the non-scientist. (May be taken by B.Sc. students for credit, but does not count as a Physics course or other science course towards the fulfillment of the requirements for the B.Sc. degree.) (2 lecture hours a week.)