

Science (SCI) Courses

SCI1005 Introduction to Botany

This course provides a comprehensive description of the structure, physiology and reproduction of plants of economic value. Focus is on the relationship between plants and humans, including the role of plants as food sources such as rice, corn and wheat, as well as industries which are plant based. The importance of plants in maintaining environmental balance is also discussed with an emphasis on topics of current interest.

Offered at Providence, Providence CE
3 Semester Credits

SCI1010 Environmental Science

This course presents major scientific concepts dealing with the biological and physical nature of the world we live in. A major theme is the impact of human population and economic growth on the biodiversity and ecosystems of our planet, considering how sustainable use of the world's resources may be achieved for both developing and developed nations. Topics such as energy, air, water or resource use, land use and agriculture will be discussed. (OL)

Offered at Charlotte, Online, Providence, Providence CE
3 Semester Credits

SCI1015 Introduction to Life Science

This course describes key biological and chemical principles that apply to all living things. Evolution and natural selection are studied as an explanation for the history of life on Earth. Students examine cells and cell functions, genetics, as well as structure and function of human body systems. Application of scientific methodology is included. (OL)

Offered at Charlotte, Online, Providence, Providence CE
3 Semester Credits

SCI1030 Marine Biology

This course is an introduction to both the biological and physical aspects of the marine environment, including a survey of the organisms that inhabit the world's oceans, their ecology, species evolution and distribution, and the human impact of commercial marine-related industries. Of particular interest are seafood, shellfish and marine plants as marine food sources, as well as shipping and maritime industries. (HY)

Offered at Providence, Providence CE
3 Semester Credits

SCI1050 Nutrition

This course in basic human nutrition examines metabolic energy derived from carbohydrates, proteins and lipids. Pathways for utilization of this energy to build new biomolecules, including nucleic acids, are discussed, as are the consequences of nutrient deficiencies. Ways to achieve and maintain nutrient balance are a central part of the course. The significance of vitamins and minerals and possible toxicity due to overabundance are also discussed. Computer-based dietary analysis is a key component of this course. (OL)

Offered at Charlotte, Online, Providence, Providence CE
3 Semester Credits

SCI2020 Introduction to Exercise Physiology

This course introduces topics in the physiology and anatomy of exercise, cardiovascular fitness, nutrition, and weight control. Emphasis is placed on understanding the scientific basis for a wellness program. (OL)

Offered at Charlotte, Online, Providence, Providence CE
3 Semester Credits

SCI2030 Introduction to Ecology

This course combines biology and other sciences to study how living things interact with each other and with their nonliving environment. Topics such as competition and predation, the one-way flow of energy and the cycling of nutrients through ecological communities are examined. Other topics such as biodiversity, major terrestrial and aquatic biomes, succession, and the methods and goals of environmental conservation are discussed. (OL)

Offered at Online, Providence, Providence CE
3 Semester Credits

SCI2031 Anatomy and Physiology

This course covers the anatomy and physiology of the human organism, based on the cell, tissue, organ and system structures of the body. An integral part of this course is the learning of medical terminology. (OL)

Offered at Charlotte, Online, Providence, Providence CE
3 Semester Credits

SCI2120 Introduction to Microbiology

This course introduces the basic morphological, physiological and genetic aspects of various microbes, and explores the application of this information to medical, agricultural and industrial settings. Key topics include the following: structure/function relationships, factors affecting the growth and control of microorganisms, microbial genetics and evolutionary mechanisms, host-microbe interactions, and applied microbiology. This course combines both lecture and laboratory components. Topics covered in the laboratory portion of the course both support lecture content and allow students to develop introductory laboratory skills.

Prerequisite(s): CHM2040 and SCI1015.

Offered at Charlotte, Providence
3 Semester Credits

SCI2350 Honors Seminar: The Scientific Implications of Mass Food Production

This course focuses on the health and environmental impacts of the industrialization of food production. Specifically, students investigate the molecular techniques used to engineer genetically modified foods, the use of antibiotics and hormones in animal production, the biological modes of action of both pesticides and herbicides, and the industry's contribution to environmental pollutants and greenhouse gases. Students gain insight into scientific research methods through readings and classroom discussions. Scientific research articles are used to investigate the consequences of current production techniques. In addition, students develop an understanding of the scientific method by designing and conducting experiments in a laboratory setting. Students demonstrate their understanding of this topic with the completion of a research project.

Prerequisite(s): ENG1024 or English placement, honors status.

Offered at Charlotte, Providence
3 Semester Credits

SCI3020 Sustainability Policy and Planning

In this course, students are introduced to the application of scientifically-sound sustainability policies and their effects. Through the study of relevant case studies, this course demonstrates how corporate leaders can gain a strategic advantage by fostering sustainable development principles within their organizations. Businesses have typically been viewed as major contributors to environmental problems, but they have also been extremely important participants in solutions. Students investigate policy efforts that promote responsible management of social, economic, and environmental resources and examine the role of governments, markets, and nonprofit organizations in the implementation of sustainable development laws and policies.

Prerequisite(s): ENG1021 or ENG1027, BIO1022 and BIO1026 or SCI1010. (OL)
Offered at Charlotte, Online, Providence, Providence CE
3 Semester Credits

SCI3070 Food Sustainability

This course introduces students to the natural science aspects of sustainability in food production, agriculture, aquaculture, food distribution, and environmental considerations. Topics include such emerging areas as organic food industry, slow food movement, local food production, and sustainable food production practices. The class integrates theoretical principles of agriculture and aquaculture sustainability with hands-on learning exercises and evaluates the environmental, social and economic aspects of sustainable food production issues.

Prerequisite(s): ENG1021 or ENG1027, BIO1022 and BIO1026 or SCI1010. (OL)
Offered at Charlotte, Online, Providence
3 Semester Credits

SCI3080 The Business of Sustainability

This course reveals the business advantages of integrating the scientific principles of environmental sustainability in commerce. The application of sustainability principles to business management is investigated. How environmental issues can drive markets and be used to manage risks and costs is examined. The economic necessity of sustainable business practices is analyzed. Business practices are evaluated to determine their true environmental impact.

Prerequisite(s): ENG1021 or ENG1027, BIO1022 and BIO1026 or SCI1010. (OL)
Offered at Charlotte, Online, Providence
3 Semester Credits

SCI3500 How Drugs Work

This course integrates knowledge from core science courses including physiology, biochemistry and cellular and molecular biology to ascertain the relationship between biological processes and therapeutic agents. An understanding of pharmacology basics, including pharmacokinetics, pharmacodynamics and a systematic cognizance of pharmacotherapy is emphasized. Course content brings an awareness of the adverse effects of pharmacologic agents on humans, animals, microorganisms and ecosystems. Prerequisite(s): (SCI1015 or (BIO1011, BIO1015), SCI2031) or (BIO2041, BIO2045), sophomore status. (OL)
Offered at Online, Providence
3 Semester Credits

SCI4090 Research Seminar in Sustainability

This course is a capstone of the student's undergraduate work in the sustainability minor and an introduction to the professional practice of sustainability. The Research Seminar in Sustainability is designed to provide students with opportunities to experience the methods used in business, nonprofit, and government sustainable development initiatives and programs by approaching a single issue from a variety of perspectives. Student groups select topics related to the main issue. Topics are clustered within the categories of policies and sociology, economics, or health and environment. Each group analyzes its topic, discovers relationships to the main issue and other groups' topics, and presents their findings to the entire class. This multidisciplinary seminar serves as an integrative course employing the strategies that will build a sustainable future. Prerequisite(s): BIO1022 and BIO1026 or SCI1010, SCI3020, SCI3070, SCI3080. (OL)
Offered at Charlotte, Online, Providence
3 Semester Credits