SCIENCE (NON-DEPARTMENTAL) (SC)

SC 02000 Research Cures Cancer Corps Summer Immersion (0 Credit Hours)
High school students participating in the Harper Cancer Research Institute (HCRI) Research Cures Cancer Corps (RC3) Summer Immersion program will gain hands-on cancer research experience. Students will work alongside Mentors in HCRI-affiliated laboratories on actual cancer research projects at the University of Notre Dame.

SC 10100 Planet Earth (3 Credit Hours)
This course introduces the student to Earth processes and focuses on how these processes affect people, and how people affect these processes. The course explores the interactions between Earth's biosphere, geosphere, atmosphere, and hydrosphere, with the objective of demonstrating how our physical environment is controlled by geological, biological, and human forces. SC 10100 and SC 20100 are the same course.
Prerequisites: CHEM 10113 or CHEM 10115 or CHEM 10117 or CHEM 10121 or CHEM 10125 or CHEM 10126 or CHEM 10171
Corequisites: SC 21110
Satisfies the following University Core Requirements: WKST-Core Science & Technology

SC 10200 Big History - The science of what we are, how we got here, and implications for where we are going (3 Credit Hours)
This is an introductory level course that is intended to fulfil the science requirement for non-COS majors who are part of the Glynn Family Honors Program. The course will examine the arc of history from the Big Bang to the present day to identify major themes and driving forces that can explain the past, illuminate the present, and help predict the future of (human) life on earth. The course will be interdisciplinary by nature: though science (including biology, geology, and cosmology) will be the main focus, the course will include aspects of anthropology (e.g., comparative development of human societies in different world zones) and history/sociology (e.g., ways that different social/power/economic structures can enhance/inhibit innovation).
Corequisites: SC 12200
Satisfies the following University Core Requirements: WKST-Core Science & Technology

SC 12200 Big History Tutorial (0 Credit Hours)
Tutorial to accompany SC 10200 (Big History)
Corequisites: SC 10200

SC 20110 Planet Earth (3 Credit Hours)
An introduction to the Earth and its processes, composition, evolution, and structure. The course introduces the student to mineralogy, petrology, structural geology, oceanography, surficial processes, and environmental geology. Lecture and laboratory meetings.
Corequisites: SC 21110
Satisfies the following University Core Requirements: WKST-Core Science & Technology

SC 20200 Mineralogy and Optical Mineralogy (4 Credit Hours)
Explores the compositions and structures of rock forming minerals in the context of environmental systems. Case studies emphasize the role of mineralogy in the transport of heavy metals and radionuclides in the subsurface, geologic disposal of nuclear waste, and acid mine drainage. Various remediation strategies are examined and contrasted.
Prerequisites: CHEM 10118 or SC 20110 or ENVG 10110 or CHEM 10171 or CHEM 10097 or CHEM 10181
Satisfies the following University Core Requirements: WKST-Core Science & Technology

SC 20300 Rare Disease Symposium (0 Credit Hours)
The Class is a Symposium on Rare Diseases in the format of a public forum. The one day event will feature: - A forum on providing emerging experimental therapies led by local rare disease patients and their physicians - A session on the global perspectives of rare disease patient families - Updates from ND faculty and visiting researchers/clinicians on the latest research in lysosomal storage disorders, rare cancers and more broadly in rare inherited syndromes - ND Student research in establishing natural histories for rare diseases and developing a database for patient medical records - A poster session featuring Notre Dame student and faculty research in rare diseases - Other activities including a rare disease quiz to build awareness for rare diseases.

SC 20500 Principles of Science Communications (3 Credit Hours)
Communicating about science has always been a necessity in public discourse, but communicating complex or ongoing science, health, and technology issues can be a challenge. This one-semester core Writing Intensive course, taught in Spring and Fall semesters, immerses students in the art of communicating about science in many forms, from writing for magazines and newspapers, to institutional writing for universities or medical centers, to giving speeches to lay audiences and creating descriptive museum displays. The areas of focus will be on writing concisely without jargon, workshopping/re-writing/editing, communicating and writing with accuracy, and developing empathy for both the scientist and the science communicator. Each week will include short reading assignments, as reading about science is critical to writing about science. Communicating about science has always been a necessity in public discourse, but communicating complex or ongoing science, health, and technology issues can be a challenge. This one-semester core Writing Intensive course, taught in Spring and Fall semesters, immerses students in the art of communicating about science in many forms, from writing for magazines and newspapers, to institutional writing for universities or medical centers, to giving speeches to lay audiences and creating descriptive museum displays. The areas of focus will be on writing concisely without jargon, workshopping/re-writing/editing, communicating and writing with accuracy, and developing empathy for both the scientist and the science communicator. Each week will include short reading assignments, as reading about science is critical to writing about science.
Satisfies the following University Core Requirements: WRIT - Writing Intensive

SC 21110 Planet Earth Laboratory (1 Credit Hour)
The laboratory portion of ENVG/SC 20110.

SC 21200 Mineralogy and Optical Mineralogy Lab (0 Credit Hours)
This is the laboratory portion of ENVG 20201.

SC 24002 International Internship (3 Credit Hours)
Students are placed to work as interns in various organizations ranging from commercial businesses to charitable foundations. Each student will be required to make a presentation to other interns regarding their internship and to submit a 10-page paper reflecting on the experiences he/she has acquired on the internship.

SC 25000 Undergraduate STEM Pedagogy (1 Credit Hour)
Instructor approval is required for enrollment in this course. This course is intended for upper class undergraduate students who have excelled in the study of science at Notre Dame and want to learn how to teach those concepts effectively by applying peer mentoring pedagogical theory in real-world educational settings to assist new learners. The students in this course should have a strong desire to help fellow students learn science, should wish to reinforce their own science learning, and should want to share their enthusiasm for the study of science with others. Fundamentally, the course is about teaching and learning science in Notre Dame's beginning undergraduate science courses.
Prerequisites: CHEM 25171 (may be taken concurrently) or PHYS 27310 (may be taken concurrently) or MATH 25150 (may be taken concurrently)
Course may be repeated.

SC 30001 Being Human in STEM (3 Credit Hours)
This is an interactive course combining academic and community-based learning to investigate the theme of diversity within STEM fields at Notre Dame and beyond. A major goal is to empower students to explore how structural racism impacts the experience of STEM students, faculty, and staff at Notre Dame, specifically examining how geographic upbringing, gender, class, race, and sexuality shape these experiences. Students will engage with scientific literature regarding DEI (Diversity, Equity, Inclusion) issues within the STEM experience, and will collaborate and implement what they learned to design projects expanding resources and engagement in the STEM community.

SC 30230 Sedimentology and Stratigraphy (3 Credit Hours)
Physical, chemical and compositional properties of sediments are used to investigate formation, origin and occurrence of sedimentary rocks. Sedimentary environments from a physical, biological and tectonic perspective are explored. Stratigraphic relationships of layered rock successions are used to examine the distribution of strata in space and time. The course concludes with the application of sedimentologic, stratigraphic and tectonic principles to basin analysis in order to interpret the geologic history and evaluate the economic potential of sedimentary environments.
Prerequisites: CHEM 10171 or CHEM 10181

SC 30500 Geomorphology for Engineers and Scientists (3 Credit Hours)
This course introduces students to principles and processes of landform evolution with emphasis on global-scale Earth processes, volcanic & tectonic geomorphology, weathering processes & soils and mass movement. Processes and landform evolution in fluvial, desert, glacial, coastal and karst environments are investigated, and the effects on human structures and developments are explored. The course concludes with a discussion on the impact of climate change on Earth's surface features.
Prerequisites: CHEM 10171 or CHEM 10181

SC 40000 Principles of Science Communications (3 Credit Hours)
Communicating about science has always been a necessity in public discourse, but communicating complex or ongoing science, health, and technology issues can be a challenge. This one-semester core Writing Intensive course, taught in Spring and Fall semesters, immerses students in the art of communicating about science in many forms, from writing for magazines and newspapers, to institutional writing for universities or medical centers, to giving speeches to lay audiences and creating descriptive museum displays. The areas of focus will be on writing concisely without jargon, workshopping/re-writing/editing, communicating and writing with accuracy, and developing empathy for both the scientist and the science communicator. Each week will include short reading assignments, as reading about science is critical to writing about science.
Satisfies the following University Core Requirements: WRIT - Writing Intensive

SC 40300 Geochemistry (3 Credit Hours)
An introduction to the use of chemical thermodynamics and chemical kinetics in modeling geochemical processes. Special emphasis is placed on water-rock interactions of environmental interest.

SC 40491 Current Topics in Environmental Science (3 Credit Hours)
Taught by the director of the ES major. Environmental sciences first and second majors only. The course will be divided into various modules taught by experts on campus. The modules will include environmental law, risk assessment, environmental ethics, advancements in environmental and ecological science, current topics of national interest in environmental science, and others. This course is required of all first majors and recommended of all second majors. Fall.
Enrollment is limited to students with a major in Environmental Sciences.

SC 40500 Scientific Entrepreneurship (2 Credit Hours)
This course focuses on innovation and entrepreneurship of embryonic ideas and scientific breakthroughs and how to move them from the laboratory to the marketplace - from invention to venture. All entrepreneurial case studies will be focused on science-based and high-technology examples, such as nano-science, energy science, drug discovery, medical diagnostics, sophisticated algorithms, green technology, etc. The class is project-based, where students will develop a high technology business plan based on discoveries and inventions of Notre Dame science faculty. Students will have the flexibility to choose from a variety of topics for their final projects in biology, biochemistry, chemistry, mathematics, physics, or medicine. Individual or team projects are possible depending on preference. Does not count as science credit for majors in the College of Science.
Enrollment limited to students in the College of Engineering or College of Science colleges.

SC 43350 Introduction to Hospice and Palliative Care (1.5 Credit Hours)
This 1.5 credit satisfactory/unsatisfactory graded course is designed to provide students with an in-depth understanding of hospice and palliative care that may be practically useful in student's own personal lives and particularly helpful for undergraduate preprofessional students who will be working with chronic illness and terminal conditions in all medical specialties. Students will also be given an introduction to compassionate interpersonal communication skills and therapeutic presence which are needed in caring for people who are in need of palliative care and for people who are dying. The course will introduce components of patient advocacy in difficult situations by training students to identify advocacy issues for patients and the care of the patient's family. Using a hybrid model of synchronous and asynchronous learning, the curriculum is designed to provide students with an in-depth understanding of the distinction between palliative and hospice care while focusing on how this care is given in the current healthcare system. Faculty will include Center for Hospice Care administrators, physicians, nurses, social workers, spiritual care staff, and bereavement counselors as well as Hillebrand Center faculty, and guest experts. For Spring 2024, the course will meet on 5 Friday dates from 2 to 5 p.m. on each of the following dates - March 22, April 5, April 12, April 19, April 26. In order to pass the course, students must attend all 5 sessions, complete a 3-5 page integration/reflection paper and an online self-study component of several assigned readings, and viewing assigned documentaries. This course is offered every Spring semester.

SC 45340 Geology Field Trip (1 Credit Hour)
Field trip to the Upper Peninsula of Michigan during Fall Break; emphasis on understanding the regional geology before, during, and after the formation of Proterozoic banded iron formations and the Marquette Mineral District. A wide range of sedimentary, metamorphic, and igneous rock types and geologic structures are studied, and the trip includes a structural geology field exercise. Prior to the trip, there will be lectures on the regional geology, and each student will prepare a presentation on one aspect of the geology that is seen in the field.

SC 45999 Summer Research Internship (0-1 Credit Hours)
This course is intended to be an option for Notre Dame/St, Mary's students, or those from other universities, who wish to, or are required to, have organized unpaid summer internships related to the student's career preparation. Departmental approval from one of the College of Science departments is required. The requirements are that the student will be working 30 hours per week for at least 6 weeks and write a journal of activities. A letter from the supervisor regarding satisfactory completion of work, and 5-10 page reflection is also required. This course is S/U-graded, and does not count for any major, only 1 credit counts toward degree general electives. A proposal must be submitted to Dean's office at least two weeks in advance by the student with offer letter from the internship employer attached prior to June 5, and include the name of the faculty sponsor. Proposals for routine shadowing or low level volunteer help in a lab will generally not be approved. Students are responsible for finding a faculty person to sponsor the activity including evaluation of the journal and reflection.

SC 46490 Directed Readings (1-3 Credit Hours)
Study of topics not covered or only briefly covered in other courses. Readings, problems and reports.
Course may be repeated.

SC 48100 Research Experience for Undergraduates (1-3 Credit Hours)
Times and inclusive dates variable depending on specific program elected by the student. Permission required.
Course may be repeated.

SC 48999 Research Experience for Undergraduates (0 Credit Hours)
This is a zero-credit course for students engaged in independent research or working with a faculty member or a member of the University staff on a special project. Registration requires a brief description of the research or project to be pursued and the permission of the director of the Summer Session. This course is taken as an indication of the student's status on campus and is meant to allow the registered student to use the University facilities as the Summer Session permits. No course work is required.