

# SCIENTIFIC INQUIRY

Courses in the Scientific Inquiry (SI) domain are designed to provide students with an opportunity to learn the methods of modern science and its impact in understanding the world around us. Courses are designed to help students develop a more complete perspective about science and the scientific process, including:

- an understanding of the major principles guiding modern scientific thought;
- a comprehension of the varying approaches and aspects of science;
- an appreciation of the connection among the sciences;
- an awareness of the roles and limitations of theories and models in interpreting, understanding, and predicting natural phenomena; and
- a realization of how these theories and models change or are supplanted as our knowledge increases.

Where required, Quantitative Reasoning (MAT 120) is a prerequisite for SI Domain courses. Generally, two SI courses are required; depending on their program of study students may be required to take a designated SI Science as a Way of Knowing (SWK) or SI Lab, or both. The QR and MCD waiver cannot be applied to the SI Domain.

## Learning Outcomes

### Scientific Inquiry: Science as a Way of Knowing

Students will be able to:

- Demonstrate understanding of the natural science content that is the focus of the course.
- Interpret and create multiple representations of data (e.g. graphical, mathematical, pictorial/diagrammatic, and/or descriptive).
- Use scientific evidence to support or refute predictions made by scientific hypotheses, state the limitations of the scientific method, and identify unsubstantiated claims, such as those based on pseudoscience.
- Describe the process of scientific research, including aspects such as skepticism, ethics, collaboration, diversity of community, disparate impacts, funding, peer review, or the dissemination of results.
- Substantiate the claim that scientific knowledge inherently evolves over time as previous understandings are revised with new evidence and perspectives.

### Scientific Inquiry: Lab

Students will be able to:

- Pose meaningful scientific questions and generate testable scientific hypotheses.
- Plan, design and conduct scientific investigations in a collaborative environment using appropriate tools and techniques to gather relevant data in order to test and revise scientific hypotheses.
- Develop and use scientific models (conceptual, physical, and mathematical) to make predictions and develop explanations of natural phenomena.
- Address variability in the data and recognize and analyze alternative explanations and predictions.
- Communicate scientific procedures, results, and explanations and engage in arguments based on scientific evidence.

## Courses

Below please find examples of courses previously offered for scientific inquiry credit. For information on current offerings, please consult Campus Connection.

### Scientific Inquiry: Science as a Way of Knowing Courses

Course	Title	Quarter Hours
<b>Anthropology</b>		
ANT 130	SCIENCE AND PSEUDOSCIENCE IN ARCHAEOLOGY	4
ANT 270	HUMAN EVOLUTION	4
ANT 272	INTRODUCTION TO MEDICAL ANTHROPOLOGY	4
<b>Asian Studies, Global</b>		
AAS 230	INTERNATIONAL ENVIRONMENTAL CONSERVATION	4
<b>Biology</b>		
BIO 104	EVOLUTION AND SOCIETY	4
BIO 110	EVOLUTION IN HEALTH AND MEDICINE	4
BIO 115	INTRODUCTION TO BIOLOGY	4
BIO 118	MARINE BIOLOGY	4
BIO 120	THE SCIENCE AND ART OF VISION	4
BIO 121	INFECTIOUS DISEASES AND IMMUNITY	4
BIO 122	INTRODUCTION TO PALEOBIOLOGY	4
BIO 126	BRAIN AND BEHAVIOR	4
BIO 128	STRESS, HORMONES AND THE NERVOUS SYSTEM	4
BIO 134	HOW THE HUMAN BODY WORKS	4
<b>Chemistry</b>		
CHE 100	OUR CHEMICAL WORLD	4
CHE 102	MOLECULES THAT SHAPED THE WORLD	4
CHE 104	CHEMICALS, DRUGS AND LIVING SYSTEMS	4
<b>Education</b>		
EDU 125	THE SCIENCE OF HUMAN COGNITION	4
<b>Environmental Science</b>		
ENV 101	INTRO TO ENVIRONMENTAL SCIENCE WITHOUT LAB	4
ENV 116	GEOLOGY OF THE ENVIRONMENT	4
ENV 118	EARTH THROUGH TIME	4
ENV 200	CITIES AND THE ENVIRONMENT	4
ENV 202	RESOURCES, POPULATION, AND THE ENVIRONMENT	4
ENV 204	ENERGY AND THE ENVIRONMENT	4
ENV 230	GLOBAL CLIMATE CHANGE	4
<b>Geography</b>		
GEO 101	ENVIRONMENTAL GEOGRAPHY	4
GEO 210	INTERNATIONAL ENVIRONMENTAL CONSERVATION	4
GEO 219	WOMEN AND SCIENCE	4
GEO 220	OCEANOGRAPHY	4
GEO 225	EARTH'S CHANGING CLIMATE	4
<b>Health Sciences</b>		

HLTH 150	DISCOVERING DISEASE: SMALL POX, HIV, AND ZIKA	4	CHE 105	EXPLORING NUTRIENTS/SCIENCE OF NUTRITION	4
<b>Physics</b>			CHE 107	PROTEINS AND THEIR GENES	4
ID 104	HAPTICS	4	CHE 109	FORENSIC CHEMISTRY	4
PHY 104	THE SUN & ITS PLANETS	4	CHE 130	GENERAL CHEMISTRY I	3
PHY 120	HOW THINGS WORK	4	CHE 131	GENERAL CHEMISTRY I LABORATORY	1
PHY 200	LIGHT AND ATOMS	4	CHE 132	GENERAL CHEMISTRY II	3
PHY 204	FRONTIERS OF THE UNIVERSE	4	CHE 133	GENERAL CHEMISTRY LABORATORY II	1
PHY 205	EINSTEIN'S PECULIAR IDEAS	4	CHE 134	GENERAL CHEMISTRY III	3
PHY 220	OCEANOGRAPHY	4	CHE 135	GENERAL CHEMISTRY LABORATORY III	1
PHY 225	EARTH'S CHANGING CLIMATE	4	<b>Computer Graphics and Animation</b>		
PHY 236	THE SCIENCE OF DIGITAL AUDIO	4	GPH 259	DESIGN GEOMETRY	4
<b>Psychology</b>			<b>Environmental Science</b>		
PSY 241	RESEARCH METHODS I	4	ENV 102	INTRO TO ENVIRONMENTAL SCIENCE WITH LAB	4
<b>Public Health</b>			ENV 115	ENVIRONMENTAL GEOLOGY	4
MPH 101	THE SCIENCE OF PROTECTING THE PUBLIC'S HEALTH	4	ENV 117	EARTH THROUGH TIME WITH LABORATORY	4
<b>School of Continuing and Professional Studies</b>			<b>Film and Television Production</b>		
SNC 209	EXPLORING EARTH'S PHYSICAL FEATURES	4	FILM 254	IMAGE, OPTICS AND CINEMATIC MOTION (FORMERLY DC 274)	4
SNC 210	PREHISTORIC LIFE	4	<b>Nursing</b>		
SNC 225	BIODIVERSITY	4	NSG 230	WOMEN'S HEALTH: THE PHYSICAL SELF	4
<b>Writing, Rhetoric, and Discourse</b>			NSG 232	MEN'S HEALTH: THE PHYSICAL SELF	4
WRD 283	ENVIRONMENTAL WRITING	4	<b>Physics</b>		
<b>Scientific Inquiry: Lab Courses</b>			PHY 110	BASIC ELECTRONICS: PRINCIPLES & TECHNIQUES	4
<b>Course</b>	<b>Title</b>	<b>Quarter Hours</b>	PHY 114	EXPLORING OTHER WORLDS	4
<b>Anthropology</b>			PHY 150	GENERAL PHYSICS I	4
ANT 104	INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY	4	PHY 151	GENERAL PHYSICS II	4
ANT 120	SCIENCE OF ARCHAEOLOGY	4	PHY 152	GENERAL PHYSICS III	4
<b>The Art School</b>			PHY 155	GENERAL PHYSICS	6
ART 223	LIGHT, COLOR, AND PHOTOGRAPHY	4	PHY 156	GENERAL PHYSICS	6
<b>Biological Sciences</b>			PHY 170	UNIVERSITY PHYSICS I	4
BIO 155	INTRODUCTION TO BIOLOGY WITH LABORATORY	4	PHY 171	UNIVERSITY PHYSICS II	4
BIO 156	FOOD, FUEL FOR LIFE	4	PHY 172	UNIVERSITY PHYSICS III	4
BIO 160	MARINE BIOLOGY WITH LAB	4	PHY 206	SOUND AND ACOUSTICS	4
BIO 161	INFECTIOUS DISEASES AND IMMUNITY WITH LABORATORY	4	PHY 232	INTRODUCTION TO DIGITAL ELECTRONICS	4
BIO 162	THE BRAIN: BIOLOGY AND BEHAVIOR	4	<b>School of Continuing and Professional Studies</b>		
BIO 166	INTRODUCTION TO PLANT BIOLOGY WITH LAB	4	SNC 320	MAMMALOGY	4
BIO 191	GENERAL BIOLOGY I FOR SCIENCE MAJORS	4			
BIO 192	GENERAL BIOLOGY II FOR SCIENCE MAJORS	4			
BIO 193	GENERAL BIOLOGY III FOR SCIENCE MAJORS	4			
BIO 202	HUMAN PHYSIOLOGY	4			
<b>Chemistry</b>					
CHE 103	ENVIRONMENTAL CHEMISTRY	4			