

Certificate Program Descriptions and Regulations

Certificate of Studies in the Discoveries of Science

Description and objectives:

The Division of Natural Sciences and Mathematics provides a selection of introductory and survey courses, drawn from all the sciences at Bishop's University. The Certificate of Studies in the Discoveries of Science is designed for students interested in the world of modern science: its triumphs, people, techniques, methodologies, and ongoing quest for new discoveries.

While Discoveries of Science courses are inspirational, entertaining, and thought provoking, they also develop critical, analytical, numerical and research skills. An interest in learning about science, and a willingness to explore new territory as an adult learner is far more important than having even a rudimentary background in any particular scientific discipline. These courses are designed and intended for students who have little to no science or mathematical background. A solid willingness to learn, and an enthusiasm for learning something of the fundamental ideas which help us to understand how the physical world around us works is all that is required.

In the twenty-first century, the discoveries of science and the products of the resulting technology impinge upon virtually every aspect of life. It is therefore crucial that a liberally educated university student not leave Academia without some significant experience in the modern sciences. This need not involve specialized studies of any particular discipline, since there is also merit in surveying the manner in which science is presently carried out, and learning about the current discoveries of our scientists, and their ongoing quests for further knowledge of our physical world.

Program structure:

A student must successfully complete any ten (10) courses (plus all co-requisite or integrated laboratories, if any) selected from the course lists below, including at least one from a minimum of six of the nine disciplines.

Note: Not all of the courses listed are offered in every year, and some are offered only infrequently.

Total: minimum 30 lecture-course credits.

Biochemistry

Bch 101b Introduction to Nutrition

Biological Sciences

Bio 107 Birds and Behaviour

Bio 113 Field Biology I (only offered in the spring semester)

Bio 131 The Human Body in Health and Disease

Bio 138 The Genetics Revolution

Bio 193 or Bio 191 Introductory Biology*

- Students also register in the co-requisite, 1-cr. Lab. course,
Bil 193 or Bil 191

Chemistry

Che 131 Liberal Arts Chemistry: Some Chemistry
from Everyday Life

Che 132 Chemistry of Art Conservation and Restoration.

Computer Science

Csc 101 Foundations of Computer Science

Csc 103 Interactive Web Page Design
Csc 107 Databases and Dynamic Web Design
(Csc 103 as pre-requisite)
Csc 113 Digital Imaging for Photography
- The above are all 4-credit courses which include a laboratory component
Csc 201 Computer Ethics
Csc 214 Introduction to Networks

Environmental Science

Env 101b Introduction to Environmental Science
Mat 103 Environmental Modeling

Exercise Science

Exs 101 Introduction to Exercise Science
Exs 127 Introductory Exercise Physiology

Mathematics

Mat 100 Excursions in Modern Mathematics
Mat 101 Further Excursions in Modern Mathematics
Mat 104 History of Mathematics
Mat 105 Discrete Mathematics
Mat 114 Modern Geometry; Euclidean to Fractal*
- Students also register in the co-requisite 1-cr laboratory course, Mat184
Mat 125 Number Theory*
*These courses require Mat 105 as a pre-requisite

Physics

Phy 111 The Physics of Everyday Phenomenon
Phy 112/ Fin 209 Introduction to Holography
Phy 113 Introduction to Astronomy

Philosophy and History

Sci 201 History of Science
Phi 245 The Philosophy of Science

Certificate in Computer Science

at least 32 credits

Description and objectives:

The Certificate Program in Computer Science is designed for individuals who need to acquire a basic understanding of computers and programming and a knowledge of the field in order to expand their area of interest and professional expertise. This program is organized by the Department of Computer Science. Topics include: Communications, Software Engineering, Graphics and Artificial Intelligence. This program will help students to take full advantage of the computer technology available in the workplace.

Admission requirements: (See Regulations for Certificate Programs).

Prerequisites to programs: Applicants to Option B with insufficient Math background will be required to take a 3-credit Math course in their first semester (Math190 or equivalent).

A) Certificate in Computer Science

1. Required courses: 19 credits

CSC 101ab	Foundations of Computer Science	4-3-3
CSC 111ab	Programming Methodology	4-3-3
CSC 116ab	Low Level Programming Language	4-3-3
CSC 204ab	Data Structures	3-3-3
CSC 211ab	Computer Organization	4-3-0

2. Elective courses: 5 courses to equal at least 15 credits

Any other Computer Science course except CSC 102.

B) Certificate in Software Technology

1. Required courses: 17 credits

CSC 101ab	Foundations of Computer Science	4-3-3
CSC 111a	Programming Methodology	4-3-3
CSC 204ab	Data Structures	3-3-0
CSC 303a	Principles of Programming Languages	3-3-3
and at least one of:		
CSC 218a	C++ Programming	3-3-3
CSC 328b	Object Oriented Software Construction	3-3-1
CSC 316ab	Special Topics in Software	3-3-0
CSC 319a	Special Topics in Computer Science	3-3-0

2. Elective courses: 5 courses to equal at least 15 credits

Any other Computer Science course except CSC 102.