

Applied and Industrial Mathematics major / Mathematics first teachable – Biology second teachable

The order and timing of courses may be changed subject to availability and prerequisite requirements.

Program details:

YEAR 1

Semester 1 (15 credit hours)

BIOL 1010U Biology I
CHEM 1010U Chemistry I
CSCI 1000U Scientific Computing Tools
MATH 1000U Introductory Calculus or
MATH 1010U Calculus I*
PHY 1010U Physics I or
PHY 1030U Introductory Physics*

Semester 2 (15 credit hours)

BIOL 1020U Biology II
CHEM 1020U Chemistry II
EDUC 2900U Introduction to Teaching and Field Experience I (10 days)
MATH 1020U Calculus II
PHY 1020U Physics II

*All students who have completed grade 12U Advanced Functions and Introductory Calculus or 12U Calculus and Vectors should take MATH 1010U and PHY 1010U. Students without one of these high school courses or equivalent are directed to take MATH 1000U and PHY 1030U.

YEAR 2

Semester 1 (15 credit hours)

BIOL 2010U Introductory Physiology
MATH 2010U Advanced Calculus I
MATH 2050U Linear Algebra
MATH 2080U Discrete Mathematics
STAT 2010U Statistics and Probability for Physical Science

Semester 2 (18 credit hours)

CSCI 1030U Introduction to Computer Science
EDUC 2901U Field Experience II (Practicum - 15 days)
EDUC 3752U Learning and Adolescent Development
MATH 2020U Advanced Calculus II
MATH 2060U Differential Equations
MATH 2072U Computational Science I

YEAR 3

Semester 1 (18 credit hours)

BIOL 2030U Cell Biology
EDUC 4902U Field Experience III (20 days)
MATH 3020U Real Analysis
MATH 3040U Optimization
Two non-science electives

Semester 2 (15 credit hours)

BIOL 2020U Genetics and Molecular Biology
EDUC 3612U Contemporary Educational Practice
MATH 3050U Mathematical Modelling
MATH 3060U Complex Analysis
MATH 3070U Algebraic Structures

YEAR 4

Semester 1 (15 credit hours)

BIOL 3030U Microbiology and Immunology
MATH 4010U Dynamical Systems and Chaos
MATH 4020U Computational Science II
MATH 4060U Industrial Mathematics
MATH 4410U Thesis I or
One elective

Semester 2 (15 credit hours)

MATH 4030U Applied Functional Analysis
MATH 4050U Partial Differential Equations
MATH 4420U Thesis Project II or
MATH 4430U Directed Studies in Mathematics
MATH 4042U Topics in Applied Mathematics II
One science elective

Note 1: Directed studies and thesis project courses

Students who meet the requirements will take BIOL 4430U Directed Studies in Biology in year 4. BIOL 4430U may be taken in either semester by interchanging with an elective. Students may optionally apply to do a two course sequence consisting of BIOL 4410U and BIOL 4420U Thesis Project in Biology I and II in year 4, in place of BIOL 4430U plus one elective. Opportunities for this option are limited; students must apply to the Science 4th year thesis coordinator by April 30 following completion of the first three years of the program.

YEAR 5

Semester 1 (15.75 credit hours)

CURS 3410U Math Camp
CURS 4000U I/S Core Curriculum Methods I
CURS 4100U I/S Curriculum Studies I: Biology
CURS 4140U I/S Curriculum Studies I: Mathematics
EDUC 3511U I/S Learning with ICT
EDUC 4381U I/S Analysis and Management of Classroom Behaviour
EDUC 4900U Field Experience and Practica I
One required education elective**
One optional education elective**

Semester 2 (15.0 credit hours)

CURS 3611U I/S Science and Technology Camp
CURS 4001U I/S Core Curriculum Methods II
CURS 4101U I/S Curriculum Studies II: Biology
CURS 4141U I/S Curriculum Studies II: Mathematics
EDUC 3801U I/S Individual Needs and Diversity
EDUC 3911U I/S Information Literacy
EDUC 4382U I/S Analysis and management of Classroom Behaviour II
EDUC 4901U Field Experience and Practica II
Two optional education electives**

**** Education Electives:** Students in Year 5 of the Concurrent Education program are required to take one education elective in Semester 1. Students may take a maximum of three education electives in Year 5. A limit of two electives may be taken in any single term. Note: not all listed electives will be available every year. Students may take their education electives prior to Year 5 only if they have completed Year 2 requirements and have a GPA of 2.7.