

Archived: September 6, 2016

## Science and Technology Programs

# Bachelor of Science in Fisheries and Aquaculture

**Credential:**

Bachelor Degree

**Options:**

Co-op

**Program Length:**

4 Years

## The Program

Fisheries and Aquaculture has long been an area of specialization at Vancouver Island University. VIU has an international reputation in fisheries and aquaculture applied research, technology transfer, training, and education. VIU boasts an extensive array of facilities and equipment: three cool-water hatchery complexes; a warm-water hatchery; salt-water system; fish disease laboratory; lake study field station; oyster farm; sturgeon, trout, and wild and cultured salmon research programs. The proximity of VIU to fresh-water lakes and streams, as well as to the ocean and estuaries, allows fieldwork in these habitats to be a central part of students' education.

The new Centre for Shellfish Research (CSR), located beside the Department of Fisheries & Aquaculture, was created to facilitate the emergence of the B.C. shellfish aquaculture industry as a sustainable economic engine for healthy, vibrant coastal communities. CSR faculty teach upper-level courses in fisheries and aquaculture, and there are many opportunities for students to participate in CSR research projects.

Furthermore, the federal government's Pacific Biological Station in Nanaimo provides access to numerous acclaimed fisheries scientists and one of Canada's best libraries in this field. Fisheries (sports and commercial), and aquaculture are immensely important throughout the world and are key to the economy (and employment) in British Columbia.

The B.Sc. in Fisheries & Aquaculture has been designed to offer students a great deal of flexibility, and there are several routes through this program. Students may begin in year one and complete the program at the end of year four, or they may enter at year two or three from Vancouver Island University or from other institutions. They may also complete the two-year Fisheries & Aquaculture Technology diploma program and then proceed to the B.Sc. with up to two years (60 credits) of advance credit. Some students elect this pathway after completing the Technology program and then working in industry for a few years.

**Note:** *institutional B.Sc. requirements are undergoing changes; please check the website or contact the Advising Centre for details.*

### Applied Technology

The Bachelor of Science in Fisheries & Aquaculture is an applied technology degree

program. In association with the two-year Fisheries & Aquaculture diploma program and the Bachelor of Science, Major in Biology degree program, the B.Sc. in Fisheries & Aquaculture degree provides a mix of a broad science background and applied, hands-on, technical skills. Graduates will be well schooled in scientific principles, have an understanding of the philosophical and ethical underpinnings of science, and will be trained in the practical skills required to enter employment in industry or government.

## Program Format and Courses

The Bachelor of Science in Fisheries & Aquaculture degree program is a four-year degree program requiring 130 credits of study. Of these 130 credits, a minimum of 42 must be upper-level. Students will take the Core program (109 credits), a minimum of six credits of Fisheries or Aquaculture electives, plus a minimum of six non-Science elective credits.

A variety of elective courses allow students to create a program suitable to their particular interests.

This degree is closely tied to the Bachelor of Science, Major in Biology. Students take core courses in Biology and are encouraged to take upper-level electives in Biology. Students may switch between the two degrees if their areas of interest change.

## Undergraduate Research Project

In fourth year, students may choose to complete an Undergraduate Research Project in FISH 491. For this course, students will have a Faculty Project Advisor (in some cases faculty may be from another institution) and will carry out their research under the direction of this Advisor. Students not wishing to pursue a research career may take a Directed Study FISH 490 and one upper-level Science elective or two upper-level Science electives.

## Electives

Students are encouraged to augment their program by selecting relevant electives from a variety of disciplines (see list of suggested electives below).

## Program Outline

See the section on Institutional B.Sc. Degree Requirements. The 130 credits required for graduation are as follows:

Core courses	109
Upper-level Aquaculture, Fisheries, or Biology electives	6
Non-science electives	6
Electives (including 6 upper-level credits)	9

**Note:** Most core and elective courses have prerequisites. Students should check prerequisites carefully and consult the Fisheries & Aquaculture Advisor when planning their program.

## Core Courses

Year 1	Credits
FISH 123* - (Concepts in Biology) <i>or</i> , BIOL 121 - (Introductory Zoology)	4
Select <i>one</i> of the following pairs: CHEM 140** - (Chemistry Fundamentals I) <i>and</i> , CHEM 141** - (Chemistry Fundamentals II) <i>or</i> CHEM 142** - (Chemistry Fundamentals II)	8
FISH 204 - (Aquatic Plant Ecology and Culture)	4
MATH 121 - (Calculus I) <i>and</i> MATH 122 - (Calculus II)	6
PHYS 111 - (Physics for the Life Sciences I) <i>and</i> PHYS 112 - (Physics for the Life Sciences II)	8
Degree English Requirements	6
<b>Total Credits</b>	<b>36</b>

\* *FISH 123 is the preferred option.*

\*\* *Effective September 2011: **CHEM 140 will replace CHEM 122, CHEM 141 will replace CHEM 111, and CHEM 142 will replace CHEM 121.** Students who have already completed the old Chemistry courses can still use those courses to meet the **1st-year** chemistry requirements.*

Year 2	Credits
BIOL 201 - (Principles of Biochemistry)	3
BIOL 212 - (Genetics)	3
CHEM 231 - (Organic Chemistry I)	3
FISH 205 - (Invertebrate Zoology)	4
FISH 211 - (Life History and Management of Salmonids)	3
FISH 222 - (Larval Rearing and Invertebrate Culture)	4
FISH 227 - (Fish Husbandry I)	3
FISH 253 - (Fisheries Engineering I—Hydrology) <i>or</i> , FISH 254 - (Fisheries Engineering II—Hydraulics)	3
MATH 181 - (Intro to Statistics) <i>or</i> , MATH 211 - (Statistics I)	3
<b>Total Credits</b>	<b>29</b>

**Note:** *Because of scheduling, some courses listed in second year may have to be delayed until third year and replaced by electives in second year. Students should plan their program with the Fisheries & Aquaculture Advisor.*

<b>Years 3 and 4</b>	<b>Credits</b>
CHEM 311 - (Environmental Chemical Analysis)	3
FISH 321 - (Lake and Stream Ecosystems)	3
FISH 322 - (Coastal and Estuarine Ecosystems)	3
FISH 324 - (Ichthyology)	4
FISH 327 - (Salmonid Husbandry) <i>or</i> , FISH 331 - (Advanced Fish Culture)	3
FISH 341 - (Diseases of Fish and Shellfish)	4
FISH 371 - (Aquaculture Practices I)	3
FISH 372 - (Aquaculture Practices II)	3
FISH 392 - (Project in Husbandry IV)	3
FISH 453 - (Fish Habitat Assessment and Rehabilitation)	3
FISH 473 - (Summer Field Practicum)	3
FISH 490 - (Directed Studies) <i>and</i> 1 upper-level science elective <i>or</i> , FISH 491 - (Undergraduate Research Project) <i>or</i> , <i>Two</i> upper-level science electives	6
MATH 203 - (Biometrics)	3
<b>Total Credits</b>	<b>44</b>

## List of Suggested Electives

**Note:** *These courses may not be offered every year.*

FISH 331 - (Advanced Fish Culture)	3
BIOL 200 - (Principles of Cell Biology)	3
BIOL 322 - (Terrestrial Ecosystems)	3
BIOL 331 - (Physiology and Genetics of Prokaryotes)	3
BIOL 332 - (Microbial Ecology)	3
BIOL 334 - (Virology)	3
BIOL 353 - (Non-Vascular Plants)	3
BIOL 356 - (Biological Issues in Forestry)	3
BIOL 395 - (Tropical Biology)	3
BIOL 402 - (Evolution)	3
BIOL 403 - (Current Topics in Biology)	3
FISH 333 - (Tropical Coastal Ecosystems)	3
FISH 334 - (Tropical Marine Aquaculture)	3
FISH 490 - (Directed Studies)	3
FISH 420 - (Marine Biodiversity and Conservation)	3
FRST 242 - (Integrated Resource Management Seminar)	3
MGMT 192 - (Principles of Management)	3
MGMT 381 - (Entre/Intrapreneurship)	3

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