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## **Science and Technology Programs**

# **Computing Science (BSc)**

**Location Offered:**

Nanaimo

**Credential:**

Bachelor Degree

**Options:**

Co-op, Major, Minor

**Program Length:**

4 Years

## **The Program**

Computing Science is a rapidly-growing field, generating a great number of employment opportunities. Government agencies are predicting shortages of qualified computing people that will number in the tens of thousands in Canada alone. The Bachelor of Science, Major in Computing Science, is designed to meet the training and educational requirements outlined by CIPS (Canadian Information Processing Society), ACM (Association for Computing Machinery), and IEEE (Institute of Electrical and Electronics Engineers). These requirements reflect the needs of the computing industry, both nationally and internationally.

The program is composed of courses drawn from the systems, theoretical and business application domains. It is designed to train students in applied computing and educate them in the social, ethical and legal implications of computing.

The program has an optional co-operative education component. To be eligible, students must maintain a grade point average of 3.0 ("B") or better in their Computing Science courses.

The Computer Science Major will be of interest to students wishing to enter the Information Technology industry and/or graduate studies. The Minor will primarily be of interest to students wishing to combine an additional field of study with a strong computing background.

## **Program Outline**

### **Requirements for a Major**

Students must fulfill all Institutional B.Sc. Degree Requirements, including Degree English Requirements and courses listed below:

<b>Year 1</b>	<b>Credits</b>
CSCI 160 - (Computing Science I)	4
CSCI 161 - (Computing Science II)	4
CSCI 162 - (Topics in Computing Science)	4
MATH 121 - (Calculus I)	3
MATH 122 - (Calculus II)	3
MATH 123 - (Logic and Foundations)	3
ENGL 115 - (University Writing and Research)	3
<i>Three electives (*c)</i>	9
<b>Total Credits</b>	<b>33</b>

<b>Year 2</b>	<b>Credits</b>
CSCI 251 - (Systems and Networks)	3
CSCI 260 - (Data Structures)	3
CSCI 261 - (Computer Architecture & Assembly Language)	3
CSCI 265 - (Software Engineering)	3
MATH 223 - (Discrete and Combinatorial Mathematics)	3
MATH 241 - (Linear Algebra)	3
ENGL 204 - (Business and Technical Writing) (effective September 2012) or, ENGL 225 - (Business and Technical Writing) (prior to September 2012)	3
<i>Three electives (*c)</i>	9
<b>Total Credits</b>	<b>30</b>

<b>Years 3 and 4</b>	<b>Credits</b>
CSCI 310 - (Introduction to Human-Computer Interaction)	3
CSCI 311 - (Web Programming)	3
CSCI 320 - (Foundations of Computer Science)	3
CSCI 330 - (Programming Languages)	3
CSCI 355 - (Digital Logic and Computer Organization)	3
CSCI 360 - (Intro to Operating Systems)	3
CSCI 370 - (Database Systems)	3
CSCI 400 - (Computers and Society)	3
CSCI 460 - (Networks and Communications)	3
<i>Three CSCI electives (*a)</i>	9
<i>Three electives (*b)</i>	9
<i>Five electives (*c)</i>	15
<b>Total Credits</b>	<b>60</b>

**Note: Students must have a minimum "C" average on all 300 and 400-level Computing Science courses completed or taken.**

(\*a) Students must complete at least 6 additional credits of Computing Science courses at the 400 level, and at least 3 additional credits of Computing Science number 300 or above, excluding CSCI 307, 308 and 309.

(\*b) Students must complete at least 9 additional credits at the 300 or 400 level, excluding CSCI 307, 308 and 309.

(\*c) Amongst all of the electives taken, students must obtain a combination of at least 12 credits from the Faculty of Social Sciences and the Faculty of Management, as approved by the Computing Science Department.

## **Requirements for a Minor**

Students must fulfill all Institutional B.Sc. Degree Requirements, including Degree

English Requirements and courses listed below:

<b>Year 1</b>	<b>Credits</b>
CSCI 160 - (Computing Science I)	4
CSCI 161 - (Computing Science II)	4
MATH 121 - (Calculus I)	3
MATH 123 - (Logic and Foundations)	3
<b>Total Credits</b>	<b>14</b>

<b>Year 2</b>	<b>Credits</b>
CSCI 162 - (Topics in Computing Science) (Can be taken in Year 1)	4
CSCI 260 - (Data Structures)	3
CSCI 265 - (Software Engineering)	3
<b>Total Credits</b>	<b>10</b>

<b>Years 3 and 4</b>	<b>Credits</b>
CSCI 370 - (Database Systems)	3
Five additional CSCI courses numbered 300 or above*	15
<b>Total Credits</b>	<b>18</b>

\*Students should check upper-level course prerequisites to guide second year course selection. Certain course selections will require completion of a greater number of second-year courses than is required by the Minor.

## Requirements for a Major (Co-op)

Students must fulfill all Institutional B.Sc. Degree Requirements, including Degree English Requirements and courses listed below:

<b>Year 1</b>	<b>Credits</b>
CSCI 160 - (Computing Science I)	4
CSCI 161 - (Computing Science II)	4
CSCI 162 - (Topics in Computing Science)	4
MATH 121 - (Calculus I)	3
MATH 122 - (Calculus II)	3
MATH 123 - (Logic and Foundations)	3
ENGL 115 - (University Writing and Research)	3
Three electives (*c)	9
<b>Total Credits</b>	<b>33</b>

<b>Year 2</b>	<b>Credits</b>
CSCI 251 - (Systems and Networks)	3
CSCI 260 - (Data Structures)	3
CSCI 261 - (Computer Architecture & Assembly Language)	3
CSCI 265 - (Software Engineering)	3
CSCI 307 - (Preparation for Co-operative Education Employment)	1
CSCI 370 - (Database Systems)	3
MATH 223 - (Discrete and Combinatorial Mathematics)	3
MATH 241 - (Linear Algebra)	3
ENGL 204 - (Business and Technical Writing) (effective September 2012) or, ENGL 225 - (Business and Technical Writing) (prior to September 2012)	3
Two electives (*c)	6
<b>Total Credits</b>	<b>31</b>

<b>Year 2 — Summer Session</b>		<b>Credits</b>
CSCI 308 - (Co-operative Work Placement I)		9
<b>Total Credits</b>		<b>9</b>

<b>Year 3</b>		<b>Credits</b>
CSCI 310 - (Intro to Graphical User Interfaces)		3
CSCI 311 - (Web Programming)		3
CSCI 320 - (Foundations of Computer Science)		3
CSCI 330 - (Programming Languages)		3
CSCI 355 - (Digital Logic and Computer Organization)		3
CSCI 360 - (Intro to Operating Systems)		3
Four electives (*c)		12
<b>Total Credits</b>		<b>30</b>

<b>Year 3 — Summer Session</b>		<b>Credits</b>
CSCI 309 - (Co-operative Work Placement II)		9
<b>Total Credits</b>		<b>9</b>

<b>Year 4</b>		<b>Credits</b>
CSCI 400 - (Computers and Society)		3
CSCI 460 - (Networks and Communications)		3
Three CSCI electives (*a)		9
Three electives (*b)		9
Two electives (*c)		6
<b>Total Credits</b>		<b>30</b>

<b>Year 4 — Summer Session</b>		<b>Credits</b>
CSCI 408 - (Co-operative Work Placement III)		9
<b>Total Credits</b>		<b>9</b>

**Note: Students must have a minimum "C" average on all 300 and 400-level Computing Science courses completed or taken.**

(\*a) Students must complete at least *six* additional credits of Computing Science courses at the 400 level, and at least *three* additional credits of Computing Science number 300 or above, excluding CSCI 307, 308, 309, 408, and 409.

(\*b) Students must complete at least *nine* additional credits at the 300 or 400 level, excluding CSCI 307, 308, 309, 408, and 409.

(\*c) Amongst all of the electives taken, students must obtain a combination of at least *twelve* credits from the Faculty of Social Sciences and the Faculty of Management, as approved by the Computing Science Department.

## Admission Requirements

- General admission requirements apply for admission to first year.
- Admission to third year requires completion of all first and second year courses, with a minimum grade point average of 2.33 ("C+").

### Notes on Admission

- Courses in first year have prerequisites. To satisfy all first year course prerequisites, students must complete the following B.C. Secondary School courses: Minimum “B” in either Pre-calculus 12 or Principles of Mathematics 12, minimum “C” in English 12, or equivalents.
- Students who satisfy all first-year course prerequisites will be able to complete the full degree program in four years. Students who are lacking any or all of the first year course prerequisites should speak with a VIU Advisor about upgrading courses.

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