Applied Computer Science (Network Security Applications Development Option)

Bachelor of Science Full-time/Part-time School of Computing and Academic Studies

Overview

The Bachelor of Science in Applied Computer Science (BScACS) degree equips you with advanced computing skills for careers in the tech sector. Within the Network Security Applications Development Option, you'll design, develop, and deploy advanced network applications on Linux and Windows platforms using a variety of programming languages.

Delivery: blended and in person options. See details.

About the option

The Network Security Applications Development Option integrates theory and practice, fostering critical thinking, problem-solving, and creativity to help secure the systems on which our modern world relies. You'll use programming languages such as C, C++, Java, Ruby, and Python. All tools and frameworks are put to practical use in developing, testing and managing game applications, ultimately culminating in a major project showcasing students' skills.

About the program

Full-time

- BScACS [1] employs a cohort model, where you have the same classmates in all courses. This allows you to work through this intensive program with your fellow students, share your experience and expertise, and build a professional network that will last long after graduation
- 1 intake: September
- Four 15-week terms
- Monday to Friday, 8:30 until 5:30 pm
- Optional (competitive) Co-op opportunities
- Provides excellent academic foundation for graduate studies in either computer science or applied computing
- Offered in-person at the Burnaby Campus [2]

Part-time

- Course-by-course registration
- 3 intakes: January, April, and September [3]
- Offered evenings and weekends
- Up to 7 years to complete the program
- Blended delivery: on-campus (Downtown [4] and/or Burnaby [5]) and online
- Provides excellent academic foundation for graduate studies in either computer science or applied computing

See the Program Details [6] to learn more about what you can expect from BScACS and how you can prepare for a career in Computing.

Who should complete the BScACS degree (Network Security Applications Development Option)?

This program might be for you if you:

- Have completed the Computer Systems Technology (CST) [7] Diploma (or equivalent of 60.0 credits of post-secondary education in Computing)
- Are interested in topics such as Client/Server applications, Cyber Security, and Cryptology
- Are keen to build security applications and work in exploit and penetration testing within networks
- Want to deepen theoretical knowledge and develop more advanced computing skills

If any of these sound like you, please check the Entrance Requirements [8] to ensure you can apply and start your new Computing career!

What Bachelor of Science in Applied Computer Science grads can do

By earning your BCIT Degree, you'll be honing your computing skills and gaining knowledge of various industry-recognized technologies.

Vancouver has been home to Canada's fastest-growing tech force for multiple years now, and you'll have the chance to join one of the 4,500 local tech companies or one of many international titans with Vancouver development studios.

And you also have the option to continue your education, including by applying to the BCIT Master of Science in Applied Computing [9] .

Learn more about future opportunities on the Graduating and Jobs page [10] .

Entrance Requirements

The Bachelor of Science in Applied Computer Science (BScACS) is a two year degree completion program, meant to be taken after two years of post-secondary education in computing.

External applicants will apply based on the pre-entry assessment. BCIT CST Diploma Graduates who graduated in the last **five** (5) years may apply directly to the program at bcit.ca/apply [11] without a pre-entry or departmental assessment. CIT and FSWD Diploma Graduates will apply based on the pre-entry assessment.

Application processing

Full-time

Open to applications beginning January 15th (or next business day).

Part-time

Applications are accepted throughout the year.

Indigenous applicants: Read about Indigenous student support [12] available for BCIT Computing programs.

Entrance requirements

This program has a two-step admission process. Applicants must meet all entrance requirements to be accepted.

Step 1: Pre-entry assessment

Applicants must have a pre-assessment with the program area to identify pre-entry courses and have their work experience reviewed and assessed prior to applying. Please email the completed Pre-entry Assessment Request form [PDF] [13] along with your resume and official sealed transcript(s) to the program coordinator.

You can apply once you have completed any necessary pre-entry courses. A completed pre-entry assessment document from the program area must be uploaded with your application.

Step 2: Meet the following entrance requirements

- **English language proficiency:** Category 2 [14] – English Studies 12 (67%) or equivalent
- **Post-secondary education:** A minimum of 60.0 credits of post-secondary education in Computing from a recognized institution, which consists of:
  - 6.0 credits of English or communications
  - 6.0 credits of math, with a minimum of 3.0 credits in discrete math
  - 3.0 credits of statistics
  - 27.0 credits of computing, with a minimum of 3.0 credits in each of the following seven courses:
    - Algorithms and data structures
    - Computer architecture
    - Database
    - Data communications and networking
    - Object-oriented programming
    - Procedural programming
    - Systems analysis and design

    In addition to the above, acceptance into the following options is subject to the following requirements:
    - Games Development Option requires familiarity with C++.
    - Network Security Development Option requires familiarity with C.
  - 18.0 of general education and/or other computing courses:
    - The BScACS Program Head will assess the equivalency of credits obtained from other institutions to ensure that graduation requirements are met.

Applicants who have completed post-secondary studies outside of Canada, the United States, the United Kingdom, Australia or New Zealand will require a comprehensive evaluation of their credentials by the International Credential Evaluation Service (ICES) [15]. Credential evaluation reports from other Canadian services [16] may be considered. These reports must include course-by-course evaluations and GPA calculations.

Read more about how to meet BCIT's entrance requirements [17]

International applicants

Full-time

The **full-time** option is available to international applicants. A valid study permit [18] is required prior to starting the program.

Students enrolled in this option must complete the mandatory work component to qualify for graduation. A co-op work permit is required prior to starting the work component.

Part-time

The **part-time** option is available to international students who currently have a valid status in Canada [19]. A valid study permit [20] is required prior to starting the program.

Apply to program

To submit your application:

- Include proof of meeting all entrance requirements.
- Convert all transcripts and supporting documents to PDF files [21].
- Have a credit card ready to pay the application fee.

Learn more about how to apply [23]

Scheduled Intakes

Full-time: September each year

Ongoing Flexible Learning (Part-time Studies) intakes: January, April, and September

myCommunication

Within two business days of submitting your completed application, BCIT will send a message to your personal and myBCIT email addresses. All correspondence regarding your application will be posted to your online myCommunication [24] account at my.bcit.ca [25]. We will send you an email when a new message is posted. It is important to watch for these emails or regularly check your account online.

You can expect to receive communication concerning the status of your application within four weeks.

Costs & Supplies

Learn about entrance awards [26] , including awards for women and Indigenous students [27] entering computing.

Tuition fees

Full-time Studies

Use our tuition estimator [28] to find tuition and fees for this program.

For more information on full-time tuition and fees, visit:

- Full-time Studies Tuition & Fees [29]
- International Tuition & Fees [30]

Flexible Learning

Flexible Learning (Part-time Studies) tuition is charged on a course-by-course basis. Please see the Flexible Learning Tuition & Fees [31] page for more information on domestic and international tuitions.

Books & supplies

Level 5: $1100; Level 6: $1100; Level 7: $1100; Level 8: $800
(general estimated cost, subject to change)

Financial assistance

Financial assistance may be available for this program. For more information, please contact Student Financial Aid and Awards [32] .

Courses

The Bachelor of Science in Applied Computer Science (Network Security Applications Development) curriculum has been revised effective for the September 2023 intake. Students who began the program under Bachelor of Technology in Computer Systems (Network Security Applications Development) prior to September 2023 should refer to the September 2022 cohort matrix [PDF] [33] .

Part-time option

Students completing this program on a part-time basis should select and register for courses from the Part-time Program Matrix [PDF] [34] .

Program matrix

Check current availability of courses [35] for this program.

Full-time option:

September 2023 Matrix

The below program matrix is effective for students entering the program in September 2023 and later.

Level 5 (15 weeks)		
COMP 7003 [36]	**Introduction to Information and Network Security**	3.0
COMP 7005 [38]	**Computer Networks and Protocols**	3.0
COMP 7035 [40]	**Operating Systems**	3.0
COMP 7082 [42]	**Software Engineering**	3.0
MATH 7808 [44]	**Calculus for Computing**	4.0
Level 6 (15 weeks)		**Credits**
COMP 8003 [46]	**Network Security Administration**	3.0
COMP 8042 [48]	**Advanced Algorithms and Data Structures Design and Analysis**	3.0
COMP 8082 [50]	**Project Management**	3.0
LIBS 7001 [52]	**Critical Reading and Writing**	3.0
MATH 7908 [54]	**Linear Algebra and Applications for Computing**	4.0
Level 7 (15 weeks)		**Credits**
COMP 7402 [56]	**Topics in Computer Programming - Cryptology**	3.0
COMP 8005 [58]	**Network and Security Applications Development**	3.0

COMP 8085 [60]	**Artificial Intelligence**	3.0
COMP 8800 [62]	**Major Project 1**	3.0
LIBS 7002 [64]	**Applied Ethics***	3.0
General Education Electives (3.0 credits): Will be offered in Level 7. Specific course offerings will be determined by the department. *Students who have completed the Computer Systems Technology (CST) Diploma are exempt from taking LIBS 7002 Applied Ethics since they have already taken the equivalent course, LIBS 7102 Ethics for Computing Professionals.		
Level 8 (15 weeks)		**Credits**
COMP 7012 [66]	**Interaction Design**	3.0
COMP 8505 [68]	**Special Topics in Network and Security Development**	3.0
COMP 8900 [70]	**Major Project 2**	3.0
General Education Electives (6.0 credits): Will be offered in Level 8. Specific course offerings will be determined by the department.		
Co-op work term courses (competitive entry)		**Credits**
Complete between Levels 6 and 7.		
COMP 7990 [72]	**Cooperative Education Workterm 1***	16.0
COMP 8990 [74]	**Cooperative Education Workterm 2****	16.0
*Fall intake: September through December **Winter intake: January through April		
Total Credits:		**65.0**

Check current availability of courses [76] for this program.

Transfer credit

Do you have credits from another BC/Yukon post-secondary school? Do you want to know if they transfer to courses here at BCIT? Check out BCIT's Transfer Equivalency Database [77] to find out.

Program Details

You'll learn a lot about computer networking, mastering the Berkeley socket interface, an essential data communication tool. The focus is on creating efficient and modular programs for sending and receiving data, using the IPv4 and IPv6 protocols. You'll also explore wireless communication and techniques to keep data private and secure when sending it over public networks.

The courses will teach you how to build secure Client-Server applications using the Secure Sockets Layer (SSL) API. You'll become skilled at writing code that is not only secure but also robust, meaning it works well and can handle unexpected situations. Additionally, you'll get hands-on experience with advanced programming techniques for security applications.

In the more advanced classes, you'll go deeper into security, exploring tools like Covert Channels, Stealth Backdoors, Trojans, Packet Crafting and Sniffing. You'll even get to design and build prototype security tools to understand how they work.

Program length

Two years, full-time

Students are required to complete this program within seven years starting from the date of their first technical degree-level course or the date of acceptance to the bachelor program, whichever comes first. General Education Electives cannot be older than five years from the date of acceptance to be used toward the degree.

Exception to Section 5 of Policy 5103:

Extensions beyond the maximum time limit will not be allowed. However, students may request a timeshift. A timeshift moves the program start date to one year later and the program completion date to one year later. With a timeshift, any COMP 7xxx and COMP 8xxx courses taken before the new start date will not apply towards the credential. Students will need to re-take or challenge the expired courses if they wish to use them towards fulfilling program requirements. In the event of a major program change, students who timeshift will be required to follow the new program matrix. Some exemptions of equivalent courses may apply. Student requests for a timeshift shall be reviewed and approved by the Program Head and the Registrar's Office.

Grading

A minimum passing grade of 60 percent is required for all COMP courses at the 7000 and 8000 level.

Additional program options

- Database Option [78]
- Human Computer Interface Option [79]
- Network Security Administration Option [80]
- Wireless and Mobile Applications Development Option [81]

Program delivery

Full-time

In person: The full-time program is delivered on campus.

Part-time

Blended: The part-time program is delivered partly on campus and partly online.

Once accepted into the flexible learning program, students register and complete classes on a course-by-course basis. Flexible learning courses are taught in our Downtown Vancouver Campus, Burnaby Campus, and online on weekday evenings and weekends.

Program location

Full-time:
Burnaby Campus [82]
3700 Willingdon Avenue
Burnaby, BC

Part-time:
Courses may be offered at the following locations:

Burnaby Campus [83]
3700 Willingdon Avenue
Burnaby, BC

Downtown Campus [84]
555 Seymour Street
Vancouver, BC

Courses are also offered through online learning [85] .

Program structure

Courses	Credits
Computer Science	21.0
Mathematics	8.0
Computer Specialization	15.0
Communications, Applied Ethics and General Education	15.0
Major Project	6.0
Competitive co-operative education (co-op) component*	
Total credits:	**65.0**
**full-time only*	

Continue your education

Graduates of the Bachelor of Science in Applied Computer Science program can apply to continue their studies with the Master of Science in Applied Computing [86] . Through an interdisciplinary and rigorous full-time curriculum, the MSc helps develop technical leadership and research skills for a professional setting or for further academic study. Students select a Project & Internship Path or Thesis Path, and have opportunities to apply computing solutions to industry challenges.

Co-operative education

The Co-operative Education (co-op) stream [87] of the BSc ACS program provides students with substantial benefits in their career preparation, given that employers are more eager to hire graduates who have had some industry experience. Students who apply to the co-op stream are required to meet year one performance qualification criteria. Acceptance into the program is competitive based on Level 5 GPA. Students will require two four-month co-op terms to graduate with a co-op designation on their BSc ACS degree. These co-op terms are back-to-back and are completed between Levels 6 and 7.

Co-op students will be provided full support in their employment search, career development, and during their work terms. They will be assisted with securing employment with one employer for a minimum of eight months.

Graduating & Jobs

Sector snapshot

Graduate employment outcomes

The BCIT student outcomes report presents summary findings from the annual survey of former students administered by BC Stats one to two years after graduation. These reports combine the last three years of available results for the 2021-2023 BCIT Outcomes Surveys of 2020-2022 graduates and for Degree 2019-2021 graduates. The reports are organized into three-page summaries containing information on graduates' labour market experiences and opinions regarding their education. More detailed information can be accessed at the BC Student Outcomes [88] website.

To view these results, you may need to have the Adobe Acrobat Reader [89] installed in your Web browser.

- Applied Computer Science (Network Security Applications Development Option) [90]

Faculty, Advisors & Staff

Student Inquiries

Email: compBSc@bcit.ca

Full-time faculty

Mirela Gutica

- Program Head – Curriculum Leadership, Bachelor of Science in Applied Computer Science (BScACS)
- Option Head – Technical Programming, Computing

Maryam Tanha

- Program Head – Student Success, Bachelor of Science in Applied Computer Science (BScACS)

Aman Abdulla, Instructor

Borna Noureddin, Instructor

D'Arcy Smith, Instructor

Jeff Yim, Instructor

Rahul Kukreja, Instructor

Sayyedhassan Shavarani, Instructor

Takashi Nakamura, Instructor

Tejinder Randhawa, Instructor

Advisory committee

BCIT is well-respected by employers for its ties to industry. In Computing, this connection is formalized through a Program Advisory Committee (PAC) [91] comprised of experts in a range of roles from a cross-section of companies. The department consults regularly to ensure program currency and relevance.

Contact Us

Email: compBSc@bcit.ca
Tel: 604-432-8644

Programs and courses are subject to change without notice.

List of links found on this page

This list includes all links found on this page for your reference.

[1] https://www.bcit.ca/programs/bachelor-of-science-in-applied-computer-science/
[2] https://www.bcit.ca/about/visit/campuses-directions/burnaby/
[3] https://www.bcit.ca/flexible-learning/part-time-courses-programs/flexible-learning-key-registration-dates/
[4] https://www.bcit.ca/about/visit/campuses-directions/downtown/
[5] https://www.bcit.ca/about/visit/campuses-directions/burnaby/
[6] https://www.bcit.ca/programs/applied-computer-science-network-security-applications-development-option-bachelor-of-science-full-time-part-time-867bbsc/#details
[7] https://www.bcit.ca/programs/computer-systems-technology-diploma-full-time-5500dipma/
[8] https://www.bcit.ca/programs/applied-computer-science-network-security-applications-development-option-bachelor-of-science-full-time-part-time-867bbsc/#entry
[9] https://www.bcit.ca/programs/applied-computing-master-of-science-full-time-m600msc/
[10] https://www.bcit.ca/programs/applied-computer-science-network-security-applications-development-option-bachelor-of-science-full-time-part-time-867bbsc/#graduating
[11] https://secure.bcit.ca/sis/apply/
[12] https://www.bcit.ca/computing-academic-studies/computing/indigenous-student-support/
[13] https://www.bcit.ca/files/cas/computing/pdf/bscacsadmissionsprocedures.pdf
[14] https://www.bcit.ca/admission/entrance-requirements/english-language-proficiency/#category2
[15] https://www.bcit.ca/ices/
[16] https://www.cicic.ca/1374/obtain-an-academic-credential-assessment-for-general-purposes/index.canada
[17] https://www.bcit.ca/admission/entrance-requirements/
[18] https://www.bcit.ca/international-students/permits-visas-status/study-permits/
[19] https://www.bcit.ca/international-students/permits-visas-status/status-in-canada/
[20] https://www.bcit.ca/international-students/permits-visas-status/study-permits/

[21] https://www.bcit.ca/admission/how-to-apply/submitting-transcripts-supporting-documents/#documents
[22] https://apply.educationplannerbc.ca/bcit
[23] https://www.bcit.ca/admission/how-to-apply/
[24] https://www.bcit.ca/admission/after-you-apply/communicating-with-bcit/
[25] https://my.bcit.ca/
[26] https://www.bcit.ca/financial-aid/awards-scholarships-bursaries/entrance-awards/
[27] https://www.bcit.ca/computing-academic-studies/computing/indigenous-student-support/
[28] https://www.bcit.ca/admission/tuition-fees/estimator/?ref=catalogue
[29] https://www.bcit.ca/admission/tuition-fees/full-time-studies/
[30] https://www.bcit.ca/admission/tuition-fees/international-fees/#fulltimetech
[31] https://www.bcit.ca/admission/tuition-fees/flexible-learning/
[32] https://www.bcit.ca/financial-aid/
[33] https://www.bcit.ca/files/admission/pdf/matrix-cstbtech-network-sep2022.pdf
[34] https://www.bcit.ca/files/admission/pdf/pt_network_app_matrix.pdf
[35]
https://www.bcit.ca/courses/comp7003,comp7005,comp7012,comp7035,comp7082,comp7402,comp7990,comp8003,comp8005,comp8042,comp8082,comp8085,comp8505,con
[36] https://www.bcit.ca/courses/introduction-to-information-and-network-security-comp-7003/
[37] https://www.bcit.ca/outlines/comp7003/
[38] https://www.bcit.ca/courses/computer-networks-and-protocols-comp-7005/
[39] https://www.bcit.ca/outlines/comp7005/
[40] https://www.bcit.ca/courses/operating-systems-comp-7035/
[41] https://www.bcit.ca/outlines/comp7035/
[42] https://www.bcit.ca/courses/software-engineering-comp-7082/
[43] https://www.bcit.ca/outlines/comp7082/
[44] https://www.bcit.ca/courses/calculus-for-computing-math-7808/
[45] https://www.bcit.ca/outlines/math7808/
[46] https://www.bcit.ca/courses/network-security-administration-comp-8003/
[47] https://www.bcit.ca/outlines/comp8003/
[48] https://www.bcit.ca/courses/advanced-algorithms-and-data-structures-design-and-analysis-comp-8042/
[49] https://www.bcit.ca/outlines/comp8042/
[50] https://www.bcit.ca/courses/project-management-comp-8082/
[51] https://www.bcit.ca/outlines/comp8082/
[52] https://www.bcit.ca/courses/critical-reading-and-writing-libs-7001/
[53] https://www.bcit.ca/outlines/libs7001/
[54] https://www.bcit.ca/courses/linear-algebra-and-applications-for-computing-math-7908/
[55] https://www.bcit.ca/outlines/math7908/
[56] https://www.bcit.ca/courses/topics-in-computer-programming-cryptology-comp-7402/
[57] https://www.bcit.ca/outlines/comp7402/
[58] https://www.bcit.ca/courses/network-and-security-applications-development-comp-8005/
[59] https://www.bcit.ca/outlines/comp8005/
[60] https://www.bcit.ca/courses/artificial-intelligence-comp-8085/
[61] https://www.bcit.ca/outlines/comp8085/
[62] https://www.bcit.ca/courses/major-project-1-comp-8800/
[63] https://www.bcit.ca/outlines/comp8800/
[64] https://www.bcit.ca/courses/applied-ethics-libs-7002/
[65] https://www.bcit.ca/outlines/libs7002/
[66] https://www.bcit.ca/courses/interaction-design-comp-7012/
[67] https://www.bcit.ca/outlines/comp7012/
[68] https://www.bcit.ca/courses/special-topics-in-network-and-security-development-comp-8505/
[69] https://www.bcit.ca/outlines/comp8505/
[70] https://www.bcit.ca/courses/major-project-2-comp-8900/
[71] https://www.bcit.ca/outlines/comp8900/
[72] https://www.bcit.ca/courses/cooperative-education-workterm-1-comp-7990/
[73] https://www.bcit.ca/outlines/comp7990/
[74] https://www.bcit.ca/courses/cooperative-education-workterm-2-comp-8990/
[75] https://www.bcit.ca/outlines/comp8990/
[76]
https://www.bcit.ca/courses/comp7003,comp7005,comp7012,comp7035,comp7082,comp7402,comp7990,comp8003,comp8005,comp8042,comp8082,comp8085,comp8505,con
[77] https://www.bcit.ca/admission/entrance-requirements/transfer-credit/
[78] https://www.bcit.ca/programs/applied-computer-science-database-option-bachelor-of-science-full-time-part-time-867cbsc/
[79] https://www.bcit.ca/programs/applied-computer-science-human-computer-interface-option-bachelor-of-science-part-time-867dbsc/
[80] https://www.bcit.ca/programs/applied-computer-science-network-security-administration-option-bachelor-of-science-part-time-867ebsc/
[81] https://www.bcit.ca/programs/applied-computer-science-wireless-and-mobile-applications-development-option-bachelor-of-science-part-time-867fbsc/
[82] https://www.bcit.ca/about/visit/campuses-directions/burnaby/
[83] https://www.bcit.ca/about/visit/campuses-directions/burnaby/
[84] https://www.bcit.ca/about/visit/campuses-directions/downtown/
[85] https://www.bcit.ca/flexible-learning/distance-online-learning/
[86] https://www.bcit.ca/programs/applied-computing-master-of-science-full-time-m600msc/
[87] https://www.bcit.ca/workplace-education/work-experience-programs/co-op-programs/bachelor-of-science-in-applied-computing-science/
[88] https://bcstats.shinyapps.io/so_data_viewer/
[89] https://get.adobe.com/reader/
[90] https://www.bcit.ca/files/ir/gp/8620btech.pdf
[91] https://commons.bcit.ca/news/2020/02/fariba-pacheleh/
[92] https://www.bcit.ca/international-students/
[93] https://www.bcit.ca/financial-aid/
[94] https://secure.bcit.ca/sis/apply/