UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Part-Time Instructor

Posting #FAPT09-23

Department of Computer Science
Faculty of Science and Engineering
Part-Time, Term

The University of Northern British Columbia (UNBC) invites applications for a sessional instructor position in the Department of Computer Science for the Winter 2024 semester. As an institution committed to the fostering of an inclusive and transformative learning environment, UNBC values high quality and growth in both teaching and scholarship.

CPSC 110-3 (Introduction to Computer Systems and Programming)
The course introduces computer systems and programing, concepts in computer architecture including the central processing unit, buses, memory units, input/output, and communication devices. The introduction to operating systems emphasizes the file system and program development utilities. Programing concepts and techniques include problem analysis, program design, coding, and testing, as well as language elements such as data types, variables and assignment statements, expressions, mixed-mode arithmetic, input/output operations, basic data structures and control structures, procedures, and abstract data types. Basic database management concepts will also be introduced. Students will develop small applications programs. CPSC 110-3 is a first course in computer science and computer programing.

CPSC 222-3 (Introduction to Concurrent and Distributed Programming)
This course introduces the core concepts, techniques, and tools for concurrent and distributed programming. Topics include concurrent programming in shared memory systems and distributed programming in message passing systems. After introducing the necessary concepts, various coordination problems are discussed and then solved using different synchronization mechanisms.
Relevant programming environments are introduced, and students gain hands-on experience through programming assignments in both shared memory systems and message passing systems.

CPSC 231-3 (Computer Organization and Architecture)
This course introduces computer organization and architecture. Topics include computer abstractions and technology, characteristics of good computer architecture, instruction set architecture, Reduced Instruction Set Computer (RISC), Complex Instruction Set Computer (CISC), processor Datapath and control, pipelining, hyper-threading, memory systems, I/O systems, bus, multiprocessors, parallel computers, and Flynn's Taxonomy. Students gain hands-on experience through a series of assembly level programming lab assignments using a simulator of a simple machine.

CPSC 250-3 (Applied Business Computing)
This course examines core computing knowledge and techniques as they apply to business applications. The course covers database design and information retrieval techniques with emphasis on web-database integration, advanced features of spreadsheets, recoding/analyzing basic business transactions using a variety of accounting software, and implementation of selected financial models. Presentational and interface design techniques are also covered. Students complete a term project that solves a typical business problem using the software and procedures of their choice. This course may not be counted as a computer science course by computer science majors**.**

CPSC 321-3 (Programming Languages)
Programming languages change constantly and come in and out of popularity as they age.
most programmers will learn multiple programming languages during their careers. This course is intended as a general introduction to programming languages. In this course, we will cover the general ideas that underlay programming languages and their design. Some of these topics include: the

specification of syntax and semantics, theoretical fundamentals, programming language constructs, declarations and types, abstraction mechanisms, and programming paradigms.

CPSC 324-3 (Introduction to Database Systems)
This course focuses on the relational database model. Topics include storage structure and access methods, data definition and data manipulation language, relational algebra and calculus, and SQL. An introduction to database design using entity-relationship model, functional dependencies, and theory of normalization is provided. A relational DBMS is used for understanding SQL and application development in SQL-like languages and general-purpose host languages with application program interfaces.

CPSC 377-3 (Introduction to Robotics)
This course is an introduction to hardware architecture and control architecture of robotic and mechatronic devices. Topics include electronics, sensor capabilities, calibration of sensors, control of sensor I/O, motor and motion control through duty cycle and pulse width modulation. Laboratory topics include the development of interfaces between sensors, their control boards and digital circuitry including microprocessors. Microprocessor control of sensors and motors is developed, including the use of reasoning embedded in onboard microprocessor software for control of robotic actions.

CPSC 444-3/644-3 (Computer Networking)
This course explores essential topics in computer networks including each of the network layers (application layer, transport layer, network layer – divided into data and control planes, data link layer, and physical layer). The application layer includes HTTP, SMTP/IMAP, DNS, client-server, P2P, video streaming, and CDN. The transport layer includes UDP, TCP, reliable data transfer, congestion control, and flow control. The network layer – data plane includes IP protocol, generalized forwarding, NAT, middleboxes, and Internet Architecture. The network layer – control plane includes routing such as OSPF and BGP, SDN controllers, network management configuration, ICMP, and SNMP. Finally, the Link Layer and LANs includes error detection and correction, shared broadcast channel, link layer addressing, local area networks including Ethernet and VLANs, and data center networks. In addition, wireless and mobile networks are covered including Wi-Fi, 4G & 5G, mobility management, and Mobile IP. Security is also highlighted, but in-depth coverage is deferred to other courses focused on security.

CPSC 473-3 (Introduction to Data Mining)
This course introduces algorithms and paradigms that allow computers to discover previously hidden patterns in databases or datasets. Main topics include discovery of frequent patterns, analysis of different types of data (static, dynamic, sequential, uncertain, etc.) clustering and classification. Other topics may include data visualization, social network mining, real-life applications, and parallel/distributed data mining. Students work on assignments, term tests and a course project.

Our Commitment to Diversity and Employment Equity

The University of Northern British Columbia is fully committed to creating and maintaining an equitable, diverse, and inclusive environment that is accessible to all. We are devoted to ensuring a welcoming, safe, and inclusive campus free from harassment, bullying, and discrimination. This commitment is woven into our motto and mission. In the Dakelh language, UNBC's motto 'En Cha Huná translates to "he/she/they also live" and means respect for all living things. Through the respect for all living things, we are able to grow and learn better together, each bringing our own unique individual differences and contributions to inspire leaders for tomorrow by influencing the world today.

Employment equity requires that we remove barriers and overcome both direct and indirect discrimination. In this way, the pool of excellent candidates increases substantially. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the B.C. Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person.

About the University and its Community

Since its founding in 1990, the University of Northern British Columbia (UNBC) has emerged as one of Canada's best small research-intensive universities, with a passion for teaching, discovery, people, and the North. UNBC's excellence is derived from community-inspired research, hands-on learning, and alumni who are leading change around the world.
Since time immemorial, Indigenous peoples have walked gently on the diverse traditional territories where the University of Northern British Columbia community is grateful to live, work, learn, and play. We are committed to building and nurturing relationships with Indigenous peoples, we acknowledge their traditional lands, and we thank them for their hospitality. UNBC's largest campus in Prince George is located on the traditional unceded territory of the Lheidli T'enneh, in the spectacular landscape near the geographic centre of beautiful British Columbia.

UNBC's three regional campuses are located in Quesnel, Fort St. John, and Terrace. The South-Central campus in Quesnel is situated on the traditional territory of the Lhtako Dené (Red Bluff Band), Nazko, Lhoosk'uz Dené Nation (Kluskus Band), and Esdilagh First Nations (formerly Alexandria Band). Lhtako, Nazko, and Lhoosk'uz are Dakelh First Nations, and Esdilagh is a member of the Tsilhqot'in Nation. The Peace River-Liard campus in Fort St. John is situated on the traditional territory of the Doig River, Blueberry River and Halfway River First Nations. They are the Dunne-Za people. The Northwest campus in Terrace is situated on traditional Ts'msyen (Tsimshian) territory of the Kitsumkalum and Kitselas First Nations. It includes a satellite campus in the coastal community of Prince Rupert.

UNBC consistently ranks in the top three in its category in the annual Maclean's university rankings. UNBC also recently placed among the top five per cent of higher education institutions worldwide by the Times Higher Education World University Rankings.

With a diverse student population, the University is friendly, inclusive, and supportive. Prince George is a city of ~74,000 people with impressive cultural, educational, and recreational amenities. For more information about living and working in Prince George, please refer to http://www.unbc.ca/experience and https://moveupprincegeorge.ca. Make your mark with this leading post-secondary institution.

Salary

The salary for Part-Time Sessional Instructors is determined on the basis of Semester Contact Hour (SCH) at a rate of $2,957.32 per SCH. Please refer to the link below to the UNBC Faculty Association Collective Agreement (Article 48) for more compensation information:

https://www2.unbc.ca/sites/default/files/sections/human-resources/facultyassociationcollectiveagreementjuly12023-june302025-revised.pdf

To Apply

The University of Northern British Columbia is committed to employment equity and encourages applications from the four designated groups (women, Indigenous peoples, persons with disabilities, and members of visible minorities) as well as the LGBTQ2+ communities and individuals with intersectional identities.

Applicants should forward their cover letter, curriculum vitae, and the names and addresses of three references (including telephone and email information) quoting #FAPT01-24 to Meagan Jago, Administrative Assistant, at computerscience@unbc.ca .

Persons with disabilities, who anticipate needing accommodation for any part of the application and hiring process, may contact UNBC Health & Wellbeing at wellbeing@unbc.ca. Any personal information provided will be maintained in confidence.

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. We thank all applicants for their interest in UNBC however, only those applicants selected for further consideration will be contacted.

Applications received on or before November 24, 2023, will receive full consideration; however, applications will be accepted until the position is filled.