



Bachelor of Computing Science

Session 2010

CIIS

Jalvehra, GT Road, NH1, Tehsil-Taluka
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PROGRAM OUTLINES

Bachelor of Computing Science

Length: 4-year degree from TRU

B: 8 Semesters, plus 4 work terms.

Credential: Canadian Degree, Co-op

Location: CIIS, Jalvehra, India

Description

This program is a four-year co-operative education program designed to meet Global Standards with eight academic and four work terms. There is a core emphasis on Computer Application systems supported by learning about quality, up-to-date computer software & usage. Technical management and supervisory procedures will further compliment the student's educational experience. Technical and non technical courses provide a solid foundation in Communications, Technical writing, application software, system software, Hardware, quality assurance and project management introduce the wide range of activities associated with computer science environment.

Career Opportunities

Graduates may find a range of occupation in computer science, manufacturing and service and Information Technology companies. They may become part of a team in software building and consultant in the IT world. Careers are possible in design, application building, quality assurance, testing, management, technical sales and service, computer parts and assembly. Computer application building, software sales, Technical support & Technical writing industries are among graduate employers.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Apply the principles of computer science, mathematics & engineering sciences to solving technical problems and make decisions;

- Ability to find Computer solutions to business problems
- Hone your Technical skills combined with business acumen
- An ability to think and the drive to learn
- People-to-people communications
- Quickly adapt to changing market requirements
- Keep abreast of new tools and methods
- Design, implement, maintain and upgrade information technology systems

Practical Experience

Co-operative Education at Thompson Rivers University has been designed to blend career ambitions with university studies in order to enhance the student's skills through real and relevant work experience. This blending affects much more by learning how to make the adjustment to the work environment and the development of professionalism.

Student enrolled in the Bachelor of Computing Science program are required to complete four work terms prior to graduation. Each is four month in duration. Many co-op employers hire students for full-time employment following graduation. During the 16 months spent on work terms, students will acquire valuable experience in the Information Technology & other Computer science & service Industries.

Co-operative Education is a mandatory component of all Co-op programs at Thompson Rivers University. It has been designed as a process by which student integrate their academic education with work experience relating to their program of study. Co-op reinforces the skills and theory learned during the academic semesters, develops professional contacts, job knowledge and career path, improves human relations and communication skills, and promotes personal maturity and financial independence. It is recommended that students attend and participate in any scheduled Cooperative Education. Sessions are scheduled for all first-year students and will be helpful in ensuring success in subsequent Co-op work terms.

Admission Requirements

Passed the All-Indian Senior School Certificate or All-Indian Senior Secondary School or Higher School Certificate or Intermediate Examination Certificate (10+2 system) in any stream.

1. For Direct Admission:

- a) Applicant has 72% or above in Class 12th English, or IELTS band of 6.5 or above.
- b) A minimum of 48% in Mathematics or equivalent in Class 10th

2. For the applicants not eligible for Direct Admission due to point 1.a) then he/she will have to give the Accuplacer Exam conducted in the campus and obtain the marks as prescribed in the CIIS Information Booklet

SEM 1

COMP 114

Computer Programming I (3,1,1)

An introduction to the use of structured problem solving methods, algorithms, structured programming and object oriented programming using Visual Basic .NET. The student will learn to use a high level event-driven object oriented programming language to learn how to design, develop and document well-structured programs using software engineering principles.

COMP 157

Introduction to Data Processing Principles (3, 1, 1) The course serves as an introduction to the principles of data processing. Throughout the course, students will work with and on the type of computer problems that are encountered in business, including accounting applications, data validation and storage, and report creation procedures. The student can expect to do a substantial amount of work in this course using Microsoft Excel, Microsoft Access, HTML and the file processing utilities of Linux.

ENGL 181

Business, Professional and Academic Composition (4,0,0)

English 181 teaches the theory and the practice of successful academic, business, and professional composition; the similarities and differences involved in writing for business and academic purposes; and the research and documentation skills involved in both.

COMP253

Small Computer Systems: Organisation and Architecture (3,2,0)

This course presents the organisation and higher-level architecture of modern, small microcomputer systems (PCs). General topics include data representation in computers, logic design basics, essential computer organisation, and principles of operating systems. Attention is brought to topics for computer resource management, as well as relevant, current, and popular topics. The above are complemented by lab workshops, providing hands-on experience with configuration, troubleshooting, and understanding of small system components and peripherals.

MATH 138

Discrete Structures I for Computing Science (3,1,1)

An introduction to the basic mathematical concepts used in Computing Science. Topics covered include the binary number system, computer arithmetic, logic & truth tables, Boolean algebra, logic gates and simple computer circuits, sets, relations, functions, vectors and matrices, counting, probability theory and statistics (mean, variance, median, mode, random variables).

SEM 2

Comp 124

Visual Basic Computer Programming II (3, 1, 1)

This course is the continuation of the Comp 114 course in Visual Basic .NET and provides a foundation for further studies in computing science. The objectives of the course are to continue to develop a disciplined approach to the design, coding, and testing of programs written in Visual Basic .NET. The course will introduce object oriented programming, building classes, data abstraction, encapsulation and inheritance. There will also be an

introduction to more complex data structures, files and databases and exception handling.

COMP 167

Introduction to File Processing (3,1,1)

This course is a continuation of the topics in COMP 157. The concentration is on the more advanced features of data processing and file handling. Topics include procedures for handling sequential, index sequential and relative files, file updating techniques, data sorting and merging, specialized input and output, and screen handling methods. In addition, there is a substantial section of software testing methodology. COBOL will be used in this course.

ENGL 193

Report Writing and Oral Presentations (4,0,0)

This course emphasizes the process of writing short and long technical report and includes instruction on primary and secondary researching methods, standard documentation methods, effective organisation of data, and improving communication strategies. Throughout the semester, students will discuss, research, and apply the interrelationship between products and the message, the audience, the purpose, and the various channels (reports, orals, web pages) of communication.

MATH 139

Discrete Structures II for Computing Science (3,1,1)

A continuation of Math 138, this course introduces further mathematical concepts used in computing science. Topics covered include graph theory (directed graphs and binary trees), languages, grammars, machines, an introduction to proofs and mathematical induction, and algorithm analysis.

COMP263

Small Computer Systems: Communication and Networks (3,1,0)

This course introduces the fundamentals of data communication and computer networks. The primary focus is on local area networks, their organization, installation, maintenance, and connection to other networks. A discussion of information transfer and data

communication concepts and terminology is followed by an overview of computer networks and an in-depth discussion of networks, their design, components, installation, administration, and maintenance. Also covered are the issues of security, data backup and system recovery.

Co-op 1

Co-op 2

SEM 3

Comp 252

Programming in C++ (3,0,1)

This course is a programming course in Visual C++. The course will provide an introduction to C++ using the Developers Studio. There will be an introduction to the basics of the language as well as the concepts and syntax of object-oriented programming with C++. The course will cover the building of classes, an introduction to data structures, sorting and searching and exploring some of the advanced features of classes. We will be only working with console applications not the visual components of Visual C++.

COMP 256

Database Programming (3,0,1)

This course introduces students to the concept of Database Programming. Fundamentals of I/O processing, File Organizations, and Data Structures are examined in the context of Database Systems. Database models, design, implementation and administration form a major portion of the course. Students will also implement a database project using a current Database Management System (DBMS) on microcomputers.

COMP 257

Systems Analysis and Design I (3,1,0)

This course introduces the topics of systems analysis and design. Topics in Analysis include project initiation, preliminary investigation, and definition of project scope, cost/benefit analysis, interviewing techniques, presentation techniques, detailed systems investigation and analysis. Topics in Design include object oriented design, input, output, files, systems processing and

systems controls. This course may use CASE tools in the lab component.

COMP 268

Special Topics in Computing (2,2,0)

This course covers all major aspects of Web site design and programming including HTML, HTTP, Java Script programming. The course also includes advanced techniques in HTML programming (frames & cascade style sheets)..

MGMT -070

Principles of Management (4,0,0)

This course introduces the student to the four management functions: planning, organizing, leading and controlling. The course deals with changes in the business world, which are having a direct effect upon a modern manager's job.

Co-op 3

SEM 4

Comp 254

Information Resource Management and Issues (3,1,0)

Information Systems (IS) are an important service to organizations and the management of Information System is important to understand both from the viewpoint of an employee in the organization and for individuals interested in becoming IS managers in the future. This course will look at IS management and how it must effectively address the needs and imperatives of organizations, technologies and society.

COMP 262

Advanced E-Commerce and Web Applications (3,1,0)

This course will introduce students to the design, implementation, and operation of Electronic Commerce Web-based systems. Emphasis will be placed on the technology involved in creating Web database systems, data mining systems, and Interactive Data Warehousing. The course will also discuss financial issues, electronic payments, privacy, security, and legal issues.

Comp 264

Languages – Advanced Programming (3,1,0)

The course introduces students to advanced programming techniques and modern design methods in the development of enterprise systems with graphical user interfaces using Client/Server technology and object oriented programming. The following topics will be developed (1) Advanced use of the .NET Environment for system development. (2) Design of web and windows applications using the .NET environment with a focus on applications managing data in databases. (3) Client Server techniques used for distributed systems and for use over the Internet. (4) Use of ADO.NET for data access, focusing on the SQL Server database (5) Use of components over the web using Web services and ASP.NET.

COMP 266

Introduction to Object-Oriented Programming (3,1,0)

An advanced computer-programming course with emphasis on object-oriented modeling using Unified Modeling Language and object-oriented concepts (inheritance, encapsulation, and polymorphism). Advanced topics include multithreading, network applications, and Graphical User Interface (GUI) programming techniques. Students will use Visual C++.NET for programming assignments.

COMP 267

Systems Analysis and Design 2 (3,1,0)

In COMP 267, we will continue our study of systems analysis and design methods by completing an operational system. This course is essentially the study of project management techniques. This course involves the development of a 'live' computer system for a business user

SEM 5

COMP 213

Introduction to Computer Systems (3,1,1)

The objectives of this course are: (a) to provide basic concepts of computer systems; (b) to introduce computer architecture; and (c) to teach an assembly language. Topics will include computer structure and machine language, assembly language, addressing techniques,

macros, file I/O, program segmentation and linkage and assembler construction.

COMP 223

Data Structures and Algorithm Analysis (3,1,0)

The purpose of the course is to give students an introduction to the basic methods of representing data used in Computing Science. Several fundamental data structures will be discussed, common implementation algorithms used to represent those data structures, and the efficiency and cost tradeoffs of each will be considered.

COMP 354

Web Site Design & Programming (3, 1, 0)

This course covers all major aspects of WEB site design and programming including HTML, HTTP, Java and Visual Basic Scripting as well as Java web programming. The course also includes advanced techniques in HTML programming (frames & style sheets) and concurrent programming for the web (multithreading). This course concentrates mainly on client-side web programming with an introduction to server-side web programming.

COMP 483

Multimedia (3,1,0)

The course discusses four interconnected topics: a) Design and presentation of information in computer systems. Cognitive perception of colour, space, animation and sound, and use of graphics, sound, animation, virtual reality and hypermedia in presenting information to the user. Methods of presenting complex information to the user. B) Concepts and methods of design, management, creation and evaluation of multimedia databases. Organization and retrieval of digital multimedia. Issues of image and sound capture, storage and retrieval. C) Impact of multimedia on society and ethical issues. D) Programming for multimedia: Java Programming for the Internet.

MNGT 143

Introduction to Marketing (3,0,0)

This course is designed to provide students with an overall view of the marketing function. They will come to understand the role of marketing in society and its

application within organizations. Topics include marketing strategy, market segmentation, planning and implementing and marketing mix (the product, price, channels of distribution, advertising and personal selling functions), and managing and controlling the marketing process.

Co-op 4

SEM 6

COMP 327

Computer Networks (3,0,1)

The main emphasis is on organization and management of LANs. The course objectives are: to learn about computer network organization and implementation and to obtain a theoretical understanding of data communication and computer networks and practical experience in installation, monitoring and troubleshooting of current LAN systems. The course introduces computer communication network design and its operations. The course includes the OSI communication model, error detection and recovery, local area networks, bridges, routers and gateways, network naming and addressing, and local and remote procedures. On completion of the course the student should be able in part to design, implement and maintain a typical computer network (LAN).

COMP 352

Software Engineering (3,1,0)

This course introduces students to large-scale software development including software design, implementation and maintenance. Topics included are: software life cycle, design techniques, Psychology and Economics of software testing, organization and management of modular inter-communications, software engineering tools, project management including resource estimation, team organization and review. The students will apply these techniques to develop a software project.

COMP 361

Database Systems (3,1,0)

This course introduces students to database concepts. It reviews the underlying data structures that make up

databases; trees, simple networks and complex networks, link lists and inverted list (indexes). Database design techniques are introduced using both the Entity Relationship model as well as an object oriented approach to designing database systems. The relational database model and data normalization will be taught as students design and implement a case study project. Data description language, data manipulation language (updates, queries, reports), and data integrity checking are also covered. Case study work will be completed using a relevant and current relational Database Management System, DBMS, software product.

COMP 345

Human Computer Interaction Design (3,1,0)

It is an introductory course to interaction design from a human-computer interaction perspective. Students will learn both theoretic and practical concepts of human computer interaction, which will help them, produce user interfaces developed using a user-centered approach. The course will focus initially in the principles of how to design interaction in general. After that, specific techniques for the application and implementation of the design principles will be discussed.

BBUS 272

Organizational Behaviour (3,0,0)

This course is an introductory examination of work organizations and the behaviour of individuals within them. The topics covered are: understanding and managing individuals in organizations; interpersonal relationships and communications; understanding and managing work groups; understanding organization design; and understanding and managing organizational change.

SEM 7

COMP 324

Internet and Security Issues (3,1,0)

This course will present the most practical internet and intranet technologies and techniques to students. It will cover internet protocols, addressing and architecture, intranet and extranets design, installation, and

management as well as all aspects of internet/intranet security and user/data authentication

COMP 341

Operating Systems (3, 1, 0)

This course discusses principles and techniques for the design and implementation of operating systems: computer resource management (memory management, processor management, I/O management, file management, process management and security management) and process communication. Additionally covered are: Job Control Language and batch processing, case study of some operating systems, Real Time OS, and Concurrent computations. This course includes a practical OS design project.

COMP 371

Artificial Intelligence (3,1,0)

Content includes: the scope of AI with special emphasis on rule based systems; knowledge representation and engineering; tools; techniques and areas of applicability; natural language interface; problem solving and games; pattern recognition and vision; and neural networks.

COMP 461

Advanced Database Systems (3, 1, 0)

This course continues with Oracle 9i/10G database concepts introduced in COMP 361. It begins with a review of database design and implementation principles. Discussions of the relational database model, designing for optimization, and normal forms will be continued up to and including database physical implementation, networking configuration, data and network security, backup and recovery solutions, database tuning and optimization for the best performance/cost level. Relational database strategies for Database Manipulation Language (DML) will be discussed as well as database administration and multi-user database issues.

MNGT 281

Introduction to Human Resource Management (3,0,0)

This course is designed to provide students with an understanding of the human resource management (HRM) function within organizations, including an appreciation of the roles of both HRM specialists and line

managers in designing and implementing effective HRM policies and practices.

SEM 8

COMP425

Computer Network Administration (3,1,0)

This course emphasizes the implementation and the administration of network and network servers, and network security. Those topics include administration of internetworking and server software on network servers; network traffic surveillance; network security problems, firewall, intrusion detection and defense; implementation of a practical LAN methodology of simulation: data collection, model design, analysis of output, optimization, and validation. Elements of queuing theory and its relationship to simulation. Application of models of computer system

COMP 451

Systems Software Design (3,1,0)

Systems software components and their functions; operating software, translators, linkers, loaders, cross assemblers; utility software; relationship of operating software to hardware; developing system software components; single user, multiprogramming and distributed systems (LANs) operating software; and terminate and stay resident programs

COMP 434

Modelling and Simulation (3,1,0)

Numeric models of dynamic systems with emphasis on discrete stochastic systems. State descriptions of models, common model components and entities. A

discussion of some common simulation languages (such as Simula, GPSS, Simscript, GASP, Dynamo). Simulation using algebraic languages.

COMP 491

Project (3, 1, 0)

This course is designed as a capstone project in the BCS and CS Major programs and includes the practical design and implementation of a supervised project in an area of specialization in Computing Science. The students will develop a 'live' project and part of their learning experience will include working with an external client.

MNGT248

Marketing Communications (3,0,0)

This course studies the uses of marketing communications in our society with a focus on the creation and management of various promotions. The basis of communications planning is ensuring all contact between the marketer and the consumer and other stakeholder groups are consistent and integrated. Lectures, discussions, exercises and projects are used to develop a greater understanding of the principles and practices of marketing communications.

Note: Information contained in college documents regarding the program is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis ensuring relevance to changing educational objectives and employment market needs. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolments, and availability of courses.

Notes: