



THE UNIVERSITY OF WINNIPEG

For more information visit www.uwinnipeg.ca or contact a student recruitment officer at welcome@uwinnipeg.ca or 204.786.9844. In any case where The University of Winnipeg Course Calendar and this fact sheet differ, the current Calendar takes precedence.

Applied Computer Science

The Applied Computer Science program focuses on the theory and application of computing in business and scientific environments.

The Applied Computer Science major is designed to prepare students in the following core areas: Programming Fundamentals (object-oriented, event driven, algorithms), Information Management (database systems, data modeling, data warehousing, relational databases, query languages), Software Engineering (software requirements and design, software process, software project management), Operating Systems, Net-Centric Computing (internet programming, networks, security), Human Computer Interaction (GUI Design and Programming), Intelligent Systems (Machine Learning).

Our team-oriented courses are meant to strengthen communication skills, experience group dynamics, and foster self-confidence. The 4-year major includes the development of a team-based software project for a local IT organization. Our program will help develop analytical thinking and applied skills by blending theoretical and practical aspects of computer science.

The Applied Computer Science program can lead to a **Bachelor of Science (3-year, 4-year, or Honours)** or a **Bachelor of Arts (3-year or 4-year)**. This major is focused in theories, professionalism, and fundamental computing knowledge. We recommend the four-year degree programs due to the greater depth of study. Additionally, there are two streams: Information Systems and Health Informatics. The Applied Computer Science major is designed to provide an excellent basis for graduate studies in either computer science or applied computing.

The **Information Systems stream** leads to a Bachelor of Science (3-year) or a Bachelor of Arts (3-year). It is designed for students who are more interested in information-centric courses and are more pragmatic in problem solving.

The **Health Informatics stream** leads to a Bachelor of Science (3-year) or a Bachelor of Arts (3-year). The stream is designed for students who are interested in computer systems for health related industries.

The Applied Computer Science program is designed to provide an excellent basis for graduate studies in computer science, information sciences, or interdisciplinary areas such as Biostatistics.

The Department offers a **Masters Degree in Applied Computer Science and Society**.

SAMPLE CAREERS

Job prospects for Applied Computer Science graduates are excellent. The Applied Computer Science curriculum includes a wide range of courses that prepare you for a career as a database specialist, network systems and data communications analyst, systems analyst, designer, software engineer, project manager, or web application developer. Employers value the combination of technical and applied skills gained in this program, especially the practical experience offered by the Senior Systems Development Project Course.

Graduates are employed in a wide variety of positions in business, industry, and government. Past graduates have made their careers in the areas of web application development, database application programming, database administration, systems analysis and design, project management, technical support, and quality assurance. Students in this program have been successful in winning National Sciences and Engineering Research Council (NSERC) post-graduate scholarships to pursue graduate studies in Computer Science at well-known universities such as the

University of Alberta and the University of British Columbia. Also, some of our graduates have chosen to pursue MBA programs.

SAMPLE COURSES

Data Structures and Algorithms introduce fundamental data structures using an object-oriented programming language (Java). Topics to be covered include vectors, multidimensional arrays, linked lists, stacks, queues, trees, graphs, recursion, and algorithms. This course follows the two first-year introductory Java programming courses.

Software Design and Architecture is an advanced course in software design that examines recent advances in the design of larger application systems. Topics include software architecture, object-oriented analysis and design, software patterns, and the Unified Modelling Language (UML).

Senior Systems Development Project is a fourth-year course that applies the principles and techniques of software project management. A project proposal, project plan, regular status reports, and a completion report are required. All work must conform to proper analysis, design, programming, and documentation standards. Each student team holds status reviews at appropriate life-cycle milestones. A final presentation and a formal demonstration of the system are required at the end of the project.

MORE SAMPLE COURSES

Database Systems
Computer Networks
Introduction to Machine Learning
Requirements Analysis and Design
Principles of Software Project Management
Computer Architecture and System Software

Unix
Advanced Database Systems
Data Warehousing
Human Computer Interfaces
Advanced Internet Programming

WHAT OUR STUDENTS SAY...

"The class sizes were small and faculty members were easily accessible outside of regular class hours for additional assistance. The program offered a wide variety of courses that include programming, database design and development, system analysis and design to name a few. I also found the material of the program to blend theoretical and practical learning seamlessly. The wide variety of course material combined with the theoretical and practical learning experience has provided me with the opportunity to obtain successful employment in the IT sector. I would not have this opportunity in my career without my start at Applied Computer Science program at the University of Winnipeg." - *Travis Plawicki, Application Support Analyst, Manitoba e-Health, 2004 graduate*

"The Applied Computer Science program prepared me well for success in the information technology field. I left the University of Winnipeg with strong computer programming and database design skills. As the Application Administrator for a large hospital information system I am able to put these skills into practice on a daily basis. I highly recommend the Applied Computer Science program at the University of Winnipeg". - *Matthew Sodomsky, Application Administrator, Manitoba e-Health (WRHA), April 2006 graduate*

"The University of Winnipeg Applied Computer Science degree has helped a great deal in learning to understand the processes of problem resolution while developing programs and understanding existing systems. The skills learned in this program are usable independent of programming language, physical setup or purpose of a system, and have been indispensable for both developing new and altering existing systems". - *Craig Klassen, Programmer, Manitoba Public Insurance (MPI), September, 2010 graduate*

"The depth of knowledge, approachability and overall quality of the professors along with the superb course material makes the Applied Computer Science department a great place to learn about the world of computer science. The program challenged and motivated me, while providing a robust knowledge in the field. The university provided me with opportunities to perform high-level research during my undergraduate degree. This experience was very gratifying and intrigued me sufficiently to pursue my education at the Masters level. The University of Winnipeg Applied Computer Science department helped lay the foundation for my acceptance into the M.Sc. program at the University of Toronto." - *Daniel Levy, 2012*

DID YOU KNOW?

- The Applied Computer Science Program (formerly Business Computing) is housed in a new facility on the third floor of the Duckworth Centre. The classrooms in this facility are the most technologically advanced on campus.
- Several Applied Computer Science courses are offered later in the day or in the evening to accommodate the many adult learners participating in this program.
- The research interests of our faculty include: computational intelligence, computer vision, data warehousing, web and document databases, image processing, pattern recognition, software engineering, security and privacy, machine learning, multimedia computing, and wireless communication.

SAMPLE FIRST YEAR

Group A: These courses have **No Prerequisite** Requirement. They are specially designed for pre-professional programs, general interest, and also for Information Systems major.

- ACS 1453/3 **Introduction to Computers**
 - Introduction to the use of personal computers
- ACS 1803/3 **Introduction to Information Systems**
 - Introduction to information systems in businesses and organizations
- ACS 1805/3 **Introduction to Programming**
 - Providing important programming experience using a graphics package
- ACS 1809/3 **Website Design and Development**
 - Providing valuable experience in website design and programming
- ACS 2814/3 **Applications of Database Systems**
 - Introduction to the design and use of databases
- RHET-1103(3) Academic Writing: Science or any other section of Academic Writing (if required)

Group B: These courses have **High School Prerequisite** Requirement. They are required for the Applied Computer Science major.

- ACS 1903/3 **Programming Fundamentals I**
 - Prerequisite Requirement: Applied Mathematics 40S or Pre-Calculus 40S
 - ACS 1904/3 **Programming Fundamentals II** is its follow-up course
- ACS 1905/3 **Programming Fundamentals**
 - Prerequisite Requirement: Computer Science 40S
- RHET-1103(3) Academic Writing: Science or any other section of Academic Writing (if required)

REQUIRED HIGH SCHOOL COURSES

In addition to meeting The University of Winnipeg's general admission requirements you must have either **Pre-Calculus Mathematics 40S** or **Applied Mathematics 40S** for the Applied Computing Program. These additional requirements are not necessary for the new Information Systems Program.

HOW TO APPLY – Domestic Student

Apply online at uwinnipeg.ca or pick up an Application for Admission from your high school counsellor's office or the Admissions Office at The University of Winnipeg. To meet Scholarship deadline, submit your application and \$80 application fee by **March 1st**.

HOW TO APPLY – International Student

Apply online at uwinnipeg.ca/index/intl-apply and submit all official documents by mail. To meet Scholarship deadline submit application, fee, and documents by **March 1st**. International application fee is \$100, which includes a one-time courier fee.

CONTACT US

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