Introduction

Computer Science continues to be one of the fastest growing areas of professional employment in the world. Opportunities for graduates of the four-year programs exist in all sectors of industry, and successful students are well trained to handle a wide variety of jobs. Students have worked on special effects for Hollywood films, soccer-playing robots, self-flying aircraft, brain imaging devices, and much more. In the 21st century our graduates have unprecedented abilities to make substantial contributions to all aspects of society.

Programs

The Department of Computer Science offers several undergraduate programs:

Honours Program

This is a professional program, which provides students with an in-depth exposure to computer science. All students who plan to do graduate degrees or research in computer science should enroll in this program. The Bachelor of Computer Science (Honours) degree requires four years of full-time study. There are more required courses, and more 4000-level courses, than in the Major program. There is a Cooperative Option (see below).

Four Year Major Program

For those students who wish to pursue a variety of courses from other disciplines along with their Computer Science program, the Four Year Major degree could be considered. It does not have the same concentration of Computer Science courses as the Honours program, and may not lead to direct admission to graduate programs such as M.Sc. or Ph.D. but there is increased flexibility, and it may be completed on a part time basis. There is a Cooperative Option (see below).

The Cooperative Option

The Computer Science Department offers a Cooperative option in both Honours and Four Year Major programs. This option provides students with a total of 12 months of well-paid employment by the time they graduate. It enables students to obtain work experience with a broad variety of participating firms in Winnipeg as well as other parts of Canada and hones their skills in job seeking, resume writing, and effective personal interaction. Graduates find the experiences to be invaluable preparation for their working life.

Students interested in alternating employment terms and academic terms as part of their Honours or Four Year Major Computer Science program may apply to enter the Cooperative Option after successful completion of the second year of their degree program.

The employment terms are designed to provide students with the opportunity to acquire practical experience in real-life situations and to acquire insight into areas of specialization within the computing field. Students also typically earn more than enough to defray the total cost of their university education. The Cooperative Option adds an additional 8 months to the length of time required to complete a degree program, but students gain 12 months of work experience.

Other programs

In addition to the Honours and the Four Year Major, a Minor program is offered for students in other Faculties and Departments, and there are Joint Honours programs with the departments of Physics, Mathematics, and starting Fall 2010, Statistics.
Required University 1 Courses

University 1 students must take Introductory Computer Science 1 and 2 (COMP 1010 and COMP 1020). A grade of B or better in COMP 1020 is required to enter the Honours program in Computer Science. Students who wish to enter the Four Year Major must obtain a C+ or better in COMP 1020.

In addition, students must take two courses in mathematics, Introduction to Calculus MATH 1500 (or 1510, 1520, or 1690) and Vector Geometry and Linear Algebra MATH 1300 (or 1210 if transferring from Engineering or 1310), and obtain a minimum C average on these two courses.

Students may also consider taking STAT 1000 in University 1, but will have to complete this course prior to graduation.

Introductory courses

JAVA is the computer language currently being taught, beginning in COMP 1010 and continuing in COMP 1020. No previous programming knowledge is required. Algorithms and programming are the main topics covered in these courses.

The Computer Science Department also offers other introductory first year level courses for students wish to acquire some computer skills but who are not planning further studies in this area. Neither of these courses can be used as part of a Computer Science Honours or Major program. These courses are:

- Introductory Computer Usage 1  COMP 1260
  This half course offers an introduction to modern computer software. Areas covered will include word processing, spreadsheets and databases.

- Introductory Computer Usage 2  COMP 1270
  This half course continues the material from COMP 1260. It concentrates on web-based uses of computers and HTML.

Facilities

There are five dedicated Computer Science student labs containing a variety of Windows, Macintosh, and Linux systems. At the 3rd and 4th year levels students may get an opportunity to participate in the activities of the department’s 17 Research Labs.

Career opportunities

Computer Scientists are employed in every sector of government and industry, from aerospace to agriculture. They develop software and hardware solutions to a wide variety of problems using the fundamental tools and techniques studied as part of their degree program.

Students have recently found themselves

- creating software for the visual display of data from brain scanners.
- building an autonomous airplane which can take off, perform a mission, and land, all without human control.
- designing new techniques to manage crops from wireless sensor data.
- creating and enhancing software to aid bus travelers in Winnipeg.
- writing software to produce special effects for Hollywood movies.
- implementing new financial planning software for the world’s leading company in that area.

And all of these things were done before the students had graduated. Opportunities after receiving a degree are equally varied.

Enrollment in computer-related programs in Canadian universities decreased from 2001-2005, while employment opportunities continued to increase. This has resulted in a consistently strong demand for graduates.
# PROGRAM OVERVIEW

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<tbody>
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<td>COMP 1010</td>
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<td>COMP 3370</td>
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<td>COMP 3430</td>
<td>3000/4000 level Computer Science,</td>
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<td>3 credit hrs</td>
<td>30 credit hours must be outside of these areas.</td>
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<tr>
<td>21 credit hrs</td>
<td>4000 level Computer Science,</td>
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<td>48 credit hrs</td>
<td>electives</td>
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**NOTE:**
1) 3 credit hours that satisfy the University’s written English requirement must be completed in Year 1 or 2.
2) Students can take at most 90 credit hours of Computer Science, Statistics and Mathematics courses. 30 credit hours must be outside of these areas.

TOTAL = 120 credit hours  TOTAL = 120 credit hours

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**For further information**

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**Note:** In the event of any inconsistencies between the information provided in this Infosheet and the University’s annual General Calendar, the Calendar entry shall prevail. The effective date of information provided in this Infosheet is September 2010.