

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
SAULT STE. MARIE, ONTARIO**



COURSE OUTLINE

Course Title: Computer Mathematics

Code No.: MTH122-4

Semester: One

Program: Computer Programmer, Computer Engineering, Computer Network, Computer System Support

Author: The Mathematics Department

Date: August 2009

Previous Outline Dated: August 2008

“B.Punch”

Approved: _____

Chair

Date

Total Credits: 4

Prerequisite(s): None

Hours/Week: 3

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School of Natural Environment/Outdoor Studies & Technology Programs

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I. COURSE DESCRIPTION:

This course presents mathematics needed in computer studies. Emphasis is placed on developing logical thinking skills and an algorithmic approach to problem-solving.

II. LEARNING OUTCOMES:

After studying each of the indicated topics, the student should be able to perform the objectives that follow:

Topic 1: Basic Algebra Review

1. Number sets
2. Properties of integers and real numbers
3. Exponents and radicals
4. Order of operations
5. Inequalities and absolute values
6. Metric measurement

Topic 2: Number Systems

1. Number systems
2. Review decimal number system
3. Binary number system
4. Octal number system
5. Hexadecimal number system
6. Conversion between number systems
7. Binary addition
8. Complementation
9. Binary subtraction
10. Hexadecimal addition and subtraction

Topic 3: Computer Considerations

1. Scientific digits, accuracy, precision, rounding
2. Scientific notation
3. Normalized exponential form
4. Integer representation
5. Floating point representation

II. LEARNING OUTCOMES (Continued):**Topic 4: Sets**

1. Sets and elements
2. Subsets
3. Operations on sets
4. Venn diagrams
5. Basic properties of sets

Topic 5: Logic

1. Simple and compound statements
1. Truth tables: AND, OR, NOT, NAND, NOR, EOR
3. Conditional and bi-conditional statements
4. Properties of logic
5. Logical implication

Topic 6: Boolean Algebra

1. Circuits
2. Combination off switches
3. Properties of networks
4. Simplification of networks
5. Logic circuits

III. TOPICS TO BE COVERED:**Approximate Time Frame**

1. Basic Algebra	6 hours
2. Number Systems	9 hours
3. Computer Considerations	6 hours
4. Sets	9 hours
5. Logic	9 hours
6. Boolean Algebra	9 hours

Total: 48 hours

UNIT NUMBER	NO. OF HOURS	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
1	6	Number Sets Properties of Integers and Real Numbers Exponents and Radicals Order of Operations Polynomials Equations and Inequalities Metric measurement	<i>Problem Set 1.1, Odds</i> <i>Problem Set 1.2, Odds</i> <i>Problem Set 1.3,1.7,Odds</i> <i>Problem Set 1.4, Odds</i> <i>Problem Set 1.5, Odds</i> <i>Problem Set 1.6, Odds</i> <i>Instructor handout</i>
2	9	Number Systems Review Decimal Number Systems Binary Number System Octal Number System Hexadecimal Number System Conversion Between Number Systems Binary Addition Octal and Hexadecimal Addition and Subtraction Binary Subtraction	<i>Problem Set 5.1, Odds</i> <i>Problem Set 5.2, Odds</i> <i>Problem Set 5.3, Odds</i> <i>Problem Set 5.4, Odds</i> <i>Problem Set 5.5, Odds</i> <i>Problem Set 5.6, Odds</i> <i>Problem Set 5.7, Odds</i> <i>Problem Set 5.8, Odds</i> <i>Problem Set 6.1, Odds</i> <i>Problem Set 6.2, Odds</i> <i>Problem Set 6.3, Odds</i> <i>Problem Set 6.4, Odds</i>
3	6	Significant Digits Precision, Rounding Scientific Notation Normalized Notation, Integer Representation, Floating Point Representation Real Numbers	<i>Problem Set 7.1, Odds</i> <i>Problem Set 7.2, Odds</i> <i>Problem Set 7.3, Odds</i> <i>Problem Set 7.4, Odds</i>
4	9	Sets and Elements Subsets Operations on Sets Venn Diagram Basic Properties of Sets	<i>Problem Set 8.1, Odds</i> <i>Problem Set 8.2, Odds</i> <i>Problem Set 8.3, Odds</i> <i>Problem Set 8.4, Odds</i> <i>Problem Set 8.5, Odds</i>
5	9	Simple and Compound Statements Truth Tables: AND, OR, NOT, NAND, NOR, EOR	<i>Problem Set 9.1, Odds</i> <i>Problem Set 9.2, Odds</i> <i>Problem Set 9.3, Odds</i>

		Conditional and Bi-conditional Statements Properties of Logic Logical Implication, Arguments	<i>Problem Set 9.4, Odds</i> <i>Problem Set 9.5, Odds</i> <i>Problem Set 9.6, Odds</i>
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UNIT NUMBER	NO. OF HOURS	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
6	9	Circuits Combinations of Switches Properties of Networks Simplification of Networks Logic Circuits	<i>Problem Set 10.1, Odds</i> <i>Problem Set 10.2, Odds</i> <i>Problem Set 10.3, Odds</i> <i>Problem Set 10.4, Odds</i> <i>Problem Set 10.5, Odds</i> <i>Problem Set 10.7, Odds</i>

IV. REQUIRED RESOURCES / TEXTS / MATERIALS:

1. Textbook: "Mathematics for Data Processing", Robert N. McCullough, ***Third Edition***, Prentice-Hall.
3. Calculator: (Recommended) SHARP Scientific Calculator EL-531. The use of some kinds of calculators may be restricted during tests.

V. EVALUATION PROCESS/GRADING SYSTEM:

MAJOR ASSIGNMENTS AND TESTS

While regular tests will normally be scheduled and announced beforehand, there may be an unannounced test on current work at any time. Such tests, at the discretion of the instructor, may be used for up to **30%** of the overall mark.

The instructor will provide you with a list of test dates and other required evaluation information for your class section. Tests may be scheduled out of regular class time.

V. EVALUATION PROCESS/GRADING SYSTEM (continued):

If you are absent from class, it is your responsibility to find out what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

Unexcused absence from a test may result in a mark of zero (“0”). Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

METHOD OF ASSESSMENT (GRADING METHOD)

Grade	Definition	Grade Point Equivalent
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

“F” and “X” Grades at the end of the Semester

If an “X” grade is not cleared by the specified date, it will become an “F” grade. Except for extenuating circumstances, an “X” grade in Math will not be carried into the next semester.

Course: MTH 122-4		
Evaluation Device	Topics Covered (reference topic numbers from the course outline)	% weight of Final Average
Test 1	1	10%
Test 2	2	20%
Test 3	3	10%
Test 4	6	20%
Test 5	4	20%
Test 6	5	20%

VI.**SPECIAL NOTES:**

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in Student Code of Conduct. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.