THE 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

AUTHOR: Math Department

DATE: Jun 2014   **PREVIOUS OUTLINE DATED:**   Jun 2013

APPROVED: "Colin Kirkwood"   May 31/14

                         DEAN   **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S):   None

HOURS/WEEK: 3 hours/week

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 necessary applications to solve related problems with in program:

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:

	Textbook Reference	Approximate Time Frame
1. Basic Algebra	Chapter 1	6 hours
2. Number Systems	Chapters 5 & 6	9 hours
3. Computer Considerations	Chapter 7	6 hours
4. Sets	Chapter 8	8 hours
5. Logic	Chapter 9	8 hours
6. Boolean Algebra	Chapter 10	8 hours

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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	*Problem Set 1.1, Odds* *Problem Set 1.2, Odds* *Problem Set 1.3,1.7,Odds* *Problem Set 1.4, Odds* *Problem Set 1.5, Odds* *Problem Set 1.6, Odds* *Instructor handout*
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	 *Problem Set 5.1, Odds* *Problem Set 5.2, Odds* *Problem Set 5.3, Odds* *Problem Set 5.4, Odds* *Problem Set 5.5, Odds* *Problem Set 5.6, Odds* *Problem Set 5.7, Odds* *Problem Set 5.8, Odds* *Problem Set 6.1, Odds* *Problem Set 6.2, Odds* *Problem Set 6.3, Odds* *Problem Set 6.4, Odds*
3	6	Significant Digits Precision, Rounding Scientific Notation Normalized Notation, Integer Representation, Floating Point Representation Real Numbers	*Problem Set 7.1, Odds* *Problem Set 7.2, Odds* *Problem Set 7.3, Odds* *Problem Set 7.4, Odds*
4	8	Sets and Elements Subsets Operations on Sets Venn Diagram Basic Properties of Sets	*Problem Set 8.1, Odds* *Problem Set 8.2, Odds* *Problem Set 8.3, Odds* *Problem Set 8.4, Odds* *Problem Set 8.5, Odds*
5	8	Simple and Compound Statements Truth Tables: AND, OR, NOT, NAND, NOR, EOR Conditional and Bi-conditional Statements Properties of Logic Logical Implication, Arguments	*Problem Set 9.1, Odds* *Problem Set 9.2, Odds* *Problem Set 9.3, Odds* *Problem Set 9.4, Odds* *Problem Set 9.5, Odds* *Problem Set 9.6, Odds*

UNIT NUMBER	NO. OF HOURS	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
6	8	Circuits	*Problem Set 10.1, Odds*
			Problem Set 10.2, Odds
		Combinations of Switches	*Problem Set 10.3, Odds*
		Properties of Networks	*Problem Set 10.4, Odds*
		Simplification of Networks	*Problem Set 10.5, Odds*
		Logic Circuits	*Problem Set 10.7, Odds*

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-546. The use of some kinds of calculators may be restricted during tests.

V. EVALUATION PROCESS/GRADING SYSTEM:
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Evaluation Device	Topics Covered (topic numbers refer to the course outline)	% weight of Final Average
Test 1	1	10%
Test 2	2	20%
Test 3	3	10%
Test 4	4	20%
Test 5	5	20%
Test 6	6	20%

METHOD OF ASSESSMENT (GRADING METHOD)

Grade	Definition	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
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.

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.

VI.   SPECIAL NOTES:

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.

Electronic Devices:
Personal use of electronic devices such as cell phones, iPods, MP3 players, tablets, laptop computers etc. during class is prohibited.

VII.   COURSE OUTLINE ADDENDUM:

1.   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.

2.   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.

3.   <u>Prior Learning Assessment</u>:
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.

4.   <u>Accessibility Services</u>:
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 Accessibility Services office. Visit Room E1101 or call Extension 2703 so
that support services can be arranged for you.

5.   <u>Communication</u>:
The College considers *Desire2Learn (D2L)* 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 this Learning Management System (LMS) communication tool.

The professor reserves the right to use other tools and/or techniques that may be more applicable.
These other tools/techniques for effective communication will be discussed, identified and presented
throughout the delivery of course content.

6.   <u>Academic Dishonesty</u>:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*.
Students who engage in academic dishonesty will receive an automatic failure for that submission
and/or such other penalty, up to and including expulsion from the course/program, as may be
decided by the professor/dean. 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.

7.   <u>Tuition Default</u>:
Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments
were not deferred or payment plan not honoured) as of the first week of November (fall semester
courses), first week of March (winter semester courses) or first week of June (summer semester
courses) will be removed from placement and clinical activities due to liability issues. This may result
in loss of mandatory hours or incomplete course work. Sault College will not be responsible for
incomplete hours or outcomes that are not achieved or any other academic requirement not met as
of the result of tuition default. Students are encouraged to communicate with Financial Services with
regard to the status of their tuition prior to this deadline to ensure that their financial status does not
interfere with academic progress.

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8. <u>Student Portal:</u>
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.

9. <u>Recording Devices in the Classroom:</u>
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.