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: June 2010 **Previous Outline Dated: August 2009**

"B.Punch"
Approved: _____ _____
Chair **Date**

Total Credits: 4
Prerequisite(s): None
Hours/Week: 3

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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	***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	9	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	9	Simple and Compound Statements Truth Tables: AND, OR, NOT, NAND, NOR, EOR	***Problem Set 9.1, Odds*** ***Problem Set 9.2, Odds*** ***Problem Set 9.3, Odds***

		Conditional and Bi-conditional Statements Properties of Logic Logical Implication, Arguments	***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	9	Circuits Combinations of Switches Properties of Networks Simplification of Networks Logic Circuits	***Problem Set 10.1, Odds*** ***Problem Set 10.2, Odds*** ***Problem Set 10.3, Odds*** ***Problem Set 10.4, Odds*** ***Problem Set 10.5, Odds*** ***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-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%	
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.

"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:

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.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal, form part of this course outline.