THE SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
SAULT STE. MARIE, ON

COURSE OUTLINE

Course Title: Mathematics

Code No.: Mth 1220-4 Semester: One

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

Author: The Mathematics Department

Date: August 2002 Previous Outline Dated: August 2001

Approved: _____ _____
Dean Date

Total Credits: 4 Prerequisite(s): None
Length of Course: 3 hrs./week Total Credit Hours: 48

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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. STUDENT PERFORMANCE OBJECTIVES:

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. STUDENT PERFORMANCE OBJECTIVES (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

IV. LEARNING ACTIVITIES:

UNIT NUMBER	NO. OF HOURS	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
1	3	Number Sets Properties of Integers and Real Numbers Exponents and Radicals Order of Operations Inequalities and absolute values Metric measurement	***Problem Set 1.1, Odds*** ***Problem Set 1.2, Odds*** ***Problem Set 1.3, Odds*** ***Problem Set 1.4, Odds*** ***Problem Set 1.5 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 6.5, Odds*** ***Problem Set 6.4, Odds***
3	6	Significant Digits Precision, Rounding Scientific Notation Normalized Notation, Integer Representation, Floating Point Representation	***Problem Set 7.1, Odds*** ***Problem Set 7.2, Odds*** ***Problem Set 7.3, Odds***
4	9	Sets and Elements Subsets Operations on Sets Venn Diagram Basic Properties of Sets	***Problem Set 8.2, 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 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***

IV. LEARNING ACTIVITIES (Continued):

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 10.6, Odds***

V. REQUIRED RESOURCES / TEXTS / MATERIALS:

1. Textbook: "Mathematics for Data Processing", Robert N. McCullough, ***Second Edition,*** Prentice-Hall.

2. Calculator: (Recommended) SHARP Scientific Calculator EL-546V. The use of some kinds of calculators may be restricted during tests.

VI. EVALUATION PROCESS/GRADING SYSTEM:

MAJOR ASSIGNMENTS AND TESTS
Regular topic tests will contribute a minimum of **60%** of the overall mark.

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.

ATTENDANCE
It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

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.

VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):

METHOD OF ASSESSMENT (GRADING METHOD)

Grade		Definition	Grade Point Equivalent
A+	Consistently outstanding	(90% - 100%)	4.00
A	Outstanding achievement	(80% - 89%)	3.75
B	Consistently above average achievement	(70% - 79%)	3.00
C	Satisfactory or acceptable achievement in all areas subject to assessment	(60% - 69%)	2.00
R	Repeat - The student has not achieved the objectives of the course, and the course must be repeated.	(less than 60%)	0.00
X	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course course requirements **(See below)**		
CR	Credit exemption		

The method of calculating your weighted average will be defined by your instructor. Since grades are based upon averages, it follows that good marks in some tests can compensate for a failing mark in another test.

Make-Up Test (if applicable)
An "X" grade may be assigned at the end of the regular semester if you have met ***ALL*** of the following criteria for the course:

- an overall average between 50% and 59% was achieved
- at least 50% of the tests were passed
- at least 80% of the scheduled classes were attended
- at least 80% of quizzes and assignments were submitted
- all of the topic tests were written

If you are assigned an "X" grade, you may convert it to a "C" grade by writing a make-up test on topics agreed to by the instructor. This test will be available at the time agreed to by your instructor.

At the end of the regular term, it is your responsibility to obtain your results from your instructor and, in the event of an "X" grade, to inquire when the make-up test will be available.

The score you receive on this make-up test will replace your original test score and be used to re-calculate your weighted average. If the re-calculated average is 60% or greater, a "C" grade will be assigned. If the re-calculated average is 59% or less, an "R" grade will be assigned.

"R" and "X" Grades at the end of the Semester
If an "X" grade is not cleared by the specified date, it will become an "R" grade. Except for extenuating circumstances, an "X" grade in Math will not be carried into the next semester.

"R" Grades during the Semester
A student with a failing grade and poor attendance (less than 80% attendance) may be given an "R" at any time during the semester.

VII. SPECIAL NOTES:

Special Needs
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, or 491 so that support services can be arranged for you.

Advanced Standing
Students who have completed an equivalent post-secondary course must bring relevant documents to the Coordinator, Mathematics Department.

Retention of Course Outlines
It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions.

Substitute course information is available at the Registrar's office.
The instructor reserves the right to alter the course as he/she deems necessary to meet the needs of the students.

VIII. PRIOR LEARNING ASSESSMENT:

There is a MTH 122 Challenge exam in place.

Students who wish to apply for advanced credit in the course should consult the instructor or the Prior Learning Assessment Office (E1306).