

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY  
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: TECHNOLOGY MATHEMATICS  
Code No. MTH 423-4  
Program COMPUTER, ELECTRICAL & ELECTRONICS TECHNOLOGY  
Semester: TWO  
Date: JUNE 1985  
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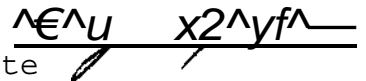
New:

Revision

APPROVED:

  
Chairperson

Date

  
Date

TECHNOLOGY MATHEMATICS

MTH 423-4

Course Name

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PHILOSOPHY/GOALS:

When the student has successfully completed this course he will have demonstrated an acceptable ability to pass tests based upon the course contents as listed elsewhere. If, after completing the course, the student takes further courses (or employment) in which he is required to apply the material he should then, through practice, be able to develop a good command of this subject matter.

METHOD OF ASSESSMENT (GRADING METHOD):

The students will be assessed by tests. These tests will include periodic tests based upon blocks of subject matter and may, at the instructor's discretion include unannounced surprise tests on current work and/or a final test on the whole course. A letter grade will be based upon a student's weighted average of his test results. See also the mathematics department's annual publication "To The Mathematics Student" which is presented to the students early in each academic year.

TEXTBOOK(S):

Calter - "Technical Mathematics with Calculus"

Floyd - "Digital Fundamentals" - Second Edition

OBJECTIVES:

The basic objective is for the student to develop an understanding of the methods studied, knowledge of the facts presented and an ability to use these in the solution of problems. For this purpose exercises are assigned. Tests will reflect the sort of work contained in the assignments. The level of competency demanded is the level required to obtain an overall passing average on tests. The material to be covered listed on the following pages.

NOTE;

The parallel mechanical technology mathematics course differs from this course in that the mechanical students omit "Number Systems and Boolean Algebra" at the start of the term and take "Analytic Geometry" at the end of the term. Hence, the two courses are out of step throughout the term.

ENTRY TO COURSES:

Prerequisite: MTH 413 or credit in MTH 413.

A student who has taken MTH 120 instead of MTH 413 may be admitted to MTH 426 if certain conditions are met:

1. The student has earned an "A" or "B" in MTH 120;
2. The student is entering a technology program.

AUDITING:

Computer, electrical, and electronics students who are taking the "Logic at Switching" course but who are not registered in MTH 426 will be permitted to audit the topic "Number Systems and Boolean Algebra".

ENTRY TO SUCCEEDING COURSES;

A student who successfully completes MTH 426 is admitted to the succeeding course. If a student transfers to a related technician program his grade in MTH 426 will be accepted in lieu of the second semester technician mathematics (MTH 220).

A student who fails second semester technology math (MTH 426) and transfers to a related technician program may be granted a "C" in second semester technician mathematics (MTH 220) and entry to third semester technician mathematics if he meets certain requirements:

1. Good attendance (80% or better);
2. MTH 426 average is 40% or better;
3. 50% or better in each algebra related topic in MTH 426 except "Progressions and Binomial Theorem";
4. Every test in MTH 426 has been written.

| TOPIC NO. | PERIODS | TOPIC DESCRIPTION  | ASSIGNMENTS   | REFERENC                                 |
|-----------|---------|--|---|--|
|           | 11      | Number Systems and Boolean Algebra-<br>Binary, octal, hexadecimal.<br>Conversions.<br>Arithmetic in binary system-<br>And, Or, and Not gates.<br>Truth tables.<br>Boolean algebra.<br>Proof of identities.<br>Application to circuits.   | Ex. 1-30<br><br>Ex. 1-17<br>Ex. 1-20<br>Ex. 1-10<br>14-18 | Ch. 2<br><br>Ch, 3<br>Ch. 4<br>Ch. 11    |
|           |         | Quadratic Equations-<br>Solution by factoring.<br>Completing the square.<br>Quadratic formula.<br>Radical equations.<br>Graphs of quadratic functions.<br>Equations of quadratic type.<br>Systems of equations.  | Ex- 1-5,7,<br>8,10  | Ch. 11                                   |
|           | 20      | Trigonometry - Oblique Triangles,<br>Graphs of Trig Functions, Identities,<br>and Equations -<br><br>Large angles.<br>Radian measure and circular motion-<br>Sine law.<br>Cosine law.<br>Sine and cosine curves.<br>Fundamental identities.<br>Sum or difference of two angles<br>Double angle identities.<br>Trigonometric equations.<br>Inverse functions. | Ex. 1-3<br><br>Ex. 1-3<br><br>Ex. 1,2<br>Ex. 1-6          | Ch. 12<br><br>Ch. 13<br>Ch. 14<br>Ch. 15 |
|           | 10      | Exponential and Logarithmic<br>Functions<br><br>The exponential function.<br>Properties of logarithms.<br>Common and natural logarithms<br>Exponential equations.<br>Logarithmic equations.  | Ex. 1-4   | Ch. 17                                   |

|  |         |        |
|--|---------|--------|
| Functional Variation -                               | Ex. 1-7 | Ch. 16 |
| Direct and inverse variations.                       |         |        |
| Joint variations.                                    |         |        |
| Functions of more than one variable.                 |         |        |
| Straight Line -                                      | Ex. 1-3 | Ch. 20 |
| Length, slope of line segment.                       |         |        |
| Equation of straight line.                           |         |        |
| Derivatives of Algebraic Fns. -<br>(if time permits) | Ex. 1-7 | Ch. 22 |
| Limits.  |         |        |
| Delta method.  |         |        |
| Rules for derivatives.                               |         |        |
| Product and fraction rule.                           |         |        |
| Implicit relations.                                  |         |        |
| Higher order derivatives.                            |         |        |