#190

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: MECHANICS OF MACHINES

CODE NO.: MCH 204-3 **SEMESTER:** III - 4 HRS./WK

PROGRAM: MECHANICAL ENGINEERING TECHNOLOGY (MTY - 3)

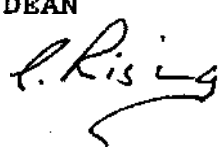
AUTHOR: BRUCE PROUT

DATE: SEPT'. 1992 **PREVIOUS OUTLINE DATED:**: SEPT. 1991

APPROVED: /rf [/ UC^Hi JtZ

DEAN

DATE



COURSE NAME: Mechanics of Machines CODE NO. MCH 204-3

TOTAL CREDIT HOURS: 3

PREREQUISITE!S): DRF 101-6 AND MCH 111-4

I. PHILOSOPHY/GOALS:

The student will study the vocabulary of machines, mechanisms and motion, the precision drafting techniques used to, - a) layout skeleton outlines of mechanisms, b) displacement diagrams of points and links, c) velocity analysis of various parts by the relative velocity method and the method of instantaneous centres, and d) acceleration analysis of various parts by the relative acceleration method. The time available for the acceleration topic will only permit an introduction to the method.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1) be familiar with the vocabulary of motion, mechanisms and machines.

2) make accurate skeleton outlines of mechanisms/machines and displacement diagrams of points and links.

3) make velocity analysis layouts using velocity polygons and instant centres.

4) begin an acceleration analysis using an acceleration polygon.

III. TOPICS TO BE COVERED:

1) Definitions and theory of machine analysis.

2) Skeleton outlines of machines/mechanisms.

3) Displacement diagrams of points or links during one motion cycle.

4) Velocity Analysis - Related Velocity Method
- Method of Instant Centres

5) Acceleration Analysis - introduction to acceleration polygon.

TOPIC NO	SUGGESTED PERIODS	TOPIC DESCRIPTION	REFERENCE
	10	MECHANISMS, definitions and fundamentals	Basic Graphical Kinematics - Harold Kepler a) Chapter 1-4 Pgs. 1 - 7 1 b) Instructor's Notes
	10	SKELETON OUTLINES --symbols used - lines used - scales used DISPLACEMENT DIAGRAMS	a) Chapter 4 Pgs. 49 -71 b) Instructor' Notes
	16	VELOCITY ANALYSIS - relative velocity method using velocity-polygon and link images	a) Chapter 6 Pgs. 130 -143
		METHOD OF INSTANT CENTRES - locating all I.C.'s in multi link mechanisms - law of thru centres - using selected I.C.'s to find velocity of any point	(I.C.) b) Chapter 5 Pgs. 73 -98 c) Chapter 6 Pgs. 99 - 114 d) instructor's Notes
	10	ACCELERATION ANALYSIS - theory and constructions using Relative Acceleration Method	Chapter 7 Pgs. 163-178

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EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

FINAL MARK

Final marks will be compiled in the following way:

Tests	75%
Assignments and Quizzes	25%

FINAL GRADE

Final grades will be assigned based on the final mark as follows:

A+	90 - 100%
A	80 - 89%
B	70 - 79%
C	55 - 69%
R	0 - 54%

Students having less than a "C" grade at term end, MAY have opportunity to rewrite up to two tests, one time only. If the revised final mark is over a "C" average, a "C" grade will be issued. However, if the revised average remains less than a "C", a^_"R" grade will result, and the student will be obliged to repeat the course.

In order to qualify for test rewrite opportunity, a student must have submitted 100% of assignments, AND have a class attendance record of at least 80% throughout the term.

Note that there will be no allowances for assignment and quiz rewrites.

Tests

Tests will be scheduled throughout the term to a maximum of four. A minimum of one week notice will be provided to allow preparation before each test.

Students who will be absent for a scheduled test must contact the instructor in ADVANCE. Students absent with a valid reason will be allowed to write a similar test at the instructor's convenience. Students absent without prior notification and a valid excuse will be assigned a "ZERO" grade for the missed test.

Assignments

Assignments will be required to be submitted throughout the term, and subject to random marking. Assignments may be scheduled for class time, or issued as homework exercises, and are to be submitted PRIOR to the start of the class on the due day.

Late and unsubmitted assignments will be considered uncompleted and be give a "Not Submitted" or a "Zero" grade, unless PREVIOUS arrangements were made with the instructor.

Quizzes

Unscheduled mini-tests may be held throughout the term, as class time exercises. One of the objectives of quizzes is to encourage regular class attendance. Students absent without a valid excuse be assigned a "ZERO" grade for a missed quiz.

VI. REQUIRED STUDENT RESOURCES

TEXTBOOK - Basic Graphical Kinematics - Harold B. Kepler

Drafting instruments, engineering and architects scales, lettering aid, (2H, 3H, 4H) pencils.

Calculator

VII- ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY:

Book Section (TITLE, PUBLISHER, EDITION, DATE, LIBRARY CALL NUMBER IF APPLICABLE - SEE ATTACHED EXAMPLE)

Mechanics of Machinery - McGraw-Hill
by Ham, Crane & Rogers

VIII SPECIAL NOTES

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.