

#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: W. MACQUARRIE

DATE: SEPT'. 1991

PREVIOUS OUTLINE DATED: JUNE 1989

APPROVED:

UEAN_____OMTT

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:

^MJpon 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 - 71 b) Instructor's Notes
	10	SKELETON OUTLINES - symbols used - lines used - scales used	a) Chapter 4 Pgs. 49 -71 b) Instructor's Notes
	16	DISPLACEMENT DIAGRAMS 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.)

GRADES:

For the school year, _____, the following grades are in effect:

A+	90 - 100%
A	75 - 89%
B	65 - 74%
C	55 - 64%
R	0 - 54%

There will be no rewrites or supplementary exams this semester.

All drawings and assignments are to be handed in on the date that they are "due". Late drawings may be accepted on verifiable compassionate grounds only.

ATTENDANCE:

It is your responsibility to attend all classes during the semester. Attendance will be taken and is NOT used to determine any final grade. If a class is missed, it is your responsibility to acquire any notes and to have finished any assigned homework BEFORE attending the next class. Poor attendance usually reflects in interior or failing grades.

METHOD OF ASSESSMENT:

There will be a mid-term, and a final (two hour) test, on large blocks of subject matter during the semester, worth 100 marks each and announced one week in advance. There may also be several small quizzes and or drawings from time to time and these may or may not be announced. A grade is determined from the average of the results of all the above, first as a percent, and then converted to a letter grade according to the above table.

TEST ABSENCE:

An unexcused absence from a scheduled test will result in a zero mark. To avoid this situation, a student, who is ill or going to be absent on compassionate grounds (family illness or death), **MUST NOTIFY** the college 759-6774 and contact either the teacher (at extension 561) or the department secretary (at extension 687) by 9:00 A.M. of the day of the test.

Further, upon his/her return to classes, the student must contact his/her instructor, within **ONE DAY**, to schedule a writing of the missed test. Failure to carry out these procedures is considered to be an unexcused absence.

A doctor's certificate or a signed note from the college nurse, verifying your illness, must be presented to your instructor on your return to classes.

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.