SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: CHEMISTRY

Code No.: CHM-109

Program: Mechanical Technology

Semester: Two

Date: June, 1983

Author: J. S. Korrey

New: _____ Revision: X

APPROVED: _____ _____

Chairperson Date

CALENDAR DESCRIPTION

CHEMISTRY	CHM 109
Course Name	Course Number

PHILOSOPHY/GOALS:

An introductory course in chemistry designed to give mechanical engineering students a basic understanding of a few chemical processes which he/she will encounter. Topics discussed are basic chemistry such as elements and the periodic table, compounds, atoms, molecules, ions, oxidation state, nomenclature equations, organic hydrocarbons, electrochemical cells, batteries, corrosion, fuels, and lubricants.

METHOD OF ASSESSMENT:

Approximately 4 - 5 tests are written during the semester.

The grades are averaged and converted to a letter grade on the following basis:

A = 80 - 100
B = 70 - 79
C = 60 - 69
I = 59 or less

TEXTBOOK(S):

Booklet entitled "Crude Oil" obtainable from Sault College Campus Shop.

COURSE OUTLINE

CHEMICAL PROCESSES FOR CHM 109

TEXT: Chemistry in Engineering - Lloyd A. Munro

TOPIC NO.	CHAPTER	TOPIC INFORMATION	TIME (HRS)
1		Chemistry - BASICS Elements & The Periodic Table Compounds Atoms, Molecules, Ions Valence (oxidation state) Nomenclature Equations - 5 types including Redox Organic Hydrocarbons	
2	14	Electric Cells & Storage Batteries 1. Electrochemical Cells a) voltaic cells or Galvanic cells b) electrolytic cells c) electroplating 2. Reversible Cells or Storage Batteries a) lead-acid storage battery b) edison cells c) ni-cad batteries d) dry cells	5
3	15	Corrosion 1. Definition of Corrosion 2. Factors influencing corrosion 3. Factors associated with the metal a) oxidation potential b) effect of metal purity	7

TOPIC NO.	CHAPTER	TOPIC INFORMATION	TIME
3	15	c) effect of stress d) relative areas of anode and cathode e) passive films	
		4. Factors associated with the environment a) presence of moisture b) oxygen concentration c) conductance d) temperature e) inhibitors	
		5. Corrosion Testing a) A.S.T.M. Methods b) salt spray test c) other tests, etc.	
	15	6. Corrosion Testing a) general principles b) sacrificial anodes and cathodic protection	
4	10	Gaseous Fuels a) natural gas b) L.P.G. c) butane d) manufactured fuel gases	2
5	6	Liquid Fuels Crude Oil a) types of crude oil b) separation of petroleum crude by distillation	7
6	7	Fuel to Match the Engine a) compression ratio b) knock c) octane ratings	
7	9	Diesel Fuels a) classification of diesel engines b) cetane no. c) diesel index	

TOPIC NO.	CHAPTER	TOPIC INFORMATION	TIME
7 (Cont'd)	9	Diesel Fuels d) tests for diesel fuel quality e) kerosene f) heating fuels	
8	13	Lubrication and Lubricants 1. Purpose of lubricants 2. The manufacture of lubricating oils 3. Testing lubrication oils a) Viscosity & Viscosity Index b) Flash & Fire Points c) Oxidation Resistance d) Carbon Residue e) Neutralization No. f) Specific Gravity g) Colour 4. Oil additives 5. Oil emulsions 6. Gels & Greases 7. Synthetic lubricants 8. Solid lubricants	

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