

UNIVERSITY COLLEGE OF THE FRASER VALLEY

COURSE INFORMATION

DISCIPLINE/DEPARTMENT: Physics **IMPLEMENTATION DATE:** Fall 1992

Revised: June 1993

<u>Physics 231</u>	<u>Thermodynamics</u>	<u>4</u>
SUBJECT/NUMBER OF COURSE	DESCRIPTIVE TITLE	UCFV CREDITS

CALENDAR DESCRIPTION: This course is designed for students who wish to pursue a career in engineering or physical science. This is an introductory course designed to study the fundamentals of heat, energy, and thermodynamics. Topics include temperature, heat, the first and second law of thermodynamics, phase change, and the kinetic theory of gases. To ensure a comprehensive treatment of the above topics, the course will be presented using lectures, tutorials and computer simulations.

RATIONALE:

COURSE PREREQUISITES: Physics 111; Math 111

PRE- OR CO-REQUISITES: Mathematics 112

HOURS PER TERM FOR EACH STUDENT	Lecture	60	hrs	Student Directed	
	Laboratory		hrs	Learning	hrs
	Seminar		hrs	Other - specify:	
	Field Experience		hrs	_____	hrs
				TOTAL	60

MAXIMUM ENROLMENT: 24

Is transfer credit requested? : Yes **9** No

AUTHORIZATION SIGNATURES:

Course Designer(s): G. McGuire Chairperson: T. Cooper
Curriculum Committee

Department Head: T. Cooper Dean: K. Wayne Welsh

PAC: Approval in Principle _____ PAC: Final Approval: December 13, 2000
(Date) (Date)

Physics 231**NAME & NUMBER OF COURSE**

METHODS:

This course will be presented using lectures, tutorials, demonstrations, directed study, computer assisted learning, and appropriate audio-visual aids. Problems will be assigned and marked weekly. Problem solving will emphasize the use of calculus methods and computers (numerical techniques).

STUDENT EVALUATION PROCEDURE:

Assignments	20%
Mid-term	30%
Final Exam	50%

COURSE CONTENT

1. Temperature: measuring, temp. and internal energy, temperature scales, thermal expansion
2. Heat and the First Law of Thermodynamics: measuring heat capacity, specific heats, absorption and transfer of heat, the First Law of Thermodynamics
3. Kinetic Theory of Gases: an ideal gas, Avogadro's constant, pressure and temperature, kinetic energy, equipartition of energy
4. Second Law of Thermodynamics: engines, ideal engines, the Carnot Cycle, efficiencies, entropy
5. Statistical Thermodynamics: probability distributions, Maxwell-Boltzmann law