Students are advised to keep course outlines in personal files for future use.

Shaded headings are subject to change at the discretion of the department and the material will vary

+ see course syllabus available from instructor

<table>
<thead>
<tr>
<th>FACULTY/DEPARTMENT:</th>
<th>Faculty of Science, Health &amp; Human Services/Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NAME/NUMBER</td>
<td>PHYS 231</td>
</tr>
<tr>
<td>FORMER COURSE NUMBER</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>UCFV CREDITS</td>
<td>3</td>
</tr>
</tbody>
</table>

**COURSE DESCRIPTIVE TITLE**

**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, and the first and second law of thermodynamics, phase change, and the kinetic theory of gases.

**PREREQUISITES:**

**PHYS 112**

**COREQUISITES:**

**SYNONYMOUS COURSE(S)**

(a) Replaces: n/a

(b) Cannot take: n/a

**SERVICE COURSE TO:**

<table>
<thead>
<tr>
<th>(Course #)</th>
<th>(Department/Program)</th>
</tr>
</thead>
</table>

**TOTAL HOURS PER TERM:** 75

**TRAINING DAY-BASED INSTRUCTION**

<table>
<thead>
<tr>
<th>STRUCTURE OF HOURS:</th>
<th>LENGTH OF COURSE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures: 75 Hrs</td>
<td></td>
</tr>
<tr>
<td>Seminar:</td>
<td></td>
</tr>
<tr>
<td>Laboratory:</td>
<td></td>
</tr>
<tr>
<td>Field Experience:</td>
<td></td>
</tr>
<tr>
<td>Student Directed Learning:</td>
<td></td>
</tr>
<tr>
<td>Other (Specify):</td>
<td></td>
</tr>
</tbody>
</table>

**MAXIMUM ENROLLMENT:** 36

**EXPECTED FREQUENCY OF COURSE OFFERINGS:**

Once every two years

**WILL TRANSFER CREDIT BE REQUESTED?**

<table>
<thead>
<tr>
<th>(lower-level courses only)</th>
<th>(upper-level requested by department)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:**

Yes

**COURSE IMPLEMENTATION DATE:** September 1992

**COURSE REVISED IMPLEMENTATION DATE:** September 2007

**COURSE TO BE REVIEWED:** December 2009

(Four years after UPAC final approval date)

**AUTHORIZATION SIGNATURES:**

Course Designer(s): George McGuire; revised Rob Woodside

Chairperson: Gillian Mimmack (Curriculum Committee)

Department Head: Norm Taylor

Dean: Jackie Snodgrass

UPAC Approval in Principle Date: UPAC Final Approval Date: December 14, 2005
LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:
This course will attempt to broaden, and to deepen the students' present knowledge of thermodynamics. The emphasis will be on applications and problem solving, as this course is designed for students who plan to continue their studies in the applied sciences. After finishing this course, the students should be able to:

1. Demonstrate their understanding of thermodynamics by solving problems in heating and refrigeration;
2. Appreciate the uses of thermodynamics for other sciences;
3. Understand the importance and beauty of science to all of mankind.
4. Solve various problems in each of the topic areas listed in the Calendar Description section.

METHODS:
This course will be presented using lectures, tutorials and demonstrations. Problems will be assigned and marked weekly. Problem solving will emphasize the use of calculus methods and computers (numerical techniques).

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):
Credit can be awarded for this course through PLAR (Please check:)

[ ] Yes  [ ] No

METHODS OF OBTAINING PLAR:
Departmental Review and/or Course Challenge

TEXTBOOKS, REFERENCES, MATERIALS:
[Textbook selection varies by instructor. An example of texts for this course might be:]
Carter, A.H., Classical and Statistical Thermodynamics, Prentice Hall (2001)

SUPPLIES / MATERIALS:

STUDENT EVALUATION:
[An example of student evaluation for this course might be:]
Assignments 20%
Mid-term 30%
Final Exam 50%

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]
1. Temperature: measuring, temp. and internal energy, temperature scales, thermal expansion.