

Course Description of Thermodynamics

- البرنامج الذي يقدم المقرر من خلاله (برنامج إعداد المعلم)
- The course is presented through the teacher preparing Programme.
- يمثل المقرر عنصرا (رئيسيا) بالنسبة للبرنامج
- This is a core course in the programme.
- القسم العلمي المسئول عن البرنامج (قسم المناهج وطرق التدريس)
- The Curriculum and Instruction Department is responsible for the programme.
- القسم العلمي المسئول عن تدريس المقرر (قسم الطبيعة)
- The physics Department is responsible for teaching the course.
- السنة الدراسية / المستوى (الفرقة الثانية – الفصل الدراسي الأول “شعبة الطبيعة”)
- The course is targeted to be presented for second Year for physics section students.
- تاريخ اعتماد توصيف البرنامج (/ /)
- Date of accrediting the course description (\ \)

Basic Data

- (1) Course Title: Thermodynamics
(2) Course Code No.: 217 ph
(3) Credit Hours: four credit hours
Lectures: 2credit hours
laboratory: 2credit hours
Total hours: 4 credit hours

بيانات أساسية

Professional Data

بيانات مهنية

1) General goals of the course

(1) الأهداف العامة للمقرر

The course is designed to help student-teachers achieve the following goals:

The students will be trained on applications of conversation of energy with in the context of thermodynamics.

2) Operational learning objectives of the course

(2) الأهداف الإجرائية للمقرر

By the end of this course, student teachers are expected to achieve the following objectives:

A) Knowledge and Comprehension:

(أ) المعرفة والفهم:

The student have to recognize the following :

- 1- Systems, state variables and thermo dynamical processess.
- 2- Work, internal energy and first law of thermodynamics and its applications in different processes.

3- Concepts of enthalpy, surface energy and transformation of heat into work and the associated applications.

4- Second law of thermodynamics, concept of entropy and the associated processes

B) Cognitive Skills: (ب) المهارات العقلية:

- Demonstrate competence in the practice of teaching as defined within the Entry-Level Standards.
- promote the maintenance of a safe science classroom, including the appropriate use and storage of scientific equipment, and safe storage, use, and disposal of materials;

C) Practical Skills: (ج) المهارات العملية:

- Locate resources, design and conduct inquiry-based open-ended investigations in physics, interpret findings, communicate results, and make judgments based on evidence.
- Demonstrate competence in the practice of teaching through investigative experiences and by demonstrating the application of the scientific process and assessing student learning through multiple processes.
- Acquire hands on practical skills.
- Biological and engineering applications.

D) Enabling Skills: (د) المهارات العامة والمنقولة:

- Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of science in human affairs.
- Create and maintain an educational environment in which conceptual understanding will occur for all science students.

Contents

المحتويات

Week	Topic	Assigned hours		
		Lectures	laboratory	Total
First	Thermodynamics systems and static variables.	2	2	4
Second	Types of thermodynamics processes. Thermodynamics equilibrium.	2	2	4
Third	Work in thermodynamics. Internal energy of a gas.	2	2	4
Fourth	Point and path functions.	2	2	4
Fifth	First law of thermodynamics and conversation of energy..	2	2	4
Sixth	Applications of the first law in different processes.	2	2	4
Seventh	Enthapy.	2	2	4
Eighth	Surface energy.	2	2	4
Ninth	Transformation of heat into work and thermal efficiency.	2	2	4
Tenth	Heat engines.	2	2	4
Eleventh	Carnot cycle and refrigerator	2	2	4
Twelfth	Second law of thermodynamics	2	2	4
Thirteenth	Entropy in reversible and irreversible processes. Thermodynamics function..	2	2	4

Activities, tasks and assignments:

أساليب التعليم والتعلم

- Solves and discusses problem sets.
 - Computer aided and web based assignments and assessment.
- Lecture.
 - Laboratory experiments.
 - Problems and essay assignments.

Assessment and Evaluation tools:

أساليب التقييم

- Semester activities including classroom interactions and Quizzes.
- Mid – term exam
- Lab performance evaluation.
- Oral exam.
- Final exam.

Summative Evaluation table

جدول التقييم

First Assessment	Midterm exam	Seventh Week	الأسبوع السابع	نصف الفصل الدراسي	التقييم الأول
Second Assessment	Final exam	Fifteenth Week	الأسبوع الخامس عشر	نهاية الفصل الدراسي	التقييم الثاني

النسبة المئوية لكل تقييم

Assessment	Score ^{وزن الدرجة} Weight	التقييم
1. Midterm exam	12	1. امتحان نصف الفصل الدراسي
2. Final written exam	56	2. امتحان نهاية الفصل الدراسي
3. Final oral exam	12	3. الامتحان الشفوي
4. assignments	20	4. أعمال السنة
Total	%100	المجموع

References:

Students' Textbooks

Lecturer's References

Periodicals and websites

قائمة المراجع

(1) كتب الطالب

(2) كتب المحاضر

(3) مجلات علمية، ومواقع الإنترنت

Resources

الإمكانات المطلوبة للتعليم والتعلم

- Computer simulation programs and slides.
- Transparencies.
- Manual of solved problems (answer and solutions)
- **Text books:**
 - 1- "Heat Thermodynamics"
Zemansky & dittman, McGrwe – Hill Company.
 - 2- "Physics Principles with applications", d.c Giancoli, USA.
"University Physics" F.W Sears, M.W Zemasky and H.D Young, Wesley Series in Physics

Course coordinator:

Head of the Department:

Date:

• منسق المقرر:

• رئيس القسم:

• التاريخ: