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| --- | --- | --- |
|  | **Mutah University**  **Detailed Syllabus Form** | Description: C:\Users\lamasat.lamasat-PC\Pictures\Picture1.png |

**First :** Course Information**:**

|  |  |
| --- | --- |
| * Course Number: 0302362 | * Course Title: Statistical Mechanics |
| * Credit Hours: Three | * College: Science |
| * Pre-requisite: Thermodynamics | * Department: Physics |
| * Instructor: Prof. Mansour Al-Haj | * Semester & Academic Year: First semester 2016/2017 |
| * Lecture time: Mon, Wed 8-9.30 | * Office Hours: Tue 8-11 |

**Second :** General Course Description

A core physics course for sophomore students.

**Third :** Course Objectives

* To give the students an introduction to the well-known statistical distribution functions used in physics.
* To study some applications of these distribution functions.

**Fourth:** Expected Learning Outcomes

* Students are expected to encounter these distribution functions in other physics courses such as solid state, nuclear, astrophysics, and atomic, so they are required to study them carefully.
* These functions are useful for possible further advanced research work.

**Fifth :** Course Plan Distribution & Learning Resources

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| --- | --- | --- |
| **Learning Resources** | **Topics to be Covered** | **Week**  **No.** |
| Textbook and references | Mathematical background |  |
| Textbook and references | Kinetic theory of ideal gas |  |
| Textbook and references | Chemical potential |  |
| Textbook and references | Classical statistics |  |
| Textbook and references | Applications of classical statistics |  |
| Textbook and references | Maxwell-Boltzmann statistics |  |
| Textbook and references | Bose-Einstein statistics |  |
| Textbook and references | Fermi-Dirac statistics |  |
| Textbook and references | Finding the heat capacity |  |
| Textbook and references | Lattice heat capacity |  |
| Textbook and references | Electronic heat capacity |  |
| Textbook and references | Blackbody modeling |  |
| Textbook and references | Planck's law and applications |  |
| Textbook and references | Paramagnetism |  |

**Sixth :** Teaching Strategies and Methods

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| --- | --- |
| **Teaching Strategies and Methods** | No |
| Lectures in the classroom | **1** |
| Solving problems | **2** |
| Modern applications | **3** |

**Seventh :** Methods of Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| **Proportion of Final Evaluation** | **Evaluation Methods of** | **Week & Date** | **No.** |
| 25% | First exam | 2-11-2016 | **1.** |
| 25% | Second exam | 14-12-2016 | **2.** |
| 50% | Final exam | To be announced | **3.** |
| **(**100%) |  | Total | |

**Eighth :** Required Textbooks

**- Primary Textbook:**

**Zemansky and Dittman, Heat and thermodynamics**.

**-** **Secondary References**

**Sears and Salinger, Thermodynamics, Kinetic Theory, and Statistical Thermodynamics.**

**Ninth :** General Instructions

|  |  |
| --- | --- |
| **Additional Notes, Office hours, Incomplete Exams, Reports, Papers, …etc** | **No** |
| Students are encouraged to solve the assigned problems. | **1** |
| Class attendance is obligatory. | **2** |