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

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

|  |  |
| --- | --- |
| * Course Number: 103 | * Course Title: General physics 3 |
| * Credit Hours: 3 | * College: Science |
| * Pre-requisite 101, 102 | * Department: Physics |
| * Instructor: Dr Ali Qudah | * Semester & Academic Year:   1st term 2016/2017 |
| * the time of the lecture:   11:00 - 2:30 Monday, Wednesday | * Office Hours: 9-11 Mon and Wed   10-2 Tues |

**Second :** General Course Description

This course is a third course in general physics for physics studentswhich completes and discuses additional concepts that hadn't been discussed in general physics 1 and 2.

**Third :** Course Objectives

* Static Equilibrium and Elasticity, Universal Gravity,
* Fluid Mechanics
* Oscillations and Mechanical Waves
* Introduction to thermodynamics and heat
* AC electricity and introduction to EM Waves

**Fourth:** Expected Learning Outcomes

* **This course introduces and discuses more concepts in general physics**
* **It makes a background for advanced courses in physics**

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

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Lecture | Date | Lecture Material |
| W1 | L1 | 26/9/2016 Mon | **Part I: MECHANICS**  **CH12. Static Equilibrium and Elasticity 362**  12-1 The Conditions for Equilibrium.  12-2 More on the Center of Gravity. |
| L2 | 28/9/2016 Wed | 12-3 Examples of Rigid Objects in Static Equilibrium.  12-4 Elastic Properties of Solids. |
| W2 | L3 | 3/10/2016 Mon | **CH13. Universal Gravitation 389**  13-1 Newton's Law of Universal Gravitation.  13-2 Measuring the Gravitational Constant.  13-3 Free-Fall Acceleration and the Gravitational Force.  13-4 Kepler's Laws and the Motion of Planets. |
| L4 | 5/10/2016 Wed | 13-5 The Gravitational Field.  13-6 Gravitational Potential Energy.  13-7 Energy Considerations in Planetary and Satellite Motion. |
| W3 | L5 | 10/10/2016 Mon | **CH14. Fluid Mechanics 420**  14-1 Pressure.  14-2 Variation of Pressure with Depth.  14-3 Pressure Measurements.. |
| L6 | 12/10/2016 Wed | 14-4 Buoyant Forces and Archimedes's Principle.  14-5 Fluid Dynamics. Bernoulli's Equation.  14-6 Other Applications of Fluid Dynamics |
| W4 | L7 | 17/10/2016 Mon | **Part II: OSCILLATIONS AND MECHANICAL WAVES 451**  **CH15. Oscillatory Motion 452**  15-1 Motion of an Object Attached to a Spring.  15-2 Mathematical Representation of Simple Harmonic Motion.  15-3 Energy of the Simple Harmonic Oscillator. |
| L8 | 19/10/2016 Wed | 15-4 Comparing Simple Harmonic Motion with Uniform Circular Motion.  15-5 The Pendulum. Damped Oscillations/ Forced Oscillations. |
| W5 | L9 | 24/10/2016 Mon | **CH16. Wave Motion 486**  16-1 Propagation of a Disturbance.  16-2 Sinusoidal Waves.  16-3 The Speed of Waves on Strings. |
| L10 | 26/10/2016 Wed | 16-4 Reflection and Transmission.  16-5 Rate of Energy Transfer by Sinusoidal Waves on Strings.  16-6 The Linear Wave Equation. |
| W6 | L11 | 31/10/2016 Mon | **CH17. Sound Waves 512**  17-1 Speed of Sound Waves.  17-2 Periodic Sound Waves.  17-3 Intensity of Periodic Sound Waves. |
| L12 | 2/11/2016 Wed | *First Exam :Chapters 12, 13,14 and 15* |
| W7 | L13 | 7/11/2016 Mon | 17-4 The Doppler Effect.  17-5 Digital Sound Recording.  17-6 Motion Picture Sound. |
| L14 | 9/11/2016 Wed | **Part III: THERMODYNAMICS 579**  **CH19. Temperature 580**  19-1Temperature and the Zeroth Law of Thermodynamics.  19-2 Thermometers and the Celsius Temperature Scale. |
| W8 | L15 | 14/11/2016 Mon | 19-3 The Constant-Volume Gas Thermometer and the Absolute Temperature Scale.  19-4 Thermal Expansion of Solids and Liquids. |
| L16 | 16/11/2016 Wed | 19-5Macroscopic Description of an Ideal Gas. |
| W9 | L17 | 21/11/2016 Mon | **CH20. Heat and the First Law of Thermodynamics 604**  20-1 Heat and Internal Energy.  20-2 Specific Heat and Calorimetry. |
| L18 | 23/11/2016 Wed | 20-3 Latent Heat.  20-4 Work and Heat in Thermodynamic Processes. |
| W10 | L19 | 28/11/2016 Mon | 20-5 The First Law of Thermodynamics.  20-6 Some Applications of the First Law of Thermodynamics.  20-7 Energy Transfer Mechanisms. |
| L20 | 30/11/2016 Wed | **Part IV: ELECTRICITY AND MAGNETISM**  **CH33. Alternating Current Circuits 1033**  33-1 AC Sources.  33-2 Resistors in an AC Circuit. |
| W11 | L21 | 5/12/2016 Mon | 33-3 Inductors in an AC Circuit.  33-4 Capacitors in an AC Circuit. |
| L22 | 7/12/2016 Wed | 33-5 The RLC Series Circuit.  33-6 Power in an AC Circuit. |
| W12 | L23 | 12/12/2016 Mon | 33-7 Resonance in a Series RLC Circuit.  33-8 The Transformer and Power Transmission.  33-9 Rectifiers and Filters. |
| L24 | 14/12/2016 Wed | *Second Exam: Chapters 16, 17, 19, and 20* |
| W13 | L25 | 19/12/2016 Mon | **CH34. Electromagnetic Waves 1066**  34-1 Maxwell's Equations and Hertz's Discoveries. |
| L26 | 21/12/2016 Wed | 34-2 Plane Electromagnetic Waves. |
| W14 | L27 | 26/12/2016 Mon | 34-3 Energy Carried by Electromagnetic Waves.  34-4 Momentum and Radiation Pressure. |
| L28 | 28/12/2016 Wed | 34-5 Production of Electromagnetic Waves by an Antenna. |
| W15  &  W16 | L29  &  L30 | (1 – 14) /1/2017  Final Exams | *University Final Exams (Sunday 1/1/2017) to (Saturday 14/1/2017)* |

**Sixth :** Teaching Strategies and Methods

|  |  |
| --- | --- |
| **Teaching Strategies and Methods** | No |
| This is a class lecture course | **1** |
| Homework is essential | **2** |
| Course Exams mainly based on homework | **3** |
|  | **4** |
|  | **5** |

**Seventh :** Methods of Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| **Proportion of Final Evaluation** | **Evaluation Methods of** | **Week & Date** | **No.** |
| 25% | First exam | Week 6 | **1.** |
| 25% | Second Exam | Week 12 | **2.** |
| 50% | Final Exam | To be determined by university | **3.** |
|  |  |  | **4.** |
|  |  |  | **5** |
|  |  |  | **6** |
| **(100%)** |  | **Total** | |

**Eighth :** Required Textbooks

**- Primary Textbook:**

*Physics for scientists and Engineers, Serway and Jewett, 6th edition*

**-** **Secondary References**

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**Ninth :** General Instructions

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| **Additional Notes, Office hours, Incomplete Exams, Reports, Papers, …etc** | **No** |
|  | **1** |
|  | **2** |
|  | **3** |
|  | **4** |
|  | **5** |