|  |  |
| --- | --- |
| *Course report of* | |
| **Vibrations and Waves – PHM 021– Spring 2019** | |
| University: Ain Shams | Faculty: Engineering |

## Basic Information

1. Title and code:

|  |
| --- |
| **Vibrations and Waves – PHM 021** |

1. Program on which the course is given :

|  |  |
| --- | --- |
| |  | | --- | | All Programs | |

1. Year/Level of program :

|  |
| --- |
| 1st Level |

1. Units/Credit Hours

|  |  |
| --- | --- |
| ( i ) Lecture : | 3 |

|  |  |
| --- | --- |
| ( ii ) Tutorial/Practical : | 1+1 |

|  |  |
| --- | --- |
| ( iii ) Total : | 5 |

1. Names of lecturers contributing to delivery of the course :

|  |  |
| --- | --- |
|  | Dr Michael Gad |

|  |  |
| --- | --- |
| Course coordinator: | Dr. Michael Gad |

|  |  |
| --- | --- |
| External evaluator: | --- --- --- |

## Statistical Information

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Grade** | **A+** | **A** | **A-** | **B+** | **B** | **B-** | **C+** | **C** | **C-** | **D+** | **D** | **F** | **Total** |
| **No. of students** | 1 | 1 | 0 | 5 | 4 | 4 | 2 | 10 | 1 | 2 | 8 | 14 | 52 |
| **% of students** | 1.92 | 1.92 | 0 | 9.62 | 7.69 | 7.69 | 3.85 | 19.23 | 1.92 | 3.85 | 15.38 | 26.92 | 100 |

## Professional Information

1. **Course Teaching:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Course Content** | **Lecture**  **(hours)** | **Tutorial** | **Lab** | **Total** |
| **1** | Revision of physical mechanics. | 3 | 1 | 1 | 5 |
| **2** | Conservative and non-conservative forces, Potential energy and potential gradient. | 3 | 1 | 1 | 5 |
| **3** | Uniform circular motion and Simple harmonic oscillation. | 3 | 1 | 1 | 5 |
| **4** | The energy perspective of the simple harmonic oscillation. | 3 | 1 | 1 | 5 |
| **5** | Superposition of harmonic vibrations | 3 | 1 | 1 | 5 |
| **6** | Damped oscillations. | 3 | 1 | 1 | 5 |
| **7** | Forced oscillations and the concept of resonance. | 3 | 1 | 1 | 5 |
| **8** | The concept of wave propagation and classification of wave types. | 3 | 1 | 1 | 5 |
| **9** | The wave equation and the corresponding parameters. | 3 | 1 | 1 | 5 |
| **10** | Transverse and Longitudinal waves, velocity of sound waves. | 3 | 1 | 1 | 5 |
| **11** | Intensity of sound waves and intensity levels. | 3 | 1 | 1 | 5 |
| **12** | Standing waves. | 3 | 1 | 1 | 5 |
| **13** | Beats, phase and group velocities. | 3 | 1 | 1 |  |
| **14** | Interference. | 3 | 1 | 1 | 5 |
| **15** | Diffraction. | 3 | 1 | 1 | 5 |
|  | Total | 45 | 15 | 15 | 75 |

**Lab Experiments**

|  |  |  |
| --- | --- | --- |
| **Week**  **No** | **Experiment Title** | **Hours** |
| 1 | Introduction to Physics Lab | 1 |
| 2 | Introduction to Physics Lab | 1 |
| 3 | Introduction to Measuring Instruments | 1 |
| 4 | Introduction to Measuring Instruments | 1 |
| 5 | Newton’s Rings Experiment / part (a) | 1 |
| 6 | Newton’s Rings Experiment / part (b) | 1 |
| 7 | Diffraction Grating/ part (a) | 1 |
| 8 | Diffraction Grating / part (b) | 1 |
| 9 | Melde's Experiment / part (a) | 1 |
| 10 | Melde's Experiment / part (b) | 1 |
| 11 | Superposition using Oscilloscope / part (a) | 1 |
| 12 | Superposition using Oscilloscope / part (b) | 1 |
| 13 | General Revision | 1 |
| 14 | Practical and Oral Exam | 1 |
| 15 | Practical and Oral Exam | 1 |
|  | Total | 15 |

**Topics taught as a percentage of the content specified:**

**>90 % X 70-90 % <70%**

**Reasons in detail for not teaching any topic**

N/A

**Teaching and learning methods:**

Lectures: **X**

Assignments: **X**

Lab:

**X**

Class Activity: **(Tutorials) X**

1. **Student assessment:**

|  |  |
| --- | --- |
| **Method of assessment** | **Percentage of total** |
| Written examinations (final + midterm) | 60 % |
| Oral LAB examination | 10 % |
| Quizzes | 10 % |
| Assignments | 20 % |

**Members of examination committee**

1. Dr Michael Gad
2. Dr Dalia Selim

**Role of external evaluator**

N/A………………………………………………………………………………………….

1. **Facilities and teaching materials:**

x

Totally adequate

Adequate to some extent

Inadequate

List any inadequacies

1. **Administrative constraints:**

List any difficulties encountered

No difficulties

1. **Student evaluation of the course:**



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No problems reported to respond to.

1. **Comments from external evaluator(s): Response of course team**

………**N/A** ………………. …………………………….