1. **Basic Information:**

|  |  |
| --- | --- |
| **Program Title** | **All programs** |
| **Department Offering the Program** | **Basic Science and Engineering** |
| **Department Responsible for the Course** | **Basic Science and Engineering** |
| **Course Title** | **Physics1** |
| **Course Code** | **PHY101** |
| **Year/Level** | **1st level** |
| **Specialization** | **Major** |
| **Authorization Date of Course Specification** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Teaching hours** | **Lectures** | **Tutorial** | **Practical** |
| 2 | 2 | 2 |

1. **Course Aims:**

|  |  |
| --- | --- |
| **No.** | **Aims** |
| 1 | Apply knowledge of mathematics, science and engineering concepts for studying mechanical properties of materials, simple harmonic motion, sound, fluids at rest and in motion, heat transfer and introduction to thermodynamics. |

1. **Intended Learning Outcomes (ILO’S):**
2. **Knowledge and understanding:**

|  |  |
| --- | --- |
| **No.** | **Knowledge and understanding** |
| A1 | Define concepts and theories of mathematics and sciences necessary for engineering system analysis for physical quantities, unit’s dimensional analysis and basics of thermodynamics. |
| A5 | Recognize methodologies of solving engineering problems, data collection problems for stress-strain diagram, and fluids study. |

1. **Intellectual Skills:**

|  |  |
| --- | --- |
| **No.** | **Intellectual Skills** |
| B2 | Select the appropriate solutions for engineering problems like properties of materials through Brittle and Ductile material. |

**C. Professional Skills:**

|  |  |
| --- | --- |
| **No.** | **Professional Skills** |
| C5 | Use measuring instruments and laboratories equipment to design experiments and collect, analyze and interpret results for acceleration gravity, simple harmonic motion, Hook's law, speed of sound and specific heat. |

**D. General Skills:**

|  |  |
| --- | --- |
| **No.** | **General Skills** |
| D9 | Refer to relevant literatures. |

**4. Course Contents:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Topics** | **Lectures** | **Tutorial** | **Practical** |
| 1 | Physical quantities- Standard units and dimensions | 2 | 2 | 2 |
| 2 | Material properties- Mechanical properties for materials | 6 | 6 | 6 |
| 3 | Frequency motion | 2 | 2 | 2 |
| 4 | Sound waves – Waves in elastic media | 2 | 2 | 2 |
| 5 | Fluid properties-– viscosity – surface tension | 6 | 6 | 6 |
| 6 | Heat and thermodynamics: Heat transfer | 2 | 2 | 2 |
| 7 | Gas motion theory – First law of thermodynamics- Entropy and second law of thermodynamics | 6 | 6 | 6 |
| 8 | Temperature measurements and thermometers | 2 | 2 | 2 |
| Total | | 28 | 28 | 28 |

**5. Teaching and learning methods:**

|  |  |
| --- | --- |
| **No.** | **Teaching Methods** |
| **1** | **Lectures** |
| **2** | **Discussion sessions** |
| **3** | **Information collection from different sources** |
| **4** | **Research assignment** |

**6. Teaching and learning methods for disable students:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Teaching Methods** | **Reason** |
| 1 | **Presentation of the course in digital material** | **Better access any time** |
| 2 | **Web communication with students** | **Better communication with certain cases** |
| 3 | **Asking small groups to do assignments; each composed of low, medium and high performance students.** | **Knowledge and skills transfer among different levels of students** |

7**. Student evaluation:**

**7.1 Student evaluation method**:

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **ILO’s** |
| 1 | **Midterm examination** | **A1 – A5 –B5** |
| 2 | **Semester work** | **C5 – D9** |
| 3 | **Practical exam** | **C5 – D9** |
| 4 | **Final term examination** | **A1 - A5 - B2 - C5** |

**7.2 Evaluation Schedule:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **Weeks** |
| 1 | **Midterm examination** | **08th** |
| 2 | **Semester work** | **7th,9th ,14th** |
| 3 | **Other types of assessment** | **2nd ,7th,9th,14th** |
| 4 | **Final term examination** | **15th** |

**7.3 weighting of Evaluation:**

|  |  |  |
| --- | --- | --- |
| **No.** | **evaluation method** | **Weights** |
| 1 | **Mid-term examination** | **10%** |
| 2 | **final examination** | **60%** |
| 3 | **Practical examination** | **10%** |
| 5 | **Semester work** | **20%** |
|  | **total** | **100%** |

**8. List of References:**

|  |  |
| --- | --- |
| **No.** | **Reference List** |
| 1 | Serway and Jewett, “Physics for Scientists and Engineers” 6E, Brooks, Cole, 2003 |
| 2 | David Halliday and Robert Resnick, Fundamentals of Physics, John, Wiley, 7th edition, 2007 |

**9. Facilities required for teaching and learning:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Facility** |  |
| 1 | **Lecture classroom** |  |
| 2 | **Presenter** |  |
| 3 | **White board** |  |
| 4 | **Data show system** |  |

**10. Matrix of knowledge and skills of the course:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Topic** | **Aims** | **Knowledge and understanding** | **Intellectual Skills** | **Professional Skills** | **General Skills** |
| 1 | Physical quantities- Standard units and dimensions | 1 | A1 |  |  |  |
| 2 | Material properties- Mechanical properties for materials | 1 | A5 | B2 |  |  |
| 3 | Frequency motion | 1 |  |  | C5 |  |
| 4 | sound waves – waves in elastic media | 1 |  |  | C5 |  |
| 5 | Fluid properties– viscosity – surface tension | 1 | A5 - A1 |  |  |  |
| 6 | Heat and thermodynamics: Heat transfer | 1 | A5 |  |  |  |
| 7 | Gas motion theory – First law of thermodynamics - entropy and second law of thermodynamics | 1 |  |  | C5 | D9 |
| 8 | Temperature measurements and thermometers | 1 |  |  | C5 |  |

**Course Coordinator: Dr. Amal Behary**

**Head of Department: Prof. Dr. Mohamed Saad Elkady**

**Date of Approval:**