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** | Mechanics 2 |
| **Course Code** | ENG 102 |
| **Year/Level** | Level: 1 |
| **Specialization** | Major |
| **Authorization Date of Course Specification** | - |

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

1. **Course Aims:**

|  |  |
| --- | --- |
| **No.** | **Aims** |
| 1 | Apply knowledge of plane motion using Cartesian axis and relative motion between particles. |

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

|  |  |
| --- | --- |
| **No.** | **Knowledge and understanding** |
| A1 | Define position, velocity and acceleration of particles and principles of conversation of mechanical energy. |
| A5 | Recognize methodologies of solving engineering problems such as principles of work and energy. |

1. **Intellectual Skills:**

|  |  |
| --- | --- |
| **No.** | **Intellectual Skills** |
| B5 | Solve engineering problems such as determine the velocity and position of projectile. |

1. **Professional Skills:**

|  |  |
| --- | --- |
| **No.** | **Professional Skills** |
| C1 | Apply knowledge of principle of work and principle of work and energy of motion and principle of conservation of mechanical energy and momentum of rigid body. |

1. **General Skills:**

|  |  |
| --- | --- |
| **No.** | **General Skills** |
| D7 | Search for information and engage in life-long self-learning discipline. |

**4. Course Contents:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Topics** | **Lectures** | **Tutorial** | **Practical** |
| 1 | Position, Displacement, Velocity, and Acceleration of particle | 4 | 4 | - |
| 2 | Plane Motion Path of Particle | 2 | 2 | - |
| 3 | Description of plane motion using Cartesian axes | 2 | 2 | - |
| 4 | Projectiles | 2 | 2 | - |
| 5 | Relative motion between particles | 2 | 2 | - |
| 6 | Motion for particle in circular path | 2 | 2 | - |
| 7 | Newton’s second law of motion | 4 | 4 | - |
| 8 | Newton’s third law of motion | 2 | 2 | - |
| 9 | Principle of work and energy of motion | 4 | 4 | - |
| 10 | Principle of conservation of mechanical energy | 2 | 2 | - |
| 11 | Principle of Impulse and Momentum of rigid body | 2 | 2 | - |
| Total | | 28 | 28 | 0 |

**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 | Wed 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,B5 |
| 2 | Semester work | C1,D7 |
| 3 | Final term examination | A5,B5,A1 |

**7.2 Evaluation Schedule:**

|  |  |  |
| --- | --- | --- |
| **No.** | **Evaluation Method** | **Weeks** |
| 1 | Midterm examination | 8th |
| 2 | Semester work | 2nd -7th - 9th -14th |
| 3 | Final term examination | 15th |

**7.3 weighting of Evaluation:**

|  |  |  |
| --- | --- | --- |
| **No.** | **evaluation method** | **Weights** |
| 1 | Midterm examination | 20% |
| 2 | Semester work | 20% |
| 3 | Other types of assessment | 0% |
| 4 | Final term examination | 60% |
| Total | | 100% |

**8. List of References:**

|  |  |
| --- | --- |
| **No.** | **Reference List** |
| 1 | Hibbeler, R. C. "Gupta Ashok Engineering Mechanics: Statics & Dynamics. 11th еd." (2009).‏ |
| 2 | Meriam, James L., and L. Glenn Kraige. *Engineering mechanics: dynamics*. Vol. 2. John Wiley & Sons, 2012.‏ |
| 3 | Hibbeler, R. C. "Engineering Mechanics: Statics and Dynamics 13/e." (2013).‏ |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Facility** | | | |
| 1 | Lecture classroom | 3 | White board |
| 2 | seminar | 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 | Position, Displacement, Velocity, and Acceleration of Particle | 1 | A1 |  |  | D7 |
| 2 | Plane Motion path of Particle | 1 | A1 |  |  | D7 |
| 3 | Description of plane Motion using Cartesian axes | 1 | A1 |  |  | D7 |
| 4 | Projectiles | 1 |  | B5 |  | D7 |
| 5 | Relative motion between particles | 1 | A1 |  |  | D7 |
| 6 | Motion for particle in circular path | 1 | A1 |  |  | D7 |
| 7 | Newton’s second law of motion | 1 | A1,A5 |  | C1 | D7 |
| 8 | Newton’s third law of motion | 1 | A1,A5 |  | C1 |  |
| 9 | Principle of work and energy of motion | 1 | A5 |  | C1 | D7 |
| 10 | Principle of conservation of mechanical energy | 1 | A5 |  | C1 | D7 |
| 11 | Principle of impulse and momentum of rigid body | 1 | A5 |  | C1 | D7 |

**Course Coordinator: pro. Dr. Mohamed Saad Elkady**

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

**Date of Approval:**