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 1 |
| **Course Code** | ENG101 |
| **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 force system, distributed forces and moment of inertia. |

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

|  |  |
| --- | --- |
| **No.** | **Knowledge and understanding** |
| A1 | Define concepts and theories of space vectors, momentums, equivalent couples, equation of equilibrium for rigid body. |
| A5 | Recognize methodologies of solving equilibrium under the effect of forces. |

1. **Intellectual Skills:**

|  |  |
| --- | --- |
| **No.** | **Intellectual Skills** |
| B5 | Solve engineering problems, such as finding the centre of mass (group of particles – flat surfaces ) |

1. **Professional Skills:**

|  |  |
| --- | --- |
| **No.** | **Professional Skills** |
| C1 | Apply knowledge of space vector to get the result of group of forces. |

1. **General Skills:**

|  |  |
| --- | --- |
| **No.** | **General Skills** |
| D2 | Work in stressful environment and within constraints |

**4. Course Contents:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Topics** | **Lectures** | **Tutorial** | **Practical** |
| 1 | Applications of Space Vectors | 2 | 2 | - |
| 2 | Results of Group of Forces | 6 | 6 | - |
| 3 | Momentums | 2 | 2 | - |
| 4 | Equivalent Couples and Equivalent Groups | 2 | 2 | - |
| 5 | Equations of Equilibrium for Rigid Bodies | 4 | 4 | - |
| 6 | Supports and pivots types | 2 | 2 | - |
| 7 | Equilibrium under the effect of forces and the space couples | 4 | 4 | - |
| 8 | Center of mass (groups of particles - flat surfaces) | 4 | 4 | - |
| 9 | Moment of inertia (mean axes- equal surfaces) | 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, A5, B5 |
| 2 | Semester work | C1, D2 |
| 3 | Final term examination | A1, A5, B5, C1 |

**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 | Final term examination | 60% |
| Total | | 100% |

**8. List of References:**

|  |  |
| --- | --- |
| **No.** | **Reference List** |
| 1 | Hibbeler, Russell C., and S. C. Fan. *Engineering mechanics: statics*. Vol. 11. Prentice Hall, 2004.‏ |
| 2 | Hibbeler, Russell Charles. *Engineering Mechanics: Principles of Statics*. Prentice Hall, 2006.‏ |
| 3 | Meriam, J. L., and L. G. Kraige. "Engineering mechanics: Statics; SI Version, 6th edn., vol. 1." (2007).‏ |

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

|  |  |
| --- | --- |
| **No.** | **Facility** |
| 1 | Lecture classroom |
| 2 | Seminar |
| 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 | Applications of space vectors | 1 | A1 | B5 | C1 | D2 |
| 2 | Results of group of Forces | 1 | A1 | B5 | C1 | D2 |
| 3 | Momentums | 1 | A1 | B5 | C1 | D2 |
| 4 | Equivalent couples and Equivalent groups | 1 | A1 | B5 | C1 | D2 |
| 5 | Equations of Equilibrium for Rigid bodies | 1 | A1 ,A5 | B5 | C1 | D2 |
| 6 | Supports and pivots types | 1 | A1 ,A5 | B5 | C1 | D2 |
| 7 | Equilibrium under the effect of forces and The space couples | 1 | A1 ,A5 | B5 | C1 | D2 |
| 8 | Center of mass (groups of particles - flat surfaces) | 1 | A1 ,A5 | B5 | C1 | D2 |
| 9 | Moment of inertia (mean axes- equal surfaces) | 1 | A1 ,A5 | B5 | C1 | D2 |

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

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

**Date of Approval:**