**COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification. |

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| University of Baghdad/ college of Engineering | 1. Teaching Institution |
| Surveying Eng. Dept. | 2. University Department/Centre |
| Physics | 3. Course title/code |
|  | 4. Programme(s) to which it contributes |
|  | 5. Modes of Attendance offered |
| First and second / First | 6. Semester/Year |
| 2 hours per week / 120 hours (total) | 7. Number of hours tuition (total) |
| 2017 | 8. Date of production/revision of this specification |
| 9. Aims of the Course | |
| To introduce the students with the basics of physics. The course tends to make the students familiar with the principles of mechanics (energy and work) and the simple harmonic motion of a particle. The course goes over the gravity and kepler’s laws. Heat, waves, sound and optics are introduced in the 2nd. term. | |
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| 10· Learning Outcomes, Teaching ,Learning and Assessment Methode |
| 1. Knowledge and Understanding   A1.  A2.  A3.  A4.  A5.  A6 . |
| B. Subject-specific skills  B1.  B2.  B3. |
| Teaching and Learning Methods |
|  |
| Assessment methods |
| Examinations and quizzes |
| C. Thinking Skills  C1.  C2.  C3.  C4. |
| Teaching and Learning Methods |
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| Assessment methods |
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| D. General and Transferable Skills (other skills relevant to employability and personal development)  D1.  D2.  D3.  D4. |

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| 11. Course Structure | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
|  |  | Energy and work, kinetic energy, work, work and change in kinetic energy |  | 2 | 1 |
|  |  | Work- kinetic energy theorem, work done by a general variable force |  | 2 | 2 |
|  |  | Potential energy, gravitational potential Energy, elastic potential energy, , |  | 2 | 3 |
|  |  | conservative force Hook’s law determining potential energy, |  | 2 | 4 |
|  |  | Power, Elasticity and Young modulus, tension and compression, shearing, |  | 2 | 5 |
|  |  | hydraulic stress, Oscillations, simple harmonic motion, |  | 2 | 6 |
|  |  | velocity of simple harmonic motion, Acceleration of simple harmonic motion, |  | 2 | 7 |
|  |  | the force in simple harmonic motion, Energy in simple harmonic motion, |  | 2 | 8 |
|  |  | applications of simple harmonic motion, the simple pendulum, torsion pendulum |  | 2 | 9 |
|  |  | Gravity, Kepler’s laws, the law of orbits, the law of areas, the law of periods, |  | 2 | 10 |
|  |  | Newton’s law of universal gravitation |  | 2 | 11 |
|  |  | Gravitation near the earth surface, the gravitational force between a particle and a spherical mass |  | 2 | 12 |
|  |  | Spherical shell, solid sphere |  | 2 | 13 |
|  |  | Gravitational potential energy, energy considerations in planetary and satellite motion, |  | 2 | 14 |
|  |  | the gravitational field of the earth |  | 2 | 15 |
|  |  |  |  |  |  |
|  |  |  |  |  | 2nd. term |
|  |  | Temperature, temperature scales, thermometers |  | 2 | 1 |
|  |  | Heat and heat measurements |  | 2 | 2 |
|  |  | Thermal expansion, thermal expansion coefficient |  | 2 | 3 |
|  |  | Linear expansion, volume expansion |  | 2 | 4 |
|  |  | The absorption of heat by solids and liquids, heat capacity, specific heat |  | 2 | 5 |
|  |  | Heat transfer mechanisms, conduction, convection, Radiation |  | 2 | 6 |
|  |  | Waves and sounds, waves and particles, types of waves |  | 2 | 7 |
|  |  | The speed of a traveling wave |  | 2 | 8 |
|  |  | Sound waves, the speed of sound |  | 2 | 9 |
|  |  | Traveling sound waves, intensity and sound level |  | 2 | 10 |
|  |  | The Doppler effect |  | 2 | 11 |
|  |  | Optics, nature and source of light, Mirrors, reflection |  | 2 | 12 |
|  |  | Refraction of light |  | 2 | 13 |
|  |  | Lenses, optical instruments |  | 2 | 14 |
|  |  | Lasers |  | 2 | 15 |

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| 12. Infrastructure | |
| Fundamentals of physics, 6th. And 8th. Edition by Halliday Resnick and Walker  University physics, 6th. Edition by Francis W. Sears | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
|  | Special requirements (include for example workshops, periodicals, IT software, websites) |
|  | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
|  | Pre-requisites |
|  | Minimum number of students |
|  | Maximum number of students |