| 1. | **NAME OF COURSE** | **ENGINEERING SCIENCE** |
|---|---|---|
| | **COURSE CODE** | **DBS 10012**<br>*Version: 230419_1_Effective: June 2019* |
| 2. | **SYNOPSIS** | ENGINEERING SCIENCE course introduces the physical concepts required in engineering disciplines. Students will learn the knowledge of fundamental physics in order to identify and solve engineering physics problems. Students will be able to perform experiments and activities to mastery physics concepts. |
| 3. | **CREDIT VALUE** | 2 |
| 4. | **PREREQUISITE/ CO-REQUISITE (IF ANY)** | None |

| 5. | **COURSE LEARNING OUTCOMES (CLO):**<br>Upon completion of this course, students should be able to: | |
|---|---|---|
| | CLO1 | Use basic physics concept to solve engineering physics problems. (C3, CLS 1) |
| | CLO2 | Apply knowledge of fundamental physics in activities to mastery physics concept. (C3, CLS 1) |
| | CLO3 | Perform appropriate activities related to physics concept. (P3, CLS 3a) |

**PROGRAMME LEARNING OUTCOMES (PLO):**

<u>DTP , DRP , DMA, DRA</u>

PLO 1 : Apply knowledge of applied mathematics, applied science, engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices.

PLO 5 : Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations (DK6);

**ASSESSMENT METHOD:**

The course assessment consists of:

   i.     Continuous Assessment (CA) – 60%

| Assessment | Quantity | Percentage (%) |
|---|---|---|
| Test | 1 | 20% |
| Lab Work | 3 | 15% |
| Mini Project | 1 | 25% |

   ii.    Final Examination (FE) – 40%

| | Topic No. | Topic/Content | Recommended Contact Hours | Assessment Method | Week |
|---|---|---|---|---|---|
| 7. | | **TEACHING SCHEDULE:** | | | |
| | 1.0 | **PHYSICAL QUANTITIES AND MEASUREMENT**<br><br>1.1 Define the physical quantities<br>1.2 Define measurement and errors in measurement<br>1.3 Solve problems of unit conversion<br>1.4 Interpret readings of measurement tools | 4 hours Lecture | | W1 -W2 |
| | 2.0 | **LINEAR MOTION**<br><br>2.1 Apply the concept of linear motion<br>2.2 Solve problems of linear motion from velocity-time graph<br>2.3 Carry out an experiment related to linear motion of an object | 3 hours Lecture<br>1 hour Practical | LABWORK 1 | W2 – W3 |
| | 3.0 | **FORCE**<br><br>3.1 Apply the concept of force<br>3.2 Apply the concept of moment of force | 5 hours Lecture | TEST | W4 – W5 |
| | 4.0 | **WORK, ENERGY AND POWER**<br><br>4.1 Apply the concept of work<br>4.2 Explain the renewable energy<br>4.3 Apply the concept of energy<br>4.4 Apply the concept of power<br>4.5 Carry out activities related to work, energy and power | 5.5 hours Lecture<br>3.5 hours Practical | MINI PROJECT | W6 – W9 |
| | 5.0 | **SOLID AND FLUID**<br><br>5.1 Apply the concept of solid and fluid<br>5.2 Apply the concept of Pascal's Principle<br>5.3 Apply the concept of Archimedes' Principle<br>5.4 Carry out an experiment related to buoyant force | 6.5 hours Lecture<br>2.5 hours Practical | LABWORK 2<br>MINI PROJECT | W10 –W13 |
| | 6.0 | **HEAT AND TEMPERATURE**<br><br>6.1 Define the concept of temperature and heat<br>6.2 Apply the concept of heat energy<br>6.3 Carry out an experiment related to thermal equilibrium | 3 hours Lecture<br>1 hour Practical | LABWORK 3 | W13 – W14 |

| 8. | **REFERENCES** | Main : |
|---|---|---|
| | | 1. Azia Idayu Awang, Azhari Zakaria, Hardyta Bujang Pata, Khairani Yaakub, Noor Affandee Abdul. (2015). Engineering Science, Polytechnic Series. Shah Alam: Oxford Fajar Sdn. Bhd.<br><br>Additional :<br><br>1. Giambattista, A., Richardson; B., Richardson, R.C (2016). Physics Third Edition McGraw-Hill Education.<br>2. Lee, B.H and Poh,L.Y. (2016). Physics for Matrculation Semester 1 Fifth Edition. Shah Alam: Oxford Fajar Sdn. Bhd. |

Prepared by:                                          Verified by:


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(MOHD NOOR BIN SALLEH)                    (SITI HADIJAH BINTI NORSANI**)**


Date : 1/2/2024                                        Date :