

## **COURSE STRUCTURE**

**For**

### **AERONAUTICAL ENGINEERING**

*(Applicable for batches admitted from 2016-2017)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

## I Year - I Semester

| S.No.                | Subjects                                  | L  | T  | P  | Credits   |
|----------------------|-------------------------------------------|----|----|----|-----------|
| 1-HS                 | English – I                               | 4  | -- | -- | 3         |
| 2-BS                 | Mathematics - I                           | 4  | -- | -- | 3         |
| 3-ES                 | Engineering Chemistry                     | 4  | -- | -- | 3         |
| 4-BS                 | Engineering Mechanics                     | 4  | -- | -- | 3         |
| 5-BS                 | Computer Programming                      | 4  | -- | -- | 3         |
| 6-ES                 | Environmental Studies                     | 4  | -- | -- | 3         |
| 7-HS                 | Engineering /Applied Chemistry Laboratory | -- | -- | 3  | 2         |
| 8-BS                 | English- Communication Skills Lab - I     | -- | -- | 3  | 2         |
| 9-ES                 | C Programming Lab                         | -- | -- | 3  | 2         |
| <b>Total Credits</b> |                                           |    |    |    | <b>24</b> |

## I Year - II SEMESTER

| S.No.                | Subjects                                                  | L  | T  | P  | Credits   |
|----------------------|-----------------------------------------------------------|----|----|----|-----------|
| 1-HS                 | English – II                                              | 4  | -- | -- | 3         |
| 2-BS                 | Mathematics – II (Mathematical Methods)                   | 4  | -- | -- | 3         |
| 3-BS                 | Mathematics – III                                         | 4  | -- | -- | 3         |
| 4-ES                 | Engineering Physics                                       | 4  | -- | -- | 3         |
| 5-HS                 | Basic Electrical and Electronics Engineering              | 4  | -- | -- | 3         |
| 6-ES                 | Engineering Drawing                                       | 4  | -- | -- | 3         |
| 7-BS                 | English - Communication Skills Lab - II                   | -- | -- | 3  | 2         |
| 8-HS                 | Engineering /Applied Physics Lab                          | -- | -- | 3  | 2         |
| 9-ES                 | Engineering /Applied Physics – Virtual Labs - Assignments | -- | -- | 2  | --        |
| 10                   | Engg., Workshop & IT Workshop                             | -- | -- | 3  | 2         |
| <b>Total Credits</b> |                                                           |    |    |    | <b>24</b> |

## II Year - I Semester

| S.No.                | Subjects                                        | L  | T  | P  | Credits   |
|----------------------|-------------------------------------------------|----|----|----|-----------|
| 1                    | Elements of Aerospace Engineering               | 4  | -- | -- | 3         |
| 2                    | Thermodynamics                                  | 4  | -- | -- | 3         |
| 3                    | Mechanics of Fluids                             | 4  | -- | -- | 3         |
| 4                    | Computer aided Engineering and Drawing Practice | 4  | -- | -- | 3         |
| 5                    | Mechanics of Solids                             | 4  | -- | -- | 3         |
| 6                    | Managerial Economic & Financial Analysis        | 4  | -- | -- | 3         |
| 7                    | Fluid Mechanics & Strength of Materials Lab     | -- | -- | 3  | 2         |
| 8                    | Electrical & Electronics Engineering Lab        | -- | -- | 3  | 2         |
| <b>Total Credits</b> |                                                 |    |    |    | <b>22</b> |

## II Year - II Semester

| S.No.                | Subjects                               | L  | T  | P  | Credits   |
|----------------------|----------------------------------------|----|----|----|-----------|
| 1                    | Aerodynamics - I                       | 4  | -- | -- | 3         |
| 2                    | Manufacturing Technology               | 4  | -- | -- | 3         |
| 3                    | Aircraft System and Instruments        | 4  | -- | -- | 3         |
| 4                    | Elements of Heat Transfer              | 4  | -- | -- | 3         |
| 5                    | Applied Thermodynamics                 | 4  | -- | -- | 3         |
| 6                    | Industrials Engineering and Management | 4  | -- | -- | 3         |
| 7                    | Applied Thermodynamics Lab             | -- | -- | 3  | 2         |
| 8                    | Manufacturing Technology Lab           | -- | -- | 3  | 2         |
| <b>Total Credits</b> |                                        |    |    |    | <b>22</b> |

### III Year - I Semester

| S.No.                | Subjects                | L  | T  | P  | Credits   |
|----------------------|-------------------------|----|----|----|-----------|
| 1                    | Aircraft Performance    | 4  | -- | -- | 3         |
| 2                    | Aerodynamics – II       | 4  | -- | -- | 3         |
| 3                    | Aircraft Structures – I | 4  | -- | -- | 3         |
| 4                    | Propulsion – I          | 4  | -- | -- | 3         |
| 5                    | Theory of Machines      | 4  | -- | -- | 3         |
| 6                    | CAD/CAM Lab             | -- | -- | 3  | 2         |
| 7                    | Aerodynamics Lab        | -- | -- | 3  | 2         |
| 8                    | Propulsion Lab          | -- | -- | 3  | 2         |
| 7                    | IPR & Patents           | -- | 2  | -- | --        |
| <b>Total Credits</b> |                         |    |    |    | <b>21</b> |

### III Year - II Semester

| S.No.                | Subjects                                                                                                                                                                | L  | T  | P  | Credits   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|-----------|
| 1                    | Aircraft stability and control                                                                                                                                          | 4  | -- | -- | 3         |
| 2                    | Aircraft Structures –II                                                                                                                                                 | 4  | -- | -- | 3         |
| 3                    | Propulsion – II                                                                                                                                                         | 4  | -- | -- | 3         |
| 4                    | Finite Element Method                                                                                                                                                   | 4  | -- | -- | 3         |
| 5                    | <b>OPEN ELECTIVE</b><br>1. DBMS<br>2. Waste water management<br>3. Entrepreneurship<br>4. Satellite technology<br>5. Industrial Aerodynamics<br>6. Theory of Elasticity | 4  | -- | -- | 3         |
| 6                    | Aircraft Structures Lab                                                                                                                                                 | -- | -- | 3  | 2         |
| 7                    | Aircraft Design Lab                                                                                                                                                     | -- | -- | 3  | 2         |
| 8                    | Aero modelling Lab                                                                                                                                                      | -- | -- | 3  | 2         |
| MC                   | Professional Ethics & Human Values                                                                                                                                      | -- | 3  | -- | --        |
| <b>Total Credits</b> |                                                                                                                                                                         |    |    |    | <b>21</b> |

#### IV Year - I Semester

| S.No.                | Subjects                                                                                                                 | L  | T  | P  | Credits   |
|----------------------|--------------------------------------------------------------------------------------------------------------------------|----|----|----|-----------|
| 1                    | Theory of Vibrations                                                                                                     | 4  | -- | -- | 3         |
| 2                    | Computational Fluid Dynamics                                                                                             | 4  | -- | -- | 3         |
| 3                    | Instrumentation measurements and experiments in fluids                                                                   | 4  | -- | -- | 3         |
| 4                    | Helicopter Engineering                                                                                                   | 4  | -- | -- | 3         |
| 5                    | <b>Elective I</b><br>1. Airframe Repair and Maintenance<br>2. Boundary Layer Theory<br>3. Fatigue and Fracture Mechanics | 4  | -- | -- | 3         |
| 6                    | <b>Elective II</b><br>1. Elements of Combustion<br>2. Quality and reliability Engineering<br>3. Hypersonic Aerodynamics  | 4  | -- | -- | 3         |
| 7                    | Computational fluid dynamics Lab                                                                                         | -- | -- | 2  | 2         |
| 8                    | Finite element method Lab                                                                                                | -- | -- | 2  | 2         |
| <b>Total Credits</b> |                                                                                                                          |    |    |    | <b>22</b> |

#### IV Year - II Semester

| S.No.                | Subjects                                                                             | L  | T  | P  | Credits   |
|----------------------|--------------------------------------------------------------------------------------|----|----|----|-----------|
| 1                    | Rocketry and Space Mechanics                                                         | 4  | -- | -- | 3         |
| 2                    | Mechanics of Composites                                                              | 4  | -- | -- | 3         |
| 3                    | Aerospace Materials                                                                  | 4  | -- | -- | 3         |
| 4                    | <b>Elective III</b><br>1. Avionics<br>2. Propellant Technology<br>3. Aero elasticity | 4  | -- | -- | 3         |
| 5                    | Seminar                                                                              | -- | 3  | -- | 2         |
| 6                    | Project                                                                              | -- | -- | -- | 10        |
| <b>Total Credits</b> |                                                                                      |    |    |    | <b>24</b> |

**Total Course Credits = 48+44 + 42 + 46 = 180**