

| COURSE CODE | COURSE TITLE | L | T | P | C |
|--------------------|-------------------------------|----------|----------|----------|----------|
| 1152AE121 | Helicopter Maintenance | 3 | 0 | 0 | 3 |

Course Category:

Program Elective

a. Preamble :

This course provides knowledge about the fundamentals of helicopter. And it also gives the brief knowledge of Main Rotor, Tail Rotor, Powerplant, and Airframe Maintenance.

b. Prerequisite Courses:

- Aircraft General Engineering and System Maintenance

c. Related Courses:

- Aero engine maintenance and structural repair

d. Course Educational Objectives :

- To study the procedure adapted for the maintenance of helicopter.

e. Course Outcomes :

Upon the successful completion of the course, students will be able to:

| CO Nos. | Course Outcomes | Knowledge Level (Based on revised Bloom's Taxonomy) |
|----------------|--|--|
| CO1 | Describe about the fundamentals of helicopter | K2 |
| CO2 | Explain the main rotor system of helicopter | K2 |
| CO3 | Illustrate the transmission of main rotor | K2 |
| CO4 | Describe the powerplants used in helicopter | K2 |
| CO5 | Explain the maintenance of helicopter's airframe and systems | K2 |

e.

f. Correlation of COs with POs :

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | H | | M | | | H | M | H | | | | H |
| CO2 | H | | M | | | H | M | H | | | | H |
| CO3 | H | | M | | | H | M | H | | | | H |
| CO4 | H | | M | | | H | M | H | | | | H |
| CO5 | H | | M | | | H | M | H | | | | H |

H- High; M-Medium; L-Low

g. Course Content :

UNIT I HELICOPTER FUNDAMENTAL 5

Basic directions – Ground handling, bearing – Gears.

UNIT II MAIN ROTOR SYSTEM 9

Head maintenance – blade alignment – Static main rotor balance – Vibration – Tracking – Span wise dynamic balance – Blade sweeping –Electronic balancing – Dampener maintenance – Counter weight adjustment – Auto rotation adjustments – Mast & Flight Control Rotor - Mast – Stabilizer, dampeners – Swash plate flight control systems collective – Cyclic – Push pull tubes – Torque tubes – Bell cranks – Mixer box – Gradient unit control boosts – Maintenance & Inspection control rigging.

UNIT III MAIN ROTOR TRANSMISSIONS 12

Engine transmission coupling – Drive shaft – Maintenance clutch – Free wheeling units – Spray clutch – Roller unit – Torque meter – Rotor brake – Maintenance of these components – vibrations – Mounting systems – Transmissions.

UNIT IV POWER PLANTS & TAIL ROTORS 12

Fixed wing power plant modifications – Installation – Different type of power plant maintenance. Tail rotor system – Servicing tail rotor track – System rigging.

UNIT V AIRFRAMES AND RELATED SYSTEMS 7

Fuselage maintenance – Airframe Systems – Special purpose equipment.

TOTAL: 45 periods

Text Books

1. JEPPESEN, “Helicopter Maintenance”, Jeppesons and Sons Inc., 2000.

Reference

1. “Civil Aircraft Inspection Procedures”, Part I and II, CAA, English Book House, New Delhi, 1986.
2. LARRY REITHMIER, “Aircraft Repair Manual”, Palamar Books Marquette, 1992.