# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

## Department of Structural Engineering

## Attainment of Program Outcomes (POs) of 2022 - 2024 batch (IARE – PG21)

| Course Code | Course Name | Program Outcomes (POs) | | | | | |
|---|---|---|---|---|---|---|---|
| | | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
| **BSTC01** | Advanced Structural Analysis | 2.00 | | 2.30 | 2.30 | 2.20 | |
| **BSTC02** | Advanced Solid Mechanics | 1.10 | | 1.30 | 1.10 | | |
| **BSTC03** | Theory of Plates and Shells | 2.70 | | 2.50 | 2.40 | 2.60 | |
| **BSTC08** | Advanced Concrete Technology | 1.50 | | 2.50 | 2.50 | 2.80 | 2.60 |
| **BSTC11** | Advanced CAD Laboratory | | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| **BSTC12** | Advanced Concrete Laboratory | 3.00 | | 3.00 | 3.00 | 3.00 | |
| **BSTC13** | Finite Element Analysis | 2.80 | | 2.80 | 2.80 | 2.80 | 2.80 |
| **BSTC14** | Structural Dynamics | 1.50 | | 1.50 | 1.70 | 1.40 | |
| **BSTC15** | Advanced Reinforced Concrete Design | 2.90 | | 2.10 | 1.70 | 1.20 | |
| **BSTC22** | Retrofitting and Rehabilitation of Structures | 2.90 | 2.70 | 2.60 | 2.80 | 2.80 | |
| **BSTC23** | Structural Design Laboratory | 3.00 | 3.00 | 3.00 | | 3.00 | |
| **BSTC24** | Numerical Analysis Laboratory | 3.00 | 3.00 | | | | |
| **BSTC25** | Mini Project with Seminar | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| **BSTC26** | Design of Pre stressed Concrete Structures | | | 2.60 | 2.70 | 2.50 | |
| **BHSC11** | Research Methodology and IPR | 2.10 | 1.50 | | 1.80 | 1.40 | 1.40 |
| **BPSC30** | Waste to Energy | | | 3.00 | 2.50 | 2.20 | |
| **BSTC31** | Phase - I Dissertation | 3.00 | 3.00 | 3.00 | 3.00 | | 3.00 |
| **BSTC32** | Phase - II Dissertation | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| **Direct Attainment Value** | | **2.5** | **2.8** | **2.6** | **2.5** | **2.5** | **2.7** |

## Overall Attainment

| Sl. No | Assessment Components (Direct + Indirect) | Program Outcomes (POs) | | | | | |
|---|---|---|---|---|---|---|---|
| | | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
| 1 | Direct Assessment (CIA + SEE + Course End Survey) (a) | 2.5 | 2.8 | 2.6 | 2.5 | 2.5 | 2.7 |
| 2 | Program Exit Survey (b) | 2.0 | 2.8 | 2.8 | 2.5 | 2.0 | 2.5 |
| 3 | Alumni Survey (c) | 2.0 | 2.8 | 2.8 | 2.5 | 2.0 | 2.5 |
| 4 | Employer Survey (d) | 2.3 | 2.1 | 1.9 | 2.4 | 2.3 | 2.2 |
| **Overall attainment = a*0.8 + b*0.1 + c*0.05 + d*0.05** | | **2.4** | **2.8** | **2.6** | **2.5** | **2.4** | **2.6** |

## Action taken to improve the attainment of POs:

| POs | Target Level | Attainment Level | Observation |
|---|---|---|---|
| **PO1:** An ability to Independently carry out research/investigation and development work to solve practical problems | | | |
| **PO1** | **1.8** | **2.4** | **Target Achieved. Following courses were identified which didn't meet the attainment target. BSTC02, BSTC08 and BSTC14.** |

**Action:**

1. Target attainment was maintained by assigning independent research problems and analytical case studies to develop problem-solving skills.
2. Curriculum integration of applied research topics such as nonlinear analysis, fracture mechanics, and prestressed concrete performance enhanced investigative skills.
3. Literature review and critical analysis sessions helped students identify knowledge gaps and propose innovative solutions.-based investigations were aligned with practical constraints and relevant IS code provisions.

| | | | |
|---|---|---|---|
| **PO2:** An ability to Write and present a substantial technical report/document | | | |
| **PO2** | **1.8** | **2.8** | **Target Achieved. Following courses were identified which didn't meet the attainment target. BHSC11.** |

**Action:**

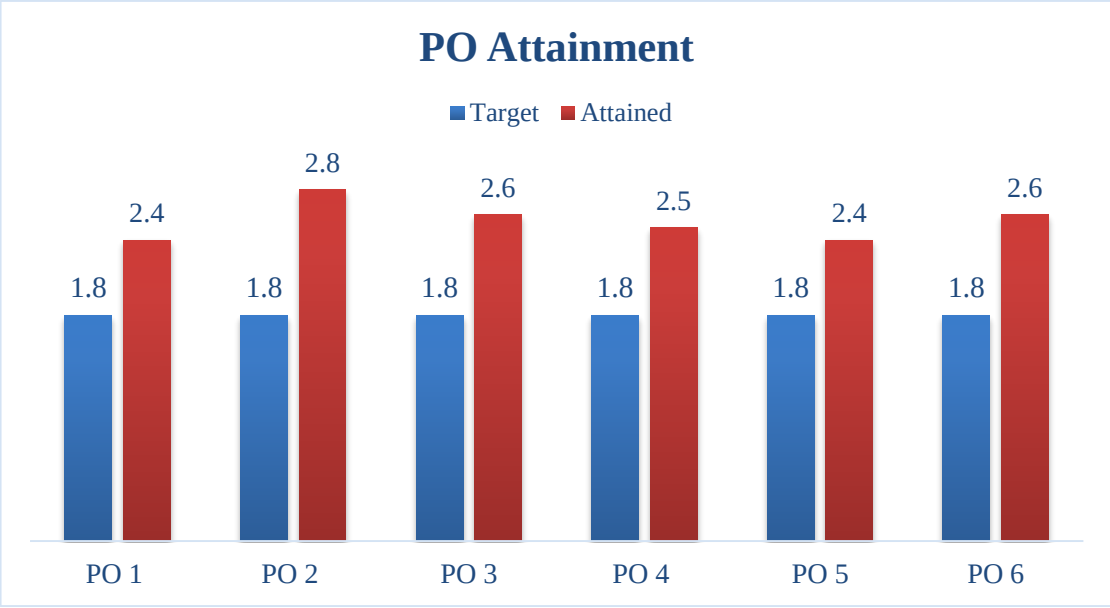
1. Target attainment was sustained by assigning detailed technical reports for all design and analysis exercises, ensuring clarity and accuracy in documentation.
2. Software-based analysis and design assignments required structured report submission to strengthen technical writing skills.
3. Standardized report templates and rubrics were implemented to maintain consistency and quality across all submissions.

| | | | |
|---|---|---|---|
| **PO3:** Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program. | | | |
| **PO3** | **1.8** | **2.6** | **Target Achieved. Following courses were identified which didn't meet the attainment target. BSTC02, and BSTC14** |
| **Action:**<br>1. Target attainment was maintained by assigning advanced problem-solving exercises.<br>2. Specialized laboratory and computational experiments reinforced application of advanced concepts in structural mechanics and material behavior.<br>3. Critical evaluation of case studies and real-world structural problems cultivated independent decision-making and problem-solving skills. | | | |
| **PO4:** Capable to apply the core, multidisciplinary knowledge for understanding the problems in structural engineering and allied fields. | | | |
| **PO4** | **1.8** | **2.5** | **Target Achieved. Following courses were identified which didn't meet the attainment target. BSTC02, BSTC14 and BSTC15** |
| **Action:**<br>1. Target attainment was maintained by assigning complex design and analysis problems requiring integration of core structural engineering concepts.<br>2. Mini projects and term assignments encouraged combining knowledge from allied fields such as construction management, materials science, and environmental engineering.<br>3. Real-life project analyses and field visits enabled students to correlate classroom learning with practical structural problems. | | | |
| **PO5:** Conceptualize and design civil engineering structures considering various socio-economic factors. | | | |
| **PO5** | **1.8** | **2.4** | **Target Achieved. Following courses were identified which didn't meet the attainment target. BSTC14 BSTC15 and BHSC11** |
| **Action:**<br>1. Target attainment was maintained by assigning design projects incorporating realistic structural loads, material choices, and cost considerations.<br>2. Advanced software-based simulations were used to explore alternative design options balancing safety, economy, and sustainability.<br>3. Faculty mentorship emphasized innovative, cost-effective, and sustainable design approaches in all project assignments. | | | |

| **PO6:** Engage in life-long learning for continuing education in research level studies and professional development. | | | |
|---|---|---|---|
| **PO6** | **1.8** | **2.6** | **Target Achieved. Following courses were identified which didn't meet the attainment target. BHSC11.** |

**Action:**

1. Target attainment was sustained by assigning advanced design problems reflecting real-life constraints, materials, and budget considerations.
2. Regular sessions on reading, analyzing, and summarizing recent research papers fostered self-directed learning and critical thinking.
3. Collaboration with industry and academia promoted awareness of current professional practices and continuous skill enhancement.

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