



# **Electrical and Electronics Engineering**

2.6.2 Attainment of programme outcomes and course outcomes are evaluated by the institution

| S.No | Course<br>Code | Couse Name   | PO1  | PO2   | РО3   | PO4  | PO5   | PO6   | PO7   | PO8 | PO9   | PO10  | PO11  | PO12  | PSO1  | PSO2  | PSO3  |
|------|----------------|--|------|-------|-------|------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|
| 1    | C201           | 18MTC07-Applied mathematics                              | 2.08 | 1.83  | 1.72  | 1.84 |       |       |       |     |       |       |       | 1.71  | 2.2   | 1.6   | 0.98  |
| 2    | C202           | 18EE CO3-Analog Electronic Circuits                      | 1.77 |       | 1.26  |      | 1.145 | 0.5   | 0.25  | 0.6 | 0.5   | 0.5   | 0.5   | 0.5   | 1.26  | 1.77  | 1.26  |
| 3    | C203           | 18EE C04-Electrical Measurements and Instrumentation     | 2.2  |       | 1.34  |      | 1.47  |       |       |     | 0.73  | 0.73  |       | 1.47  |       | 2.2   | 2.05  |
| 4    | C204           | 18EE C05-Electromagnetic Fields                          | 1.68 | 1.68  | 0.84  | 0.84 |       |       |       |     | 0.84  | 0.84  |       | 0.84  | 0.98  | 1.82  |       |
| 5    | C205           | 18EE C06-Electrical Circuit Analysis                     | 1.53 | 1.53  | 1.1   | 1.27 | 0.93  |       |       |     |       |       |       |       | 0.51  | 1.02  |       |
| 6    | C206           | 18EE CO7-Analog Electronic Circuits Lab                  | 2.22 | 1.48  | 1.63  | 0.89 | 1.48  | 1.48  | 1.48  |     |       |       |       |       | 1.48  |       | 1.48  |
| 7    | C207           | 18EE CO8-Electrical Measurements and Instrumentation Lab | 1.92 | 1.28  | 1.28  | 1.28 | 0.64  | 0.64  | 0.64  |     | 0.64  | 0.64  |       | 0.64  | 0.64  | 1.28  |       |
| 8    | C208           | 18EG M 01-Indian constitution                            | 1.52 | 1.58  | 1.58  | 1.1  | 1.1   | 0.61  |       |     |       |       |       | 0.61  | 0.98  | 1.12  | 1.22  |
| 9    | C209           | 18EE M01-Indian Traditional Knowledge                    | 1.66 | 1.48  | 1.66  | 1.66 | 1.66  |       |       |     | 1.11  |       |       |       | 1.66  | 1.48  | 1.01  |
| 10   | C210           | 18CS C05-Basics of Data Structures                       | 1.9  | 2.07  | 0.69  | 1.38 |       |       |       |     |       |       |       |       |       |       | 2.07  |
| 11   | C211           | 18EE CO9-Digital Electronics                             | 2.06 | 2.19  | 1.54  | 1.93 | 1.8   |       |       |     | 1.54  |       |       |       | 1.93  | 2.32  | 1.39  |
| 12   | C212           | 18EE C10-Electrical Machines-1                           | 1.92 | 1.53  | 1.53  | 1.15 | 0.64  |       |       |     |       |       |       |       | 0.64  | 1.28  | 1.28  |
| 13   | C213           | 18EE C11-Power Systems-I                                 | 2    | 1.295 | 0.945 | 1.53 | 0.825 | 1.415 |       |     | 0.705 | 0.705 | 0.705 | 1.415 | 0.705 | 1.415 | 1.415 |
| 14   | C214           | 18EE C12-Digital Electronics Lab                         | 1.99 | 1.88  | 1.66  | 1.44 | 1.66  |       |       |     |       |       |       |       | 1.66  | 1.99  | 1.55  |
| 15   | C215           | 18EE C13-Electrical Machines-1 Lab                       | 2.21 | 1.32  | 1.58  | 1.18 | 1.18  | 1.58  | 2.37  |     | 1.42  | 0.79  | 0.79  | 1.42  | 1.18  | 1.26  | 1.26  |
| 16   | C216           | 18ME C09-Principles of Management                        | 1.7  | 1.7   | 1.44  | 1.96 |       |       |       |     |       |       |       | 0.65  | 1.7   | 1.74  | 1.96  |
| 17   | C217           | 18CE M01-Environmental Science                           | 2.63 | 1.75  | 0.875 | 1.46 | 0.875 |       | 0.875 |     | 1.61  | 0.875 | 0.875 | 1.46  | 0.875 | 2.045 | 1.75  |
| 18   | C218           | 18EG C03-Soft Skills Lab                                 | 1.59 | 1.59  | 1.59  | 1.06 | 1.59  |       |       |     | 1. 59 |       |       | 0.53  | 1.16  | 1.23  | 1.32  |

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| 19 | C219 | 18CS C06-Basics of Data Structures lab                     | 2.15 | 1.805 | 1.32 | 2.08 |      | 1.53 | 0.76 |      |      |      |      |      | 0.76 | 1.53 | 0.76 |
|----|------|--|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 20 | C301 | 18EEC14-Electrical Machines-II                             | 2.2  |       | 1.34 |      | 1.47 |      |      |      | 0.73 | 0.73 |      | 1.47 |      | 2.2  | 2.05 |
| 21 | C302 | 18EEC15-Power Systems-II                                   | 2.15 | 1.69  | 1.38 | 2.15 |      |      |      |      |      |      |      |      | 0.77 | 1.66 | 1.92 |
| 22 | C303 | 18EEC16-Power Electronics                                  | 1.1  | 0.66  | 0.99 | 0.88 | 0.88 | 0.99 |      |      | 0.88 | 0.66 | 0.88 | 0.99 | 1.32 | 1.32 | 1.1  |
| 23 | C304 | 18EEE01-Wind and Solar Energy                              | 1.91 | 0.88  |      |      |      |      |      |      | 1.76 | 1.61 |      | 0.88 | 2.64 | 0.88 | 0.88 |
| 24 | C305 | 18EEE02-Optimization Techniques                            | 2.15 | 1.21  | 1.61 | 1.61 | 1.77 |      |      |      | 1.61 |      | 0.81 | 1.75 | 1.61 | 1.01 | 1.21 |
| 25 | C306 | 18EEE03-Electrical Engineering Materials                   | 1.8  | 0.9   | 1.95 | 1.2  | 1.2  |      |      |      | 1.05 | 0.9  |      | 1.95 | 2.7  | 1.8  | 1.8  |
| 26 | C307 | 18EEE05-Simulation Techniques in Electrical<br>Engineering | 2.81 | 2.66  | 2.19 | 1.88 | 2.03 |      |      |      | 0.94 |      | 0.94 | 0.94 | 2.81 | 2.81 | 1.88 |
| 27 | C308 | 18EEE07-Industrial Electrical Systems                      | 2.88 | 2.72  | 2.4  | 1.92 | 2.08 | 2.88 | 1.92 | 1.92 | 2.88 | 2.88 | 1.44 | 1.92 | 2.88 | 1.92 | 1.92 |
| 28 | C309 | 18EEE08-Electrical Estimation & Costing                    |      | 2.45  | 1.92 | 1.97 | 1.87 | 1.88 | 1.12 | 1.14 | 0.51 | 1.97 | 1.82 | 1.91 | 1.91 | 1.93 | 2.08 |
| 30 | C311 | 18EEC17-Electrical Machines-II Lab                         | 2.07 | 1.24  | 1.1  | 1.72 | 0.96 |      |      |      |      |      |      |      | 1.1  |      | 1.5  |
| 31 | C312 | 18EEC18-Power Systems-I Lab                                | 2.01 | 1.98  | 1.71 | 1.44 | 1.19 | 0.45 | 0.47 | 0.51 | 1.28 | 0.49 | 0.44 | 0.44 | 0.42 | 1.4  | 1.38 |
| 32 | C313 | 18EEC19-Power Electronics Lab                              | 2.18 | 1.82  | 2.18 | 1.21 | 1.36 | 0.91 | 1.36 | 0.91 |      |      |      | 1.36 | 2.72 | 1.36 | 1.63 |
| 33 | C314 | 18EEC20-Control Systems                                    | 2.71 | 1.93  | 2.52 | 1.16 | 2.37 | 1.2  | 1.23 | 0.51 | 1.86 | 1.24 | 1.34 | 0.44 | 0.46 | 1.99 | 1.97 |
| 34 | C315 | 18EEC21-Microprocessors and Microcontrollers               | 1.07 | 0.85  | 0.75 | 1.17 | 0.53 |      |      |      |      |      | 0.43 | 0.32 | 1.6  | 0.96 | 0.64 |
| 35 | C316 | 18EEC22-Power Systems Operation and Control                | 2.25 | 1.69  | 1.05 | 1.35 | 0.15 | 1.05 | 1.05 |      | 0.9  | 0.45 | 0.6  | 1.05 | 0    | 2.25 | 2.1  |
| 36 | C317 | 18EEE09-Power Quality                                      | 2.23 | 1.75  | 1.8  | 1.7  | 1.72 | 1.04 | 1.07 | 0.51 | 1.8  | 1.67 | 1.74 | 1.74 | 1.76 | 1.9  | 1.06 |
| 37 | C318 | 18EEE11-Electrical Distribution Systems                    | 1.68 | 1.49  | 0.56 | 0.75 |      | 0.56 |      |      | 0.56 |      |      |      |      | 1.26 |      |
| 38 | C319 | 18EEE12-HVDC Transmission Systems                          | 1    | 1     | 1    | 1    | 1    | 1    |      |      |      |      |      |      |      |      |      |
| 39 | C320 | 18EEE13-AI Techniques in Electrical Engineering            | 1.57 | 2.34  | 1.82 | 1.84 | 1.20 |      |      |      |      |      |      | 1.64 | 1.37 | 1.19 | 0.95 |
| 40 | C321 | 18EEE14-Electric Hybrid Vehicles                           | 1.87 | 1.74  | 1.87 | 1.37 | 1.49 |      |      |      | 1.62 |      |      | 0.75 | 1.49 | 1.87 | 1.37 |
| 41 | C322 | 18CSO07-Basics of Cyber Security                           | 2.05 | 2.21  | 1.42 | 1.84 | 1.89 |      |      |      | 1.58 |      |      |      | 1.89 | 2.37 | 1.38 |
| 42 | C323 | 18ECO06-Principles of Embedded Systems                     | 1.74 | 1.74  | 1.51 | 1.51 |      |      | 0.70 |      | 0.70 |      |      | 0.70 | 1.74 | 1.74 | 1.74 |
| 43 | C324 | 18EEC23-Control Systems Lab                                | 1.49 | 1.76  | 1.80 | 1.76 | 0.81 |      |      |      |      |      |      | 0.68 | 2.03 | 1.62 | 1.89 |
| 44 | C325 | 18EEC24-Microprocessors Lab                                | 1.87 | 1.74  | 1.87 | 1.37 | 1.49 |      |      |      | 1.62 |      |      | 0.75 | 1.49 | 1.87 | 1.37 |
| 45 | C401 | 18EEC25-Power System Protection                            | 2.05 | 2.21  | 1.42 | 1.84 | 1.89 |      |      |      | 1.58 |      |      |      | 1.89 | 2.37 | 1.38 |
| 46 | C402 | 18EEC26-Electrical Drives                                  | 0.57 | 0.57  | 1.14 | 0.57 |      | 1.14 | 1.48 |      | 0.57 |      |      | 0.57 | 1.71 | 1.71 | 1.14 |
| 47 | C403 | 18EEC27-Signals & Systems                                  | 2.08 | 1.6   | 1.12 | 1.6  | 2.08 |      |      |      | 2.08 | 1.76 | 2.4  | 2.4  |      | 2.4  | 1.6  |

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| 48 | C404 | 18EEE20-High Voltage Engineering | 1.86  | 1.465 | 1.465 | 1.2   | 1.33  |      |      |      | 0.665 |      | 2.01 |      | 0.935 | 1.165 | 1.2   |
|----|------|----------------------------------|-------|-------|-------|-------|-------|------|------|------|-------|------|------|------|-------|-------|-------|
| 49 | C405 | 18MEO04-Entrepreneurship         | 2.63  | 2.63  | 2.63  | 2.63  | 2.28  | 1.58 | 1.4  | 1.58 | 2.63  | 2.63 | 2.28 | 2.1  | 2.63  | 2.63  | 2.63  |
| 50 | C406 | 18EGO01-Technical Writing Skills |       |       |       |       |       | 1.89 | 1.89 | 1.89 | 0.91  | 1.31 |      | 0.73 |       |       |       |
| 51 | C407 | 18EEC28-Power Systems-II Lab     | 2.035 | 1.975 | 1.785 | 1.25  | 1.485 |      |      |      | 0.62  |      | 0.62 | 0.62 | 1.735 | 1.595 | 1.25  |
| 52 | C408 | 18EEC29-Electrical Drives Lab    | 2.215 | 2.07  | 1.625 | 1.475 | 1.625 |      |      |      | 0.74  |      | 0.74 | 0.74 | 2.215 | 2.215 | 1.475 |
| 53 | C409 | 18EEC30-Project: Part-1          | 2.19  | 1.9   | 2.04  | 1.9   | 1.9   |      |      |      |       |      |      |      | 1.17  |       | 1.6   |
| 54 | C410 | 18EEE23-Smart Grid               | 1.74  | 1.74  | 1.51  | 1.51  |       |      | 0.7  |      | 0.7   |      |      | 0.7  | 1.74  | 1.74  | 1.74  |
| 55 | C411 | 18EGO02-Gender Sensitization     | 1.49  | 1.76  | 1.8   | 1.76  | 0.81  |      |      |      |       |      |      | 0.68 | 2.03  | 1.62  | 1.89  |
| 56 | C412 | 18ITO02-Python Programming       | 1.71  | 1.14  | 1.02  | 1.14  | 1.02  |      |      |      | 0.91  |      | 0.57 | 1.14 |       | 1.71  | 1.14  |
| 57 | C413 | 18EEC31-Technical Seminar        | 2.035 | 1.975 | 1.785 | 1.25  | 1.485 |      |      |      | 0.62  |      | 0.62 | 0.62 | 1.735 | 1.595 | 1.25  |
| 58 | C414 | 18EEC32-Project: Part-2          | 2.04  | 2.04  | 2.04  | 1.7   | 1.87  | 1.7  | 1.7  | 1.87 | 1.53  | 1.7  | 2.04 | 1.53 | 2.04  | 2.38  | 1.70  |
|    |      | Average of All Pos               | 1.93  | 1.68  | 1.52  | 1.47  | 1.37  | 1.25 | 1.17 | 1.14 | 1.19  | 1.19 | 1.12 | 1.09 | 1.51  | 1.72  | 1.51  |

|              |      |      |      |      | PO P | SO In | direc | t Atta | inme | nt (201 | <b>19-23</b> ) |      |      |      |      |
|--------------|------|------|------|------|------|-------|-------|--------|------|---------|----------------|------|------|------|------|
| PO & PSOs    | PO1  | PO2  | PO3  | PO4  | PO5  | PO6   | PO7   | PO8    | PO9  | PO10    | PO11           | PO12 | PSO1 | PSO2 | PSO3 |
| Alumni       | 2.41 | 1.85 | 2.25 | 2.14 | 2.04 | 2.16  | 1.85  | 2.29   | 2.74 | 2.34    | 2.55           | 2.75 | 2.45 | 2.15 | 2.45 |
| Program Exit | 2.02 | 2.45 | 2.4  | 2.29 | 2.15 | 2.31  | 2.44  | 2.33   | 2.04 | 2.014   | 2.14           | 2.27 | 2.31 | 2.42 | 2.35 |
| Parent       | 2.12 | 2.14 | 2.34 | 2.45 | 2.22 | 2.42  | 1.45  | 2.45   | 2.85 | 2.4     | 2.75           | 2.85 | 2.27 | 2.8  | 2.8  |
| Employer     | 2.7  | 2.55 | 2.48 | 2.18 | 2.51 | 2.55  | 1.98  | 2.57   | 2.81 | 2.63    | 2.67           | 2.6  | 2.28 | 2.58 | 2.45 |
| Average      | 2.31 | 2.25 | 2.37 | 2.27 | 2.23 | 2.36  | 1.93  | 2.41   | 2.61 | 2.35    | 2.53           | 2.62 | 2.33 | 2.49 | 2.51 |

|                      |      | Over all Attainment |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------------|------|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| PO Direct Attainment | 1.93 | 1.68                | 1.52 | 1.47 | 1.37 | 1.25 | 1.17 | 1.14 | 1.19 | 1.19 | 1.12 | 1.09 | 1.51 | 1.72 | 1.51 |
| PO Indirect          |      | 2 25                | 2.37 | 2 27 | 2 22 | 2 26 | 1 02 | 2 /1 | 2 61 | 2 25 | 2 52 | 2.62 | 2 22 | 2.40 | 2.51 |
| Attainment           | 2.51 | 2.25                | 2.57 | 2.27 | 2.23 | 2.30 | 1.95 | 2.41 | 2.01 | 2.55 | 2.55 | 2.02 | 2.55 | 2.49 | 2.51 |
| Overall Attainment   | 2.01 | 1.79                | 1.69 | 1.63 | 1.54 | 1.47 | 1.32 | 1.40 | 1.48 | 1.42 | 1.40 | 1.40 | 1.68 | 1.87 | 1.71 |

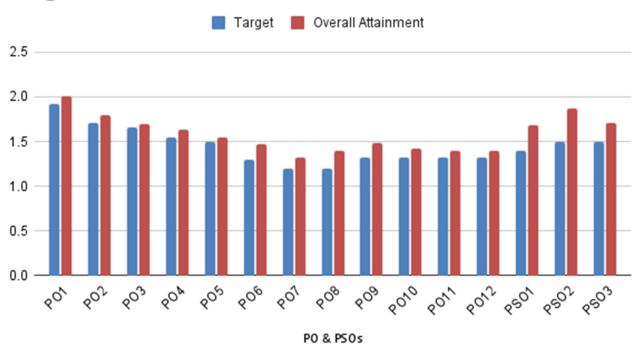
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| PO & PSOs  | PO1  | PO2  | PO3  | PO4  | PO5   | PO6  | PO7  | PO8  | PO9  | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|------------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|
| Target     | 1.92 | 1.7  | 1.65 | 1.55 | 1.5   | 1.3  | 1.2  | 1.2  | 1.32 | 1.32 | 1.32 | 1.32 | 1.4  | 1.5  | 1.5  |
| Overall    | 2.01 | 1 70 | 1 60 | 1 62 | 1 [ ] | 1 17 | 1 22 | 1 40 | 1 40 | 1 12 | 1 40 | 1 40 | 1.68 | 1 07 | 1 71 |
| Attainment | 2.01 | 1.79 | 1.09 | 1.03 | 1.54  | 1.4/ | 1.32 | 1.40 | 1.48 | 1.42 | 1.40 | 1.40 | 1.08 | 1.87 | 1./1 |

# Target and Overall Attainment 2019-2023 Batch



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#### **Action Taken:**

The areas of weaknesses in the program are known based on the analysis of evaluation of COs, POs & PSOs attainment levels. Measures identified and implemented to improve POs PSOs attainment levels for the next assessment year including curriculum intervention, pedagogical initiatives, support system improvements, etc. are given in the table. The set target for each PO is 75% of the maximum articulation value of corresponding PO of all the courses.

| POs | Target<br>level | Attainment<br>level                                 | Observations  |  |  |  |  |
|-----|-----------------|---|---|--|--|--|--|
|     | _               |   | vledge of mathematics, science, engineering fundamentals, on of complex engineering problems. |  |  |  |  |
| PO1 | 2.01            | 2.01 1.92 Observation 1: The set target is achieved |   |  |  |  |  |

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1:. Increased use of ICT tools for teaching-learning and assessment

Action 2:. To make video lectures available through Learning Management System (LMS) developed

by institute

Action 3:. It is proposed to give assignments which address higher Blooms Taxonomy levels

Action 4:. To revise the syllabus in the subsequent curriculum revision, so that program specific applications / Contents will be included in the Mathematics and Basic Sciences

**PO2 : Problem analysis:** Identify formulae, research literature and solve complex engineering problems reaching substantiated conclusions using first principles of mathematics and engineering sciences.

|     |         |      | Observation 1 97% of the set target is achieved     |
|-----|---------|------|---|
|     |         |      | Observation 2 Courses contributing to low score are |
|     |         |      | 18EE CO3, 18EE CO4, 18EE CO5, 18EE CO6, 18EE        |
| PO2 | PO2 1.7 | 1.79 | CO7, 18EE CO8, 18EE C10, 18EEC14, 18EEC16,          |
|     |         |      | 18EEE01, 18EEE03, 18EEC17, 18EEC21,                 |
|     |         |      | Above courses are of analytical type                |

After discussing in the CEG and PAQIC /PAC meetings, it is decided to continue with the same target as there is a scope for further improvement. To reach this target value the following actions are planned.

Action 1:. To amend the syllabus in the subsequent curriculum revision, so that program specific applications / Contents will be included in the Mathematics and Basic Sciences

Action 2:. It is proposed to give assignments which address higher Blooms Taxonomy levels

Action 3:. In the subsequent curriculum revision, a freshman course (engineering exploration) is introduced so that in the first year itself students can identify an engineering problem and acquire knowledge that can be applied to the identified problem

Action 4:. Proposed to introduce course end project along with assignments as a part of Continuous internal evaluation (CIE) in core courses, which are analytical in nature

Action 5:. Provision for industry internship as a part of the curriculum for enhanced learning and better exposure to latest technological trends

Action 6:. Increased number of lab courses which lay down a foundation to select and carryout project related to complex engineering problems

Action 7:. To introduce Open ended experiments in the laboratory courses

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### PO3 Design/development of solutions:

Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

PO3 1.65 1.69 Observation :The set target is achieved

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned

- Action 1:. To increase the use of ICT tools for teaching-learning so that visualization of concepts related to complex engineering problem can be enhanced and students are motivated to take up mini and major projects to provide the solution to complex engineering problems.
- Action 2:. To encourage students to take part in project exhibition hackathon, MSME projects and similar activities
- Action 3:. To give assignments which address higher Blooms Taxonomy levels
- Action 4:. To introduce course end project along with assignments as a part of Continuous internal evaluation (CIE) in core courses, which increases the student ability to solve complex engineering problem
- Action 5:. To increase the number of lab courses and to design the same, such that solutions of the problem can be viewed also through simulation
- Action 6:. To make provision for industry internship as a part of the curriculum for enhanced learning and better exposure to latest technological trends

## PO4 : Conduct investigations of complex problems :

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

| PO4 | 1.55 | 1.63 | Observation: The set target is achieved |
|-----|------|------|---|
|-----|------|------|---|

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned

- Action 1:. To introduce high-end experiments in the lab courses such that student can develop an ability to solve open ended problems
- Action 2:. To make lab experiment's demonstration videos available through Learning Management System (LMS), so that students can understand the concept better and demonstrate well in the subsequent lab classes
- Action 3:. Proposed to introduce course end project along with assignments as a part of Continuous internal evaluation (CIE) in core engineering lab courses
- Action 4:. To enter into more MoUs with industries to establish industry-based labs and activities which facilitate experiential learning to students.

### PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. (High correlation with the CAD, MATLAB, LABview etc.

PO5 1.5 1.55 Observation: The set target is achieved

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To increase the use of simulation tool in lab courses (where ever possible) to demonstrate the concept before going to the work bench

Action 2: To include open ended and structured enquiry type of experiments

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Action 4: To encourage the usage of programme specific simulation tools in the mini and major project

#### PO6 :The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO6 1.3 1.47 Observation: The set target is achieved

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1:To introduce more number of professional electives to address the regulations, codes and standards relevant to the electrical and electronics engineering discipline

Action 2:To encourage the students to actively participate in activities organized by various clubs of the institute like

- Energy conservation week and Swachhta Pakhwada 2020 Energy savers' club
- Health camps- NSS
- Rural development Engineers without borders
- Webinar -IEEE PES
- Webinar for Students on "Popular cultural practices of Telangana Harayana for healthy and enriching life and life style" - Ek Bharath Sreshtha Bharath (EBSB)

Action 3: To introduce rural internship in the curriculum

Action 4: To introduce courses related to Community Engagement

#### PO7: Environment and sustainability

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

| PO7 | 1.2 | 1.32 | <b>Observation :</b> The set target is achieved |
|-----|-----|------|---|
|-----|-----|------|---|

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To introduce the mandatory courses which address the management techniques for sustainable development

Action 2: To encourage the students to participate in social activity related to environment like

- "Tree plantation in the campus and nearby villages" as part of the activities of NSS under the new initiative "Haritha Haram" by State government.
- Awareness camp to nearby villages to promote energy conservation and alternative energy usage and to introduce energy efficient appliances like DC fans, LED bulbs, pumps etc.
- To encourage the students to actively participate in product exhibitions related to environment and sustainable development
- To encourage the students to take up mini and major projects through which relationship between technical, socio-economic and environmental dimensions of sustainability can be better understood.

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#### PO8: Ethics

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

| PO8 | 1.2 | 1.4 | <b>Observation:</b> The set target is achieved |
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After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To introduce a new course on ethics titled "UHV-2, Understanding of Harmony" suggested by UGC

Action 2:It is proposed to give due weightage in the rubrics prepared to evaluate to ethical behavior and practices in the lab and project courses

Action 3: To train more number of faculty (20:1 student faculty ratio) on UHV through AICTE FDP so that faculty can handle the universal human values -1 during the student induction programme

PO9: Individual and team work Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

|     |      | 4.40 | Observation 1: The set target is achieved.                       |
|-----|------|------|--|
| PO9 | 1.32 | 1.48 | <b>Observation 2:</b> There is a need for increase in target and |
|     |      |      | plan of action towards the same                                  |

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

This program outcome regarding individual and team work, comes under professional skills. Though the employers consider these professional skills and higher abilities as important and few students may perform weak.

After discussing in the CEG and PAQIC /PAC meetings, the committee opined that professional skills / outcome may not result simply from participation in a particular class or set of classes. Rather, these outcomes are more often acquired or influenced through sources both in and outside the classroom. It is decided to increase the target value by 5% and the following actions are planned to reach the new target value.

Action 1: To introduce more topics related to these skills in the soft skills course offered.

Action 2: To introduce activity-based courses like community engagement, engineering exploration in the first-year level itself, so that the spirit of individual and team work can be inculcated better.

Action 3: To encourage students to work as teams for activities conducted by various clubs of CBIT during Sudhee & Sruthi, which is a "Techno-Sport-Cultural" fest.

Action 4: To encourage the students to actively participate in activities organized by various clubs of the institute like

- Energy conservation week and Swachhta Pakhwada 2020 Energy savers' club
- Health camps- NSS
- Rural development Engineers Without Borders (EWB)
- Webinars, Industry tours and other professional activities-IEEE PES

Action 5: It is proposed to give due weightage in the rubrics prepared to evaluate CIE of laboratory courses, mini projects and major projects

Action 6: To encourage students to take part in project exhibition hackathon, MSME projects and similar activities

Action 7: To motivate students to work with multidisciplinary aspects in industry projects carried out as a part of institute activity

PO10 : Communication: Communicate effectively on complex engineering activities with the engineering

Dr. M. Batasubbareddy HOD/EEE, CBIT community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

| PO10 | 1.32 | 1.42 | Observation: The set target is achieved |
|------|------|------|---|
|------|------|------|---|

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To introduce more topics related to these skills in the soft skills course offered.

Action 2: To revise the rubrics used to evaluate the CIE of mini projects, seminars and major projects so that more focus is given to performance indicator related to ability of comprehending (literature review), written communication (report writing), oral communication (presentation skills) and summarization (conclusion)

#### PO11: Project management and finance

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary

| PO11 1.32 1.40 Observation: The set target is achieve |
|---|
|---|

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To introduce more subjects to address management principles

Action 2: To introduce freshmen course so that student will be able to describe various economic and financial costs/benefits of an engineering activity and analyze and select the most appropriate proposal based on economic and financial considerations

Action 3: To encourage the students to present their IDEAS at MSME Incubation centre of CBIT

Action 4: To encourage more students to work on the hardware/product-based projects such that student get an ability to prepare budget proposal and submit the same to the institute and other agencies for funding

### PO12:Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

| PO12 | 1.32 | 1.40 | <b>Observation:</b> The set target is achieved |
|------|------|------|--|
|------|------|------|--|

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To introduce the credit transfer to the courses pursued via MOOCs (e.g. Swayam NPTEL, Coursera, MSME etc.)

Action 2: To introduce internships during every academic year break to enable students to pursue independent projects in an industrial setting with mentorship and prepare them for lifelong learning.

Action 3: To facilitate the honors and additional minor engineering degrees for the students who can acquire more 20 credits through MOOCs courses

Action4: To introduce the e-portfolio to promote students participation in Co- curricular and extracurricular activities which nurture the key interest towards life long learning

Dr. M. Batasubbareddy HOD/EEE, CBIT Action 5: To invite more industry experts to take part in curriculum revision, delivery of lectures, project guidance and assessments and in establishment of laboratories.

Action 6: To encourage students to carry out projects in emerging areas and their applications to electrical & electronics engineering

**PSO1** Students will be able to succeed in executing software applications related to Electrical and Electronics

PSO1 1.4 1.68 Observation: The set target is achieved

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To increase the number of lab courses and to design the same, such that solutions of the problem can be viewed also through simulation

Action 2: To encourage the usage of programme specific simulation tools in the mini and major project

Action 3: To revise the syllabus of laboratory courses (where ever possible) to include the programming / software component so as to improve the coding skills of the students

**PSO2:** Students will be able to pursue higher studies

PSO2 1.5 Observation: The set target is achieved

After discussing in the CEG and PAQIC /PAC meetings, it is decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To arrange for more interactions to the pre-final students with successful alumni of the department to create awareness about the prospects after pursuing higher studies

Action 2: To identify tracks in professional electives, so that student can be motivated to pursue higher studies in continuation to any of the tracks of their interest

PSO3: Students will be able to serve the industry by taking up and leading the project group

PSO3 1.5 1.71 Observation: The set target is achieved

After discussion in the CEG and PAQIC /PAC meetings, it was decided to increase the target value by 2%. To reach the new target value the following actions are planned.

Action 1: To introduce more subjects to address management principles

Action 2: To encourage students to work as teams for technical activities conducted by CBIT during Sudhee – Institute level technical symposium.

Action 3: To encourage more students to work on the hardware/product-based projects such that student get an ability to prepare budget proposal and submit the same to the institute and other agencies for funding

Action 4: To motivate students to work with multidisciplinary aspects in industry projects carried out as a part of institute activity

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