



**Annexure 19 PO Attainment of 2018-2022 Batch (B. Tech Electrical  
Engineering)**

JA



**Direct PO Attainment**

S. No.	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
1	100001: Engineering Mathematics II	2.05	2.05	2.05	2.05	2.05		2.08					2.09	2.05	2.05
2	130301: Electro Magnetic Field Theory	2.21	2.21	2.21						2.23				2.21	
3	130302: Measurement & Instrumentation	2.23	2.23	2.23	2.23	2.23	2.24		2.23	2.21	2.23	2.23	2.24	2.25	2.24
4	130302: Measurement & Instrumentation (LAB)	2.28	2.28	2.28	2.28		2.28	2.28	2.28	2.28	2.28				2.28
5	130303: Network Analysis	2.27	2.27	2.26	2.27	2.27	2.28	2.27	2.27	2.27	2.27		2.27	2.27	2.27
6	130303: Network Analysis (LAB)	2.06	2.20	2.20	2.33		2.26	2.26	2.26	2.26	2.26				2.26
7	130304: Analog Electronics	2.19	2.19	2.19	2.19		2.19			2.20				2.19	
8	130304: Analog Electronics (LAB)		2.11					2.12	2.11	2.13	2.11	2.12	2.11		2.11
9	130305: Software Lab-I	2.15			2.15	2.15				2.13	2.13	2.15		2.15	2.15
10	130309 : Summer Internship	2.15	2.15	2.15						2.15	2.15	2.15		2.15	
11	130402: Electrical Machines-I	2.14	2.14	2.14	2.14	2.21	2.13	2.25	2.17	2.12	2.17	2.13	2.17	2.13	2.11
12	130402: Electrical Machines-I (LAB)				2.13			2.14	2.15	2.14	2.14	2.13		2.17	
13	130401: Digital Electronics & Microprocessor	2.17	2.18	2.18										2.16	
14	130401: Digital Electronics & Microprocessor (LAB)						2.20	2.20	2.20						
15	130403 : Control Systems	2.30	2.30	2.30	2.30	2.30	2.34	2.30	2.30	2.30	2.30		2.32	2.32	2.33
16	130404: Power System-I	2.30	2.30	2.30	2.31	2.30	2.24	2.17	2.31	2.17	2.32	2.33	2.23	2.30	2.26
17	100004: Cyber Security	2.12	2.08	2.06	2.13	2.12	2.07	2.13	2.09	2.13	1.92		2.10	2.18	2.22
18	130405: Simulation Lab-II:	2.35			2.35	2.35								2.35	
19	100005: Ethics, Economics, Entrepreneurship & Management				2.20	2.10	2.14	1.99	2.08	2.08	2.08				
20	130501: Signals & Systems	2.26	2.26	2.26	2.26	2.26							2.08		
21	130502: Power System II	1.98	1.98	1.98	1.98	1.98	1.98	1.98		1.98	1.98	1.98	1.98	1.98	1.98
22	130502: Power System II (Lab)	2.15	2.16	2.16	2.16	2.16	2.16	2.16		2.16	2.13	2.21	2.16		2.16
23	130503: Electrical Machine-II	2.29	2.30	2.30	2.28			2.29	2.30					2.30	
24	130503:Electrical Machine-II (Lab)				1.91		2.15		1.95	2.01	1.36	1.89		1.77	1.91
25	130504 : Power Electronics	2.23	2.23	2.23		2.23	2.23				2.23				
26	130504: Power Electronics (Lab)	2.37	2.36	2.38		2.38	2.38				2.38				
27	130505: Minor Project-I	2.27	2.27	2.27					2.21	2.21	2.21	2.21		2.21	2.21
28	130506: Summer Internship Project-II	2.43	2.43	2.43					2.43	2.43	2.43	2.43			
29	130507:Seminar/Self Study	2.21	2.21	2.21					2.18	2.18	2.18	2.18		2.18	2.18
30	130601:Switchgear & Protection	2.26	2.21	2.22		2.26	2.27							2.18	2.18
31	130601:Switchgear & Protection Lab								2.34	2.34	2.34	2.34	2.25		2.34



32	130602: Electrical Engineering Materials	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
33	130611 : Computer Aided Power System Analysis (DE-1)	2.44	2.45	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46
34	130612:Industrial Automation (DE1)																						
35	130651: Non Conventional Energy Resources DE2(SWAYAM/NPTL)	1.74	1.39	2.22	2.22	2.18	2.18	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
36	130603: Minor Project-II	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18
37	100007:Disaster Management	1.68	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
38	130711: Electrical Drives (DE3)	2.24	2.27	2.22	2.22	2.19	2.23	2.30	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
39	130712: Renewable Energy System (DE3)	2.32	2.36	2.36	2.36	2.28	2.32	2.36	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39
40	130713: IoT in MicroGrid (DE3)	2.18	2.24	2.24	2.24	2.25	2.26	2.24	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18
41	130714: Intelligent Sensors and Instrumentation (DE3)	2.24	2.23	2.23	2.23	2.27	2.28	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24
42	130751: Introduction to Smart Grid( DE4)	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09	2.09
43	900201:Applications of Electrical Motor & Equipment	2.03	2.03	2.07	1.96	2.17	1.88	2.17	1.88	2.17	1.88	2.17	1.88	2.17	1.88	2.17	1.88	2.17	1.88	2.17	1.88	2.17	1.88
44	130701:Control System Lab	2.29	2.22	2.05	2.29	2.20	2.20	2.20	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
45	130702: Summer Internship Project	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31
46	130703: Creative Problem Solving	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14
47	100008:Intellectual Property Rights(IPR)	2.29	2.29	2.33	2.31	2.31	2.31	2.36	2.45	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
48	130801 : Internship/ Project	2.34	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
49	130802 : Professional Development							2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
<b>Direct PO Attainment</b>		<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PO1</b>	<b>PO2</b>	<b>PO1</b>	<b>PO2</b>	<b>PO1</b>	<b>PO2</b>	<b>PO1</b>	<b>PO2</b>	<b>PO1</b>	<b>PO2</b>
<b>Direct PO Attainment</b>		<b>2.20</b>	<b>2.21</b>	<b>2.23</b>	<b>2.21</b>	<b>2.15</b>	<b>2.18</b>	<b>2.22</b>	<b>2.23</b>	<b>2.18</b>	<b>2.18</b>	<b>2.22</b>	<b>2.14</b>	<b>2.22</b>	<b>2.18</b>	<b>2.22</b>	<b>2.14</b>	<b>2.20</b>	<b>2.20</b>	<b>2.20</b>	<b>2.20</b>	<b>2.20</b>	<b>2.20</b>

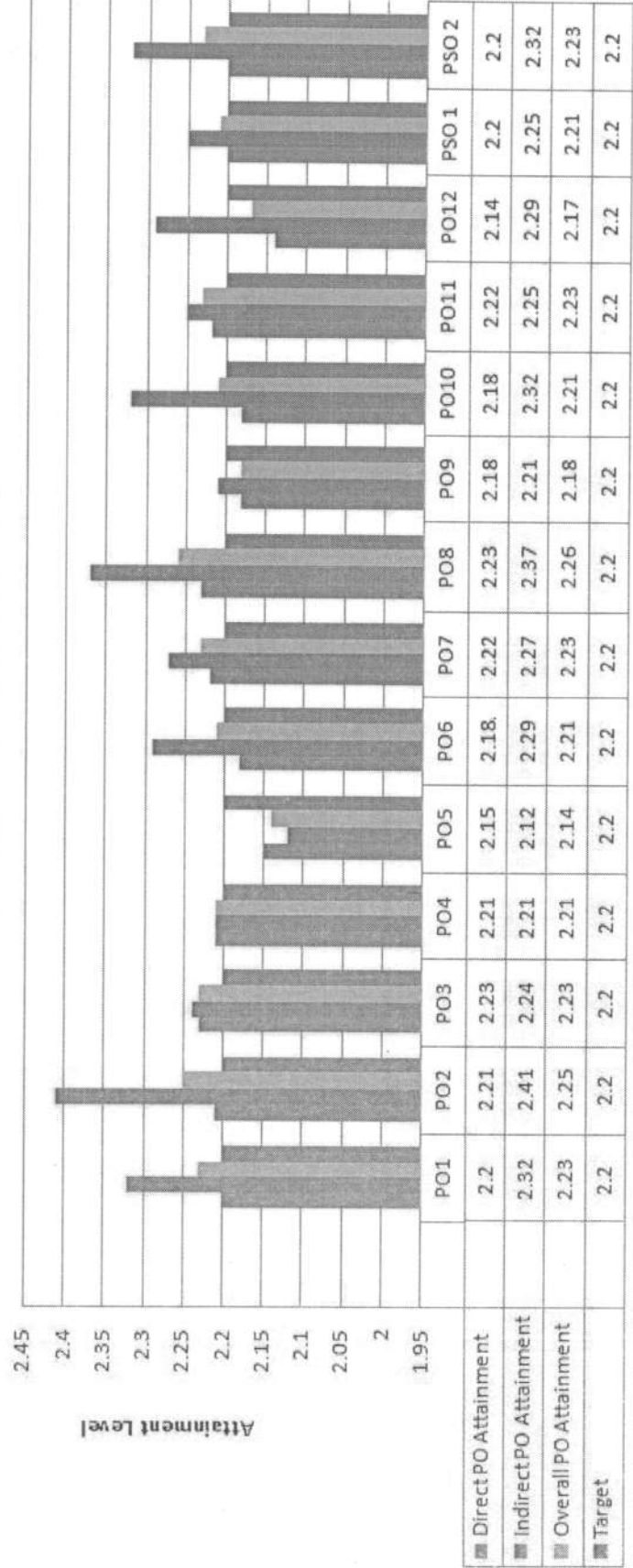
**Indirect PO Attainment**

INDIRECT PO ATTAINMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO1	PO2	PO1	PO2
(Exit Survey)	2.38	2.41	2.24	2.19	2.10	2.15	2.27	2.39	2.29	2.46	2.32	2.31	2.21	2.29	2.21	2.29
(Alumni Survey)	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26
(Employer Survey)	2.33	2.56	2.21	2.19	1.99	2.47	2.27	2.47	2.07	2.24	2.16	2.30	2.30	2.41	2.30	2.41
Indirect PO Attainment	2.32	2.41	2.24	2.21	2.12	2.29	2.27	2.37	2.21	2.32	2.25	2.29	2.25	2.32	2.25	2.32

Handwritten signatures and initials are present at the bottom of the page, including a signature that appears to read "Rajendra Kumar" and other initials.



**PO Attainment (2018-2022 Batch)**



*Handwritten signatures and initials:*  
 H, K, P, V, M, S, A, S



PO Attainment : Analysis & Action Taken

Program Outcome	Direct Attainment	Indirect Attainment	Total attainment (in Levels)	Target attainment level	Gap	Action taken
<b>PO1</b> Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems	2.20	2.32	2.23	2.2	-0.03	Students are encouraged to learn complex analytical/ mathematical concepts and apply them in real-life problem-solving.
<b>PO2</b> Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	2.21	2.41	2.25	2.2	-0.05	Industrial visits, skill-based mini projects, and weekly quizzes & assignments are used to help students to further gain knowledge on complex engineering problems.
<b>PO3</b> Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	2.23	2.24	2.23	2.2	-0.03	Students are motivated to include all standard parameters and constraints according to National & International safety norms and to address environmental concerns while focusing on innovative designs for their projects.
<b>PO4</b> 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.	2.21	2.21	2.21	2.2	-0.01	Students are motivated to further gain deep knowledge about research in multidisciplinary areas. Also, research internships are introduced at the level of III Year.
<b>PO5</b> 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.	2.15	2.12	2.14	2.2	0.06	Students are also encouraged to develop software-based projects.
<b>PO6</b> 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.	2.18	2.29	2.21	2.2	-0.01	Humanities-based courses are added in the curriculum.
<b>PO7</b> 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.	2.22	2.27	2.23	2.2	-0.03	Students are encouraged to indulge in projects, in which global and environmental issues are improved, with respect to effective electronics circuit designing and miniaturization of



**Department of Electrical Engineering**

	2.23	2.37	2.26	2.2	-0.06	circuits.
<b>PO8</b> Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.						Career readiness program, corporate lectures and motivational talks are arranged for the students.
<b>PO9</b> Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	2.18	2.21	2.18	2.2	0.02	Extracurricular activities such as debates, technical and cultural events will be organized by various students clubs.
<b>PO10</b> Communication: Communicate effectively on complex engineering activities with the engineering 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.	2.18	2.32	2.21	2.2	-0.01	Soft skills training is imparted to students to enhance various aspects of communication/technical talks by group discussions, presentations and new learning outcomes.
<b>PO11</b> 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 environments.	2.22	2.25	2.23	2.2	-0.03	Awareness is created among the student regarding the management principles.
<b>PO12</b> 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.	2.14	2.29	2.17	2.2	0.03	Students are encouraged to learn some advanced-level courses as department electives on SWAYAM/NPTEL platforms that have relevance throughout their careers and have long-term benefits.
<b>PSO1:</b> Power System Operation & Control: Graduates will be able to demonstrate proficiency in the planning, operation & control of Electrical Power System	2.20	2.25	2.21	2.2	-0.01	Courses fundamental of smart grid, emerging technologies in renewable energy sources, and simulation of microgrid are being introduced. More hardware-based projects are being undertaken.
<b>PSO2:</b> AI Based Computations: Graduates will be able to apply various artificial intelligent techniques like neural network, fuzzy logic & various nature inspired evolutionary computational methods for the solution of complex engineering problems using MATLAB environment	2.20	2.32	2.23	2.2	-0.03	Students are motivated to take up real-life problems so that they can design, analyze and find a solution that gives exposure to latest technologies in the field of AI.

*Handwritten signatures and initials:*  
 Dr. Anurag Singh  
 Dr. Anurag Singh  
 Dr. Anurag Singh