



JAGADAMBHA BAHUUDDESHIYA GRAMIN VIKAS SANSTH'S

JAGADAMBHA

COLLEGE OF ENGINEERING & TECHNOLOGY, YAVATMAL



Approved by A.I.C.T.E. & Government of Maharashtra, Affiliated to S.G.B. Amravati University, Amravati.

Dr. Hemant M. Baradkar

M.Tech. (Electronics), Ph.D. (E & TC. Engg.)
Principal

Dr. Shital A. Watile

M.Sc., Ph.D.
Secretary

JAGADAMBHA COLLEGE OF ENGINEERING AND TECHNOLOGY YAVATMAL

NAAC

Criteria I

1.3.2 Average Percentage of courses that include experiential learning through project work/field work/internship during the Academic Year 2020-21

ARNI ROAD, YAVATMAL - 445001 (M.S.) INDIA

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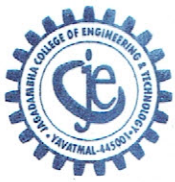


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1.3.2 Average Percentages of courses that include experiential learning through project work/field work/internship during the Academic Year 2020-21

SUMMARY SHEET

Sr. No.	Particulars	No. of courses	Page No.
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3.	B.E. Electronics & Telecommunication Engineering	70	3-6
4.	B.E. Mechanical Engineering	61	6-9
5.	B.E. Civil Engineering	56	9-10



I

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1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during the Last five years

Academic Year 2020-21

Sr. No.	Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering
1	B.E. Electrical Engg.	112729310	Electrical Machine-I	3EE03	2020-2021
2	B.E. Electrical Engg.	112729310	Energy Resources & Generation	3EE04	2020-2021
3	B.E. Electrical Engg.	112729310	Electronic Devices & Circuits	3EE05	2020-2021
4	B.E. Electrical Engg.	112729310	Environmental Studies	4ES06	2020-2021
5	B.E. Electrical Engg.	112729310	Electrical Circuit Analysis - Lab	3EE06	2020-2021
6	B.E. Electrical Engg.	112729310	Electrical Machine-I - Lab	3EE07	2020-2021
7	B.E. Electrical Engg.	112729310	Electronic Devices & Circuits – Lab	3EE08	2020-2021
8	B.E. Electrical Engg.	112729310	Electrical Technology- Lab	3EE09	2020-2021
9	B.E. Electrical Engg.	112729310	Electromagnetic Field	4EE01	2020-2021
10	B.E. Electrical Engg.	112729310	Electrical Measurement & Instrumentation	4EE02	2020-2021
11	B.E. Electrical Engg.	112729310	Power System -I	4EE03	2020-2021
12	B.E. Electrical Engg.	112729310	Analog & Digital Circuits	4EE04	2020-2021
13	B.E. Electrical Engg.	112729310	Signals & Systems	4EE05	2020-2021
14	B.E. Electrical Engg.	112729310	Environmental Studies	4ES06	2020-2021
15	B.E. Electrical Engg.	112729310	Electrical Measurement & Instrumentation - Lab	4EE06	2020-2021
16	B.E. Electrical Engg.	112729310	Power System -I - Lab	4EE07	2020-2021
17	B.E. Electrical Engg.	112729310	Analog & Digital Circuits	4EE08	2020-2021
18	B.E. Electrical Engg.	112729310	Electrical Technology- Lab	4EE09	2020-2021
19	B.E. Electrical Engg.	112729310	Control Systems-I	5EE01	2012-2013
20	B.E. Electrical Engg.	112729310	Microprocessor & Microcontroller	5EE02	2012-2013
21	B.E. Electrical Engg.	112729310	Electrical Machines-Ii	5EE03	2012-2013
22	B.E. Electrical Engg.	112729310	Signals & Systems	5EE04	2012-2013
23	B.E. Electrical Engg.	112729310	Communication Skills	5EE06	2012-2013
24	B.E. Electrical Engg.	112729310	Control Systems- Lab	5EE07	2012-2013
25	B.E. Electrical Engg.	112729310	Microprocessor & Microcontroller - Lab	5EE08	2012-2013
26	B.E. Electrical Engg.	112729310	Electrical Machines-Ii – Lab	5EE09	2012-2013
27	B.E. Electrical Engg.	112729310	Communication Skills – Lab	5EE10	2012-2013
28	B.E. Electrical Engg.	112729310	Electrical Power-I	6EE01	2012-2013
29	B.E. Electrical Engg.	112729310	Optimization Techniques	6EE02	2012-2013

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30	B.E. Electrical Engg.	112729310	Power Electronics	6EE03	2012-2013
31	B.E. Electrical Engg.	112729310	Computer Aided Machine Design	6EE04	2012-2013
32	B.E. Electrical Engg.	112729310	Free Elective-Ii : Non Conventional Energy Source	6FEEE05	2012-2013
33	B.E. Electrical Engg.	112729310	Electrical Energy Utilization	6EE06	2012-2013
34	B.E. Electrical Engg.	112729310	Power Electronics - Lab	6EE07	2012-2013
35	B.E. Electrical Engg.	112729310	Computer Aided Machine Design - Lab	6EE08	2012-2013
36	B.E. Electrical Engg.	112729310	Electrical Energy Utilization - Lab	6EE09	2012-2013
37	B.E. Electrical Engg.	112729310	Control System-Ii	7EE01	2013-2014
38	B.E. Electrical Engg.	112729310	Power System Operation & Control	7EE02	2013-2014
39	B.E. Electrical Engg.	112729310	Electrical Power-Ii	7EE03	2013-2014
40	B.E. Electrical Engg.	112729310	Switchgear & Protection	7EE04	2013-2014
41	B.E. Electrical Engg.	112729310	Project & Seminar	7EE06	2013-2014
42	B.E. Electrical Engg.	112729310	Electrical Power-Ii - Lab	7EE07	2013-2014
43	B.E. Electrical Engg.	112729310	Switchgear & Protection - Lab	7EE08	2013-2014
44	B.E. Electrical Engg.	112729310	Power System Stability	8EE01	2013-2014
45	B.E. Electrical Engg.	112729310	High Voltage Engg.	8EE02	2013-2014
46	B.E. Electrical Engg.	112729310	Digital Signal Processing	8EE03	2013-2014
47	B.E. Electrical Engg.	112729310	Professional Elective-Ii : Electric Drives & Control	8EE04	2013-2014
48	B.E. Electrical Engg.	112729310	Project & Seminar	8EE05	2013-2014
49	B.E. Electrical Engg.	112729310	Digital Signal Processing - Lab	8EE06	2013-2014
50	B.E. Computer Engg.	112724510	Engg. Mathematics -Iii	3KE01	2020-2021
51	B.E. Computer Engg.	112724510	Discret Mathematics	3KE02	2020-2021
52	B.E. Computer Engg.	112724510	Programing Methodology	3KE03	2020-2021
53	B.E. Computer Engg.	112724510	Data Structure	3KE04	2020-2021
54	B.E. Computer Engg.	112724510	Enviromental Studies	4ES06	2020-2021
55	B.E. Computer Engg.	112724510	Programing Methodology-Lab	3KE06	2020-2021
56	B.E. Computer Engg.	112724510	Data Structure -Lab	3KE07	2020-2021
57	B.E. Computer Engg.	112724510	C Skill Lab I	3KE09	2020-2021
58	B.E. Computer Engg.	112724510	Artificial Inteligence	4KE01	2020-2021
59	B.E. Computer Engg.	112724510	Computer Networks	4KE02	2020-2021
60	B.E. Computer Engg.	112724510	Operating System	4KE03	2020-2021
61	B.E. Computer Engg.	112724510	Microprocessor And Interfacing	4KE04	2020-2021
62	B.E. Computer Engg.	112724510	Theory Of Computation	4KE05	2020-2021
63	B.E. Computer Engg.	112724510	Environmental Studies	4ES06	2020-2021
64	B.E. Computer Engg.	112724510	Computer Networks -Lab	4KE06	2020-2021
65	B.E. Computer Engg.	112724510	Operating System-Lab	4KE07	2020-2021
66	B.E. Computer Engg.	112724510	Microprocessor And Interfacing -Lab	4KE08	2020-2021
67	B.E. Computer Engg.	112724510	C Skill Lab Ii-Lab	4KE09	2020-2021
68	B.E. Computer Engg.	112724510	Data Communication	5KE01	2012-2013
69	B.E. Computer Engg.	112724510	File Structure And Data Processing	5KE02	2012-2013
70	B.E. Computer Engg.	112724510	System Software	5KE03	2012-2013
71	B.E. Computer Engg.	112724510	Switching Theory And Logic Design	5KE04	2012-2013
72	B.E. Computer Engg.	112724510	Free Elective-I (Production Mangement)	5FEME05	2012-2013




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73	B.E. Computer Engg.	112724510	Communication Skills	5KE06	2012-2013
74	B.E. Computer Engg.	112724510	System Software-Lab	5KE07	2012-2013
75	B.E. Computer Engg.	112724510	Switching Theory And Logic Design-Lab	5KE08	2012-2013
76	B.E. Computer Engg.	112724510	Communication Skills-Lab	5KE09	2012-2013
77	B.E. Computer Engg.	112724510	Operating System	6KE01	2012-2013
78	B.E. Computer Engg.	112724510	Database System	6KE02	2012-2013
79	B.E. Computer Engg.	112724510	Computer Resource Management	6KE03	2012-2013
80	B.E. Computer Engg.	112724510	Computer Architecture	6KE04	2012-2013
81	B.E. Computer Engg.	112724510	Professional Ethics	6KE06	2012-2013
82	B.E. Computer Engg.	112724510	Operating System-Lab	6KE07	2012-2013
83	B.E. Computer Engg.	112724510	Database System-Lab	6KE08	2012-2013
84	B.E. Computer Engg.	112724510	Computer Lab-Ii (Hardware)	6KE09	2012-2013
85	B.E. Computer Engg.	112724510	Signal And System	7KE01	2013-2014
86	B.E. Computer Engg.	112724510	Computer Networks	7KE02	2013-2014
87	B.E. Computer Engg.	112724510	Microprocessor And Interfacing	7KE03	2013-2014
88	B.E. Computer Engg.	112724510	Mobile Computing	7KE04	2013-2014
89	B.E. Computer Engg.	112724510	Professional Elective-I : Artificial Intelligence	7KE05	2013-2014
90	B.E. Computer Engg.	112724510	Computer Networks-Lab	7KE06	2013-2014
91	B.E. Computer Engg.	112724510	Microprocessor And Interfacing-Lab	7KE07	2013-2014
92	B.E. Computer Engg.	112724510	Mobile Computing-Lab	7KE08	2013-2014
93	B.E. Computer Engg.	112724510	Project And Seminar	7KE09	2013-2014
94	B.E. Computer Engg.	112724510	Digital Signal Processing	8KE01	2013-2014
95	B.E. Computer Engg.	112724510	Embedded System	8KE02	2013-2014
96	B.E. Computer Engg.	112724510	Software Engg.	8KE03	2013-2014
97	B.E. Computer Engg.	112724510	Professional Elective-Ii : Multimedia Technologies	8KE04	2013-2014
98	B.E. Computer Engg.	112724510	Digital Signal Processing-Lab	8KE05	2013-2014
99	B.E. Computer Engg.	112724510	Embedded System -Lab	8KE06	2013-2014
100	B.E. Computer Engg.	112724510	Project And Seminar	8KE07	2013-2014
101	B.E.Ele & Tel.Comm. Engg.	112737210	Engg. Mathematics- Iii	3ETC01	2020-2021
102	B.E.Ele & Tel.Comm. Engg.	112737210	Electronics Devices & Circuits	3ETC02	2020-2021
103	B.E.Ele & Tel.Comm. Engg.	112737210	Digital System Design	3ETC03	2020-2021
104	B.E.Ele & Tel.Comm. Engg.	112737210	Electromagnetic Waves	3ETC04	2020-2021
105	B.E.Ele & Tel.Comm. Engg.	112737210	Object Oriented Programming (Es)	3ETC05	2020-2021
106	B.E.Ele & Tel.Comm. Engg.	112737210	Environmental Science	4ES06	2020-2021
107	B.E.Ele & Tel.Comm. Engg.	112737210	Electronics Devices & Circuits- Lab	3ETC06	2020-2021
108	B.E.Ele & Tel.Comm. Engg.	112737210	Digital System Design-Lab	3ETC07	2020-2021



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109	B.E.Ele & Tel.Comm. Engg.	112737210	Object Oriented Programming - Lab	3ETC08	2020-2021
110	B.E.Ele & Tel.Comm. Engg.	112737210	Electronic Workshop	3ETC09	2020-2021
111	B.E.Ele & Tel.Comm. Engg.	112737210	Analog & Digital Communication	4ETC01	2020-2021
112	B.E.Ele & Tel.Comm. Engg.	112737210	Analog Circuits	4ETC02	2020-2021
113	B.E.Ele & Tel.Comm. Engg.	112737210	Network Theory	4ETC03	2020-2021
114	B.E.Ele & Tel.Comm. Engg.	112737210	Signals And Systems	4ETC04	2020-2021
115	B.E.Ele & Tel.Comm. Engg.	112737210	Values And Ethics (Hs)	4ETC05	2020-2021
116	B.E.Ele & Tel.Comm. Engg.	112737210	Environmental Science	4ES06	2020-2021
117	B.E.Ele & Tel.Comm. Engg.	112737210	Analog & Digital Communication - Lab	4ETC06	2020-2021
118	B.E.Ele & Tel.Comm. Engg.	112737210	Analog Circuits - Lab	4ETC07	2020-2021
119	B.E.Ele & Tel.Comm. Engg.	112737210	Network Theory - Lab	4ETC08	2020-2021
120	B.E.Ele & Tel.Comm. Engg.	112737210	Signals And Systems - Lab	4ETC09	2020-2021
121	B.E.Ele & Tel.Comm. Engg.	112737210	Analog Electronics-Ii	5ET1	2018-2019
122	B.E.Ele & Tel.Comm. Engg.	112737210	Power Electronics & Drives	5ET2	2018-2019
123	B.E.Ele & Tel.Comm. Engg.	112737210	Microprocessor & Microcontroller	5ET3	2018-2019
124	B.E.Ele & Tel.Comm. Engg.	112737210	Communication Engg.-Ii	5ET4	2018-2019
125	B.E.Ele & Tel.Comm. Engg.	112737210	Energy Audit & Management	5FEEE5	2018-2019
126	B.E.Ele & Tel.Comm. Engg.	112737210	Analog Electronics-Ii Lab	5ETp6	2018-2019
127	B.E.Ele & Tel.Comm. Engg.	112737210	Power Electronics & Drives Lab	5ETp7	2018-2019
128	B.E.Ele & Tel.Comm. Engg.	112737210	Microprocessor & Microcontroller Lab	5ETp8	2018-2019
129	B.E.Ele & Tel.Comm. Engg.	112737210	Skill Development Lab -Iii (Simulation)	5ETp9	2018-2019
130	B.E.Ele & Tel.Comm. Engg.	112737210	Microcontroller Programming & Application	6ET1	2018-2019
131	B.E.Ele & Tel.Comm. Engg.	112737210	Control System Engg.	6ET2	2018-2019




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132	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Communication	6ET3	2018-2019
133	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Signal Processing	6ET4	2018-2019
134	B.E.Ele & Tel.Comm. Engg.	112737210	Free Elective Ii: Jawa Programming	6FEKE5	2012-2013
135	B.E.Ele & Tel.Comm. Engg.	112737210	Communication Skill	6ET6	2018-2019
136	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Communication Lab	6ETp7	2018-2019
137	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Signal Processing Lab	6ETp8	2018-2019
138	B.E.Ele & Tel.Comm. Engg.	112737210	Communication Skill Lab	6ETp9	2018-2019
139	B.E.Ele & Tel.Comm. Engg.	112737210	Skill Development Lab -Iv (Hardware)	6ETp10	2018-2019
140	B.E.Ele & Tel.Comm. Engg.	112737210	Vlsi Design	7ET1	2019-2020
141	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Image Processing	7ET2	2019-2020
142	B.E.Ele & Tel.Comm. Engg.	112737210	Satellite & Optical Fiber Communication	7ET3	2019-2020
143	B.E.Ele & Tel.Comm. Engg.	112737210	Industrial Management & Quality Control	7ET4	2019-2020
144	B.E.Ele & Tel.Comm. Engg.	112737210	Professional Elective I: Computer Organization	7ET5	2019-2020
145	B.E.Ele & Tel.Comm. Engg.	112737210	Vlsi Design-Lab	7ETp6	2019-2020
146	B.E.Ele & Tel.Comm. Engg.	112737210	Skill Development Lab-V (Signal Image Processing)	7ETp7	2019-2020
147	B.E.Ele & Tel.Comm. Engg.	112737210	Project	7ETp8	2019-2020
148	B.E.Ele & Tel.Comm. Engg.	112737210	Seminar	7ETp9	2019-2020
149	B.E.Ele & Tel.Comm. Engg.	112737210	Uhf & Microwave	8ET1	2019-2020
150	B.E.Ele & Tel.Comm. Engg.	112737210	Wireless Communication	8ET2	2019-2020
151	B.E.Ele & Tel.Comm. Engg.	112737210	Data Communication Network	8ET3	2019-2020
152	B.E.Ele & Tel.Comm. Engg.	112737210	Embedded System & Rtos	8ET4	2019-2020
153	B.E.Ele & Tel.Comm. Engg.	112737210	Uhf & Microwaves-Lab	8ETp5	2019-2020
154	B.E.Ele & Tel.Comm. Engg.	112737210	Skill Development Lab-Vi (Networking)	8ETp6	2019-2020




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155	B.E.Ele & Tel.Comm. Engg.	112737210	Project	8ETp7	2019-2020
156	B.E.Ele & Tel.Comm. Engg.	112737210	Advanced Optical Communication	1ENTC1	2014-2015
157	B.E.Ele & Tel.Comm. Engg.	112737210	Random Processes	1ENTC2	2014-2015
158	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Communication Techniques	1ENTC3	2014-2015
159	B.E.Ele & Tel.Comm. Engg.	112737210	Digital Signal Processing And Application	1ENTC4	2014-2015
160	B.E.Ele & Tel.Comm. Engg.	112737210	Elective-I Real Time Embedded System/Data Compression/Artificial Intelligent System/Cryptography & Network Security	1ENTC5	2014-2015
161	B.E.Ele & Tel.Comm. Engg.	112737210	Lab - I (Based On 1entc1 & 1entc3)	1ENTC6	2014-2015
162	B.E.Ele & Tel.Comm. Engg.	112737210	Lab - Ii (Based On 1entc4)	1ENTC7	2014-2015
163	B.E.Ele & Tel.Comm. Engg.	112737210	Adaptive Signal Processing	2ENTC1	2014-2015
164	B.E.Ele & Tel.Comm. Engg.	112737210	Wireless Communication	2ENTC2	2014-2015
165	B.E.Ele & Tel.Comm. Engg.	112737210	Advanced Computer Network And Programming	2ENTC3	2014-2015
166	B.E.Ele & Tel.Comm. Engg.	112737210	Rf & Microwave Circuit Design	2ENTC4	2014-2015
167	B.E.Ele & Tel.Comm. Engg.	112737210	Mobile Computing /Communication System Design/Optical Networks/Speech & Audio Processing	2ENTC5	2014-2015
168	B.E.Ele & Tel.Comm. Engg.	112737210	Lab - I (Based On 2entc2 & 2entc3)	2ENTC6	2014-2015
169	B.E.Ele & Tel.Comm. Engg.	112737210	Lab - Ii (Based On 2entc1 & 2entc4)	2ENTC7	2014-2015
170	B.E.Ele & Tel.Comm. Engg.	112737210	Seminar And Dissertation	3ENTC1	2014-2015
171	B.E.Ele & Tel.Comm. Engg.	112737210	Seminar And Dissertation	4ENTC1	2014-2015
172	B.E. Mechanical Engg.	112761210	Mathematics -Iii	3ME01	2020-2021
173	B.E. Mechanical Engg.	112761210	Manufacturing Processes	3ME02	2020-2021
174	B.E. Mechanical Engg.	112761210	Mechanics Of Materials	3ME03	2020-2021
175	B.E. Mechanical Engg.	112761210	Engg. Thermodynamics	3ME04	2020-2021
176	B.E. Mechanical Engg.	112761210	Fluid Mechanics	3ME05	2020-2021




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177	B.E. Mechanical Engg.	112761210	Environmental Studies	4ES06	2020-2021
178	B.E. Mechanical Engg.	112761210	Manufacturing Processes-Lab	3ME07	2020-2021
179	B.E. Mechanical Engg.	112761210	Mechanics Of Materials-Lab	3ME08	2020-2021
180	B.E. Mechanical Engg.	112761210	Fluid Mechanics-Lab	3ME09	2020-2021
181	B.E. Mechanical Engg.	112761210	Machine Drawing-Lab	3ME10	2020-2021
182	B.E. Mechanical Engg.	112761210	Material Science	4ME01	2020-2021
183	B.E. Mechanical Engg.	112761210	Energy Conversion - I	4ME02	2020-2021
184	B.E. Mechanical Engg.	112761210	Manufacturing Technology	4ME03	2020-2021
185	B.E. Mechanical Engg.	112761210	Basic Electrical Drives & Control	4ME04	2020-2021
186	B.E. Mechanical Engg.	112761210	Hydraulic & Pneumatic Systems	4ME05	2020-2021
187	B.E. Mechanical Engg.	112761210	Environmental Studies	4ES06	2020-2021
188	B.E. Mechanical Engg.	112761210	Material Science-Lab	4ME07	2020-2021
189	B.E. Mechanical Engg.	112761210	Manufacturing Technology-Lab	4ME08	2020-2021
190	B.E. Mechanical Engg.	112761210	Basic Electrical Drives & Control-Lab	4ME09	2020-2021
191	B.E. Mechanical Engg.	112761210	Hydraulic & Pneumatic Systems-Lab	4ME10	2020-2021
192	B.E. Mechanical Engg.	112761210	Production Technology	5ME01	2012-2013
193	B.E. Mechanical Engg.	112761210	Heat Transfer	5ME02	2012-2013
194	B.E. Mechanical Engg.	112761210	Mesurment Systems	5ME03	2012-2013
195	B.E. Mechanical Engg.	112761210	Theory Of Mechines - I	5ME04	2012-2013
196	B.E. Mechanical Engg.	112761210	Free Elective-I: Basics Of Building Construction	5FEME05	2012-2013
197	B.E. Mechanical Engg.	112761210	Production Technology-Lab	5ME06	2012-2013
198	B.E. Mechanical Engg.	112761210	Heat Transfer-Lab	5ME07	2012-2013
199	B.E. Mechanical Engg.	112761210	Mesurment Systems-Lab	5ME08	2012-2013




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200	B.E. Mechanical Engg.	112761210	Theory Of Mechines - I-Lab	5ME09	2012-2013
201	B.E. Mechanical Engg.	112761210	Computer Softwere Applications - I-Lab	5ME10	2012-2013
202	B.E. Mechanical Engg.	112761210	Fluid Power - Ii	6ME01	2012-2013
203	B.E. Mechanical Engg.	112761210	Computer Software Applications	6ME02	2012-2013
204	B.E. Mechanical Engg.	112761210	Control System Engg.	6ME03	2012-2013
205	B.E. Mechanical Engg.	112761210	Theory Of Mechines - Ii	6ME04	2012-2013
206	B.E. Mechanical Engg.	112761210	Free Elective-Ii: Power Supply System	6FEEEE05	2012-2013
207	B.E. Mechanical Engg.	112761210	Communication Skills	6ME06	2012-2013
208	B.E. Mechanical Engg.	112761210	Fluid Power - Ii-Lab	6ME07	2012-2013
209	B.E. Mechanical Engg.	112761210	Computer Software Applications - Ii-Lab	6ME08	2012-2013
210	B.E. Mechanical Engg.	112761210	Theory Of Mechines - Ii-Lab	6ME09	2012-2013
211	B.E. Mechanical Engg.	112761210	Communication Skills-Lab	6ME10	2012-2013
212	B.E. Mechanical Engg.	112761210	Machine Design & Drawing - Ii	7ME01	2013-2014
213	B.E. Mechanical Engg.	112761210	Energy Conversion - Ii	7ME02	2013-2014
214	B.E. Mechanical Engg.	112761210	Industrial Management & Costing	7ME03	2013-2014
215	B.E. Mechanical Engg.	112761210	Automation Engg.	7ME04	2013-2014
216	B.E. Mechanical Engg.	112761210	Professional Elective-I: Non Conventional Energy System	7ME05	2013-2014
217	B.E. Mechanical Engg.	112761210	Professional Elective-I: Tool Engg.	7ME05	2013-2014
218	B.E. Mechanical Engg.	112761210	Project & Seminar	7ME06	2013-2014
219	B.E. Mechanical Engg.	112761210	Machine Design & Drawing - Ii-Lab	7ME07	2013-2014
220	B.E. Mechanical Engg.	112761210	Energy Conversion - Ii-Lab	7ME08	2013-2014
221	B.E. Mechanical Engg.	112761210	Automation Engg.-Lab	7ME09	2013-2014
222	B.E. Mechanical Engg.	112761210	Professional Elective-I: Non Conventional Energy System-Lab	7ME10	2013-2014




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223	B.E. Mechanical Engg.	112761210	Professional Elective-I: Tool Engg.-Lab	7ME10	2013-2014
224	B.E. Mechanical Engg.	112761210	Professional Elective-Ii: Automobile Engg.	8ME01	2013-2014
225	B.E. Mechanical Engg.	112761210	Professional Elective-Ii: Refrigeration & Air Conditioning	8ME02	2013-2014
226	B.E. Mechanical Engg.	112761210	Professional Elective-Ii: Machine Tool Design	8ME02	2013-2014
227	B.E. Mechanical Engg.	112761210	I.C. Engines	8ME03	2013-2014
228	B.E. Mechanical Engg.	112761210	Operation Research Techniques	8ME04	2013-2014
229	B.E. Mechanical Engg.	112761210	Project & Seminar	8ME05	2013-2014
230	B.E. Mechanical Engg.	112761210	Professional Elective-Ii: Refrigeration & Air Conditioning-Lab	8ME06	2013-2014
231	B.E. Mechanical Engg.	112761210	Professional Elective-Ii: Machine Tool Design-Lab	8ME06	2013-2014
232	B.E. Mechanical Engg.	112761210	I.C. Engines-Lab	8ME07	2013-2014
233	B.E. Mechanical Engg.	112761210	Operation Research Techniques-Lab	8ME08	2013-2014
234	B.E. Civil Engg.	112719110	Engg. Mathematics-Iii	3CE01	2020-2021
235	B.E. Civil Engg.	112719110	Strength Of Materials	3CE02	2020-2021
236	B.E. Civil Engg.	112719110	Building Construction And Engg. Geology	3CE03	2020-2021
237	B.E. Civil Engg.	112719110	Transportation Engg.	3CE04	2020-2021
238	B.E. Civil Engg.	112719110	Concrete Technology & Rcc	3CE05	2020-2021
239	B.E. Civil Engg.	112719110	Environmental Studies	4ES06	2020-2021
240	B.E. Civil Engg.	112719110	Strength Of Materials - Lab	3CE06	2020-2021
241	B.E. Civil Engg.	112719110	Building Construction And Engg. Geology - Lab	3CE07	2020-2021
242	B.E. Civil Engg.	112719110	Transportation Engg. - Lab	3CE08	2020-2021
243	B.E. Civil Engg.	112719110	Concrete Technology & Rcc - Lab	3CE09	2020-2021
244	B.E. Civil Engg.	112719110	Building Planning Desining And Cad	4CE01	2020-2021
245	B.E. Civil Engg.	112719110	Hydrology & Water Resources Engg.	4CE02	2020-2021
246	B.E. Civil Engg.	112719110	Surveying	4CE03	2020-2021
247	B.E. Civil Engg.	112719110	Geotechnical Engg.-I	4CE04	2020-2021
248	B.E. Civil Engg.	112719110	Structural Analysis -I	4CE05	2020-2021
249	B.E. Civil Engg.	112719110	Environmental Science	4ES06	2020-2021
250	B.E. Civil Engg.	112719110	Building Planning Desining And Cad -Lab	4CE06	2020-2021
251	B.E. Civil Engg.	112719110	Hydrology & Water Resources Engg. -Lab	4CE07	2020-2021
252	B.E. Civil Engg.	112719110	Surveying -Lab	4CE08	2020-2021
253	B.E. Civil Engg.	112719110	Geotechnical Engg.-I -Lab	4CE09	2020-2021
254	B.E. Civil Engg.	112719110	Reinforced Cement Concrete-Ii	5CE01	2012-2013



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255	B.E. Civil Engg.	112719110	Fluid Mechanics-Ii	5CE02	2012-2013
256	B.E. Civil Engg.	112719110	Building Planning And Cad	5CE03	2012-2013
257	B.E. Civil Engg.	112719110	Surveying-Ii	5CE04	2012-2013
258	B.E. Civil Engg.	112719110	Free Elective-I (Production Mangement)	5FEME05	2012-2013
259	B.E. Civil Engg.	112719110	Communication Skills	5CE06	2012-2013
260	B.E. Civil Engg.	112719110	Fluid Mechanics-Ii-Lab	5CE07	2012-2013
261	B.E. Civil Engg.	112719110	Building Planning And Cad- Lab	5CE08	2012-2013
262	B.E. Civil Engg.	112719110	Surveying-Ii-Lab	5CE09	2012-2013
263	B.E. Civil Engg.	112719110	Communication Skills-Lab	5CE10	2012-2013
264	B.E. Civil Engg.	112719110	Numerical Methods And Computer Programming	6CE01	2012-2013
265	B.E. Civil Engg.	112719110	Design Of Rcc & Prestress Concrete Structures	6CE02	2018-2019
266	B.E. Civil Engg.	112719110	Water Resources Engg.-I	6CE03	2012-2013
267	B.E. Civil Engg.	112719110	Transportation Engg.-Ii	6CE04	2012-2013
268	B.E. Civil Engg.	112719110	Free Elective-Ii(Non Conventional Energy System)	6FEME05	2012-2013
269	B.E. Civil Engg.	112719110	Estimating And Costing	6CE06	2012-2013
270	B.E. Civil Engg.	112719110	Numerical Methods And Computer Programming-Lab	6CE07	2012-2013
271	B.E. Civil Engg.	112719110	Structural Design-I-Lab	6CE08	2012-2013
272	B.E. Civil Engg.	112719110	Estimating And Costing-Lab	6CE09	2012-2013
273	B.E. Civil Engg.	112719110	Minor Project-Lab	6CE10	2012-2013
274	B.E. Civil Engg.	112719110	Theory Of Structurs-Ii	7CE01	2013-2014
275	B.E. Civil Engg.	112719110	Geotechnical Engg.-Ii	7CE02	2013-2014
276	B.E. Civil Engg.	112719110	Design Of Steel Structures	7CE03	2019-2020
277	B.E. Civil Engg.	112719110	Environmental Engg.-I	7CE04	2013-2014
278	B.E. Civil Engg.	112719110	Professional Elective-I: Advanced Earthquake Engg.	7CE05	2013-2014
279	B.E. Civil Engg.	112719110	Computer Aided Analysis & Design - Lab	7CE06	2019-2020
280	B.E. Civil Engg.	112719110	Geotechnical Engg.-Ii - Lab	7CE07	2013-2014
281	B.E. Civil Engg.	112719110	Structural Design-Ii - Lab	7CE08	2013-2014
282	B.E. Civil Engg.	112719110	Project And Seminar	7CE09	2013-2014
283	B.E. Civil Engg.	112719110	Water Resources Engg.-Ii	8CE01	2013-2014
284	B.E. Civil Engg.	112719110	Environmental Engg.-Ii	8CE02	2013-2014
285	B.E. Civil Engg.	112719110	Project Planning And Management	8CE03	2013-2014
286	B.E. Civil Engg.	112719110	Professional Elective-Ii: Advanced Waste Water And Industrial Waste Treatment	8CE04	2013-2014
287	B.E. Civil Engg.	112719110	Water Resources Engg.-Ii - Lab	8CE05	2013-2014
288	B.E. Civil Engg.	112719110	Environmental Engg.-Ii - Lab	8CE06	2013-2014
289	B.E. Civil Engg.	112719110	Project And Seminar	8CE07	2013-2014



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Dr. Hemant M. Baradkar

M.Tech. (Electronics), Ph.D. (E & TC. Engg.)
Principal

Dr. Shital A. Watile

M.Sc., Ph.D.
Secretary

1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during the Last five years

Academic Year 2020-21

Sr.No.	Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Project Work	Field work	Internship
1	B.E. Electrical Engg.	112729310	Electrical Machine-I	3EE03	✓		✓
2		112729310	Energy Resources & Generation	3EE04	✓		✓
3		112729310	Electronic Devices & Circuits	3EE05	✓		✓
4		112729310	Environmental Studies	4ES06	✓		
5		112729310	Electrical Circuit Analysis - Lab	3EE06	✓		
6		112729310	Electrical Machine-I - Lab	3EE07	✓		✓
7		112729310	Electronic Devices & Circuits - Lab	3EE08	✓		✓
8		112729310	Electrical Technology- Lab	3EE09	✓		✓
9		112729310	Electrical Measurement & Instrumentation	4EE02	✓		✓
10		112729310	Power System -I	4EE03	✓		
11		112729310	Analog & Digital Circuits	4EE04	✓		
12		112729310	Signals & Systems	4EE05	✓		
13		112729310	Environmental Studies	4ES06	✓		
14		112729310	Electrical Measurement & Instrumentation - Lab	4EE06	✓		✓
15		112729310	Power System -I - Lab	4EE07	✓		
16		112729310	Analog & Digital Circuits	4EE08	✓		
17		112729310	Electrical Technology- Lab	4EE09	✓		✓
18		112729310	Control Systems-I	5EE01	✓		
19		112729310	Microprocessor & Microcontroller	5EE02	✓		✓
20		112729310	Electrical Machines-Ii	5EE03	✓		✓
21		112729310	Signals & Systems	5EE04	✓		
22		112729310	Free Elective-I : Electronic Test Instruments	5FEET5	✓		✓
23		112729310	Communication Skills	5EE06	✓		
24		112729310	Control Systems- Lab	5EE07	✓		✓

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25		112729310	Microprocessor & Microcontroller - Lab	5EE08	✓		✓
26		112729310	Electrical Machines-Ii – Lab	5EE09	✓		
27		112729310	Communication Skills - Lab	5EE10	✓		
28		112729310	Electrical Power-I	6EE01	✓		
29		112729310	Optimization Techniques	6EE02	✓		
30		112729310	Power Electronics	6EE03	✓		✓
31		112729310	Computer Aided Machine Design	6EE04	✓		✓
32		112729310	Free Elective-Ii : Non Conventional Energy Source	6FEEEE05	✓		✓
33		112729310	Electrical Energy Utilization	6EE06	✓		✓
34		112729310	Power Electronics - Lab	6EE07	✓		✓
35		112729310	Computer Aided Machine Design - Lab	6EE08	✓		✓
36		112729310	Electrical Energy Utilization - Lab	6EE09	✓		✓
37		112729310	Control System-Ii	7EE01	✓		
38		112729310	Power System Operation & Control	7EE02	✓		
39		112729310	Electrical Power-Ii	7EE03	✓		✓
40		112729310	Switchgear & Protection	7EE04	✓		
41		112729310	Project & Seminar	7EE06	✓		
42		112729310	Electrical Power-Ii - Lab	7EE07	✓		
43		112729310	Switchgear & Protection - Lab	7EE08	✓		✓
44		112729310	Power System Stability	8EE01	✓		
45		112729310	High Voltage Engg.	8EE02	✓		
46		112729310	Digital Signal Processing	8EE03	✓		
47		112729310	Professional Elective-Ii : Electric Drives & Control	8EE04	✓		✓
48		112729310	Project & Seminar	8EE05	✓		
49		112729310	Digital Signal Processing - Lab	8EE06	✓		
50	B.E. Computer	112724510	Discret Mathematics	3KE02	✓		
51	Engg.	112724510	Programing Methodology	3KE03	✓		
52		112724510	Data Structure	3KE04	✓		✓
53		112724510	Analog Electronics & Digital Logic Design	3KE05	✓		
54		112724510	Enviromental Studies	4ES06	✓		
55		112724510	Programing Methodology-Lab	3KE06	✓		✓
56		112724510	Data Structure -Lab	3KE07	✓		
57		112724510	Analog Electronics & Digital Logic Design -Lab	3KE08	✓		✓
58		112724510	C Skill Lab I	3KE09	✓		
59		112724510	Artificial Inteligence	4KE01	✓		✓
60		112724510	Computer Networks	4KE02	✓		✓



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61	112724510	Operating System	4KE03	✓		✓
62	112724510	Microprocessor And Interfacing	4KE04	✓		✓
63	112724510	Theory Of Computation	4KE05	✓		
64	112724510	Environmental Studies	4ES06	✓		
65	112724510	Computer Networks -Lab	4KE06	✓		✓
66	112724510	Operating System-Lab	4KE07	✓		✓
67	112724510	Microprocessor And Interfacing - Lab	4KE08	✓		
68	112724510	C Skill Lab Ii-Lab	4KE09	✓		✓
69	112724510	Data Communication	5KE01	✓		✓
70	112724510	File Structure And Data Processing	5KE02	✓		
71	112724510	System Software	5KE03	✓		✓
72	112724510	Switching Theory And Logic Design	5KE04	✓		
73	112724510	Free Elective-I (Production Mangement)	5FEME05	✓		
74	112724510	Communication Skills	5KE06	✓		✓
75	112724510	System Software-Lab	5KE07	✓		
76	112724510	Switching Theory And Logic Design-Lab	5KE08	✓		
77	112724510	Communication Skills-Lab	5KE09	✓		✓
78	112724510	Operating System	6KE01	✓		✓
79	112724510	Database System	6KE02	✓		✓
80	112724510	Computer Resource Management	6KE03	✓		
81	112724510	Computer Architecture	6KE04	✓		
82	112724510	Free Elective Ii: Introduction To Wireless Technology	6FEET05	✓		
83	112724510	Professional Ethics	6KE06	✓		
84	112724510	Operating System-Lab	6KE07	✓		✓
85	112724510	Database System-Lab	6KE08	✓		✓
86	112724510	Computer Lab-Ii (Hardware)	6KE09	✓		✓
87	112724510	Signal And System	7KE01	✓		
88	112724510	Computer Networks	7KE02	✓		
89	112724510	Microprocessor And Interfacing	7KE03	✓		
90	112724510	Mobile Computing	7KE04	✓		
91	112724510	Professional Elective-I : Artificial Intelligiance	7KE05	✓		
92	112724510	Computer Networks-Lab	7KE06	✓		
93	112724510	Microprocessor And Interfacing-Lab	7KE07	✓		✓
94	112724510	Mobile Computing-Lab	7KE08	✓		✓
95	112724510	Project And Seminar	7KE09	✓		
96	112724510	Digital Signal Processing	8KE01	✓		




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97		112724510	Embedded System	8KE02	✓		
98		112724510	Software Engg.	8KE03	✓		
99		112724510	Professional Elective-Ii : Multimedia Technologies	8KE04	✓		
100		112724510	Digital Signal Processing-Lab	8KE05	✓		
101		112724510	Embedded System -Lab	8KE06	✓		✓
102		112724510	Project And Seminar	8KE07	✓		
103	B.E.Electronics & Telecommunication Engg.	112737210	Electronics Devices & Circuits	3ETC02	✓		✓
104		112737210	Digital System Design	3ETC03	✓		
105		112737210	Electromagnetic Waves	3ETC04	✓		
106		112737210	Object Oriented Programming (Es)	3ETC05	✓		
107		112737210	Environmental Science	4ES06	✓		
108		112737210	Electronics Devices & Circuits- Lab	3ETC06	✓		✓
109		112737210	Digital System Design-Lab	3ETC07	✓		
110		112737210	Object Oriented Programming - Lab	3ETC08	✓		✓
111		112737210	Electronic Workshop	3ETC09	✓		
112		112737210	Analog & Digital Communication	4ETC01	✓		✓
113		112737210	Analog Circuits	4ETC02	✓		
114		112737210	Network Theory	4ETC03	✓		
115		112737210	Signals And Systems	4ETC04	✓		
116		112737210	Values And Ethics (Hs)	4ETC05	✓		
117		112737210	Environmental Science	4ES06	✓		
118		112737210	Analog & Digital Communication - Lab	4ETC06	✓		
119	112737210	Analog Circuits - Lab	4ETC07	✓			
120	112737210	Network Theory - Lab	4ETC08	✓			
121	112737210	Signals And Systems - Lab	4ETC09	✓			
122	112737210	Analog Electronics-Ii	5ET1	✓			
123	112737210	Power Electronics & Drives	5ET2	✓		✓	
124	112737210	Microprocessor & Microcontroller	5ET3	✓		✓	
125	112737210	Communication Engg.-Ii	5ET4	✓			
126	112737210	Energy Audit & Management	5FEEE5	✓			
127	112737210	Analog Electronics-Ii Lab	5ETp6	✓			
128	112737210	Power Electronics & Drives Lab	5ETp7	✓		✓	
129	112737210	Microprocessor & Microcontroller Lab	5ETp8	✓		✓	
130	112737210	Skill Development Lab -Iii (Simulation)	5ETp9	✓			
131	112737210	Microcontroller Programming & Application	6ET1	✓		✓	
132	112737210	Control System Engg.	6ET2	✓			
133	112737210	Digital Communication	6ET3	✓			




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134	112737210	Digital Signal Processing	6ET4	✓		
135	112737210	Free Elective Ii: Jawa Programming	6FEKE5	✓		
136	112737210	Communication Skill	6ET6	✓		
137	112737210	Digital Communication Lab	6ETp7	✓		
138	112737210	Digital Signal Processing Lab	6ETp8	✓		
139	112737210	Communication Skill Lab	6ETp9	✓		
140	112737210	Skill Development Lab -Iv (Hardware)	6ETp10	✓		
141	112737210	Vlsi Design	7ET1	✓		✓
142	112737210	Digital Image Processing	7ET2	✓		✓
143	112737210	Satellite & Optical Fiber Communication	7ET3	✓		
144	112737210	Industrial Management & Quality Control	7ET4	✓		
145	112737210	Professional Elective I: Computer Organization	7ET5	✓		
146	112737210	Vlsi Design-Lab	7ETp6	✓		
147	112737210	Skill Development Lab-V (Signal Image Processing)	7ETp7	✓		
148	112737210	Project	7ETp8	✓		
149	112737210	Seminar	7ETp9	✓		
150	112737210	Uhf & Microwave	8ET1	✓		
151	112737210	Wireless Communication	8ET2	✓		
152	112737210	Data Communication Network	8ET3	✓		
153	112737210	Embedded System & Rtos	8ET4	✓		
154	112737210	Uhf & Microwaves-Lab	8ETp5	✓		
155	112737210	Skill Development Lab-Vi (Networking)	8ETp6	✓		
156	112737210	Project	8ETp7	✓		
157	112737210	Advanced Optical Communication	1ENTC1	✓		
158	112737210	Random Processes	1ENTC2	✓		
159	112737210	Digital Communication Techniques	1ENTC3	✓		
160	112737210	Digital Signal Processing And Application	1ENTC4	✓		
161	112737210	Elective-I Real Time Embedded System/Data Compression/Artificial Intelligent System/Cryptography & Hetwork Security	1ENTC5	✓		✓
162	112737210	Lab - I (Based On lenc1 & lenc3)	1ENTC6	✓		✓
163	112737210	Lab - Ii (Based On lenc4)	1ENTC7	✓		
164	112737210	Adaptive Signal Processing	2ENTC1	✓		
165	112737210	Wireless Communication	2ENTC2	✓		




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166		112737210	Advanced Computer Network And Programming	2ENTC3	✓		
167		112737210	Rf & Microwave Circuit Design	2ENTC4	✓		
168		112737210	Mobile Computing /Communication System Design/Optical Networks/Speech & Audio Processing	2ENTC5	✓		✓
169		112737210	Lab - I (Based On 2entc2 & 2entc3)	2ENTC6	✓		
170		112737210	Lab - Ii (Based On 2entc1 & 2entc4)	2ENTC7	✓		
171		112737210	Seminar And Dissertation	3ENTC1	✓		
172		112737210	Seminar And Dissertation	4ENTC1	✓		
173	B.E. Mechanical Engg.	112761210	Manufacturing Processes	3ME02	✓		
174		112761210	Mechanics Of Materials	3ME03	✓		
175		112761210	Engg. Thermodynamics	3ME04	✓		✓
176		112761210	Fluid Mechanics	3ME05	✓		✓
177		112761210	Environmental Studies	4ES06	✓		
178		112761210	Manufacturing Processes-Lab	3ME07	✓	✓	✓
179		112761210	Mechanics Of Materials-Lab	3ME08	✓		
180		112761210	Fluid Mechanics-Lab	3ME09	✓		✓
181		112761210	Machine Drawing-Lab	3ME10	✓		✓
182		112761210	Material Science	4ME01	✓		
183		112761210	Energy Conversion - I	4ME02	✓		✓
184		112761210	Manufacturing Technology	4ME03	✓	✓	✓
185		112761210	Basic Electrical Drives & Control	4ME04	✓		✓
186		112761210	Hydraulic & Pneumatic Systems	4ME05	✓		✓
187		112761210	Environmental Studies	4ES06	✓		
188		112761210	Material Science-Lab	4ME07	✓		
189		112761210	Manufacturing Technology-Lab	4ME08	✓	✓	
190		112761210	Basic Electrical Drives & Control-Lab	4ME09	✓		
191		112761210	Hydraulic & Pneumatic Systems-Lab	4ME10	✓		
192		112761210	Production Technology	5ME01	✓	✓	✓
193	112761210	Heat Transfer	5ME02	✓	✓	✓	
194	112761210	Mesurment Systems	5ME03	✓		✓	
195	112761210	Theory Of Mechines - I	5ME04	✓			
196	112761210	Free Elective-I: Basics Of Building Construction	5FEME05	✓			
197	112761210	Production Technology-Lab	5ME06	✓		✓	
198	112761210	Heat Transfer-Lab	5ME07	✓	✓	✓	
199	112761210	Mesurment Systems-Lab	5ME08	✓		✓	
200	112761210	Theory Of Mechines - I-Lab	5ME09	✓			




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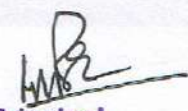
201	112761210	Computer Software Applications - I-Lab	5ME10	✓		
202	112761210	Fluid Power - Ii	6ME01	✓		
203	112761210	Computer Software Applications	6ME02	✓		
204	112761210	Control System Engg.	6ME03	✓		
205	112761210	Theory Of Mechines - Ii	6ME04	✓		
206	112761210	Free Elective-Ii: Power Supply System	6FEEEE05	✓		
207	112761210	Communication Skills	6ME06	✓		
208	112761210	Fluid Power - Ii-Lab	6ME07	✓		✓
209	112761210	Computer Software Applications - Ii-Lab	6ME08	✓		
210	112761210	Theory Of Mechines - Ii-Lab	6ME09	✓		
211	112761210	Communication Skills-Lab	6ME10	✓		
212	112761210	Machine Design & Drawing - Ii	7ME01	✓		
213	112761210	Energy Conversion - Ii	7ME02	✓		✓
214	112761210	Industrial Management & Costing	7ME03	✓		✓
215	112761210	Automation Engg.	7ME04	✓		✓
216	112761210	Professional Elective-I: Non Conventional Energy System	7ME05	✓		✓
217	112761210	Professional Elective-I:Tool Engg.	7ME05	✓		
218	112761210	Project & Seminar	7ME06	✓		
219	112761210	Machine Design & Drawing - Ii-Lab	7ME07	✓		
220	112761210	Energy Conversion - Ii-Lab	7ME08	✓		
221	112761210	Automation Engg.-Lab	7ME09	✓		✓
222	112761210	Professional Elective-I: Non Conventional Energy System-Lab	7ME10	✓		
223	112761210	Professional Elective-I:Tool Engg.-Lab	7ME10	✓		
224	112761210	Professional Elective-Ii: Automobile Engg.	8ME01	✓		✓
225	112761210	Professional Elective-Ii: Refrigeration & Air Conditioning	8ME02	✓		✓
226	112761210	Professional Elective-Ii: Machine Tool Design	8ME02	✓		✓
227	112761210	I.C. Engines	8ME03	✓		✓
228	112761210	Operation Research Techniques	8ME04	✓		
229	112761210	Project & Seminar	8ME05	✓		




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230		112761210	Professional Elective-Ii: Refrigeration & Air Conditioning-Lab	8ME06	✓		✓
231		112761210	Professional Elective-Ii: Machine Tool Design-Lab	8ME06	✓		✓
232		112761210	I.C. Engines-Lab	8ME07	✓		
233		112761210	Operation Research Techniques- Lab	8ME08	✓		
234	B.E. Civil Engg.	112719110	Engg. Mathematics-Iii	3CE01	✓		
235		112719110	Strength Of Materials	3CE02	✓		
236		112719110	Building Construction And Engg. Geology	3CE03	✓		
237		112719110	Transportation Engg.	3CE04	✓		
238		112719110	Concrete Technology & Rcc	3CE05	✓		
239		112719110	Environmental Studies	4ES06	✓		
240		112719110	Strength Of Materials - Lab	3CE06	✓		
241		112719110	Building Construction And Engg. Geology - Lab	3CE07	✓		
242		112719110	Transportation Engg. - Lab	3CE08	✓		
243		112719110	Concrete Technology & Rcc - Lab	3CE09	✓		✓
244		112719110	Building Planning Desining And Cad	4CE01	✓		✓
245		112719110	Hydrology & Water Resources Engg.	4CE02	✓		✓
246		112719110	Surveying	4CE03	✓	✓	✓
247		112719110	Geotechnical Engg.-I	4CE04	✓		
248		112719110	Structural Analysis -I	4CE05	✓		
249		112719110	Environmental Science	4ES06	✓		
250		112719110	Building Planning Desining And Cad -Lab	4CE06	✓		✓
251		112719110	Hydrology & Water Resources Engg. -Lab	4CE07	✓		✓
252		112719110	Surveying -Lab	4CE08	✓	✓	
253		112719110	Geotechnical Engg.-I -Lab	4CE09	✓		
254		112719110	Reinforced Cement Concrete-Ii	5CE01	✓		✓
255		112719110	Fluid Mechanics-Ii	5CE02	✓		✓
256		112719110	Building Planning And Cad	5CE03	✓		✓
257	112719110	Surveying-Ii	5CE04	✓	✓		
258	112719110	Free Elective-I (Production Mangement)	5FEME05	✓			
259	112719110	Communication Skills	5CE06	✓			
260	112719110	Fluid Mechanics-Ii-Lab	5CE07	✓		✓	
261	112719110	Building Planning And Cad- Lab	5CE08	✓		✓	




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262	112719110	Surveying-Ii-Lab	5CE09	✓	✓	
263	112719110	Communication Skills-Lab	5CE10	✓		
264	112719110	Numerical Methods And Computer Programming	6CE01	✓		
265	112719110	Design Of Rcc & Prestress Concrete Structures	6CE02	✓		✓
266	112719110	Water Resources Engg.-I	6CE03	✓	✓	✓
267	112719110	Transportation Engg.-Ii	6CE04	✓	✓	✓
268	112719110	Free Elective-Ii(Non Conventional Energy System)	6FEME05	✓		
269	112719110	Estimating And Costing	6CE06	✓		
270	112719110	Numerical Methods And Computer Programming-Lab	6CE07	✓		
271	112719110	Structural Design-I-Lab	6CE08	✓		✓
272	112719110	Estimating And Costing-Lab	6CE09	✓		
273	112719110	Minor Project-Lab	6CE10	✓	✓	
274	112719110	Theory Of Structurs-Ii	7CE01	✓		
275	112719110	Geotechnical Engg.-Ii	7CE02	✓		
276	112719110	Design Of Steel Structures	7CE03	✓		✓
277	112719110	Environmental Engg.-I	7CE04	✓		✓
278	112719110	Professional Elective-I: Advanced Earthquake Engg.	7CE05	✓		
279	112719110	Computer Aided Analysis & Design - Lab	7CE06	✓		
280	112719110	Geotechnical Engg.-Ii - Lab	7CE07	✓		
281	112719110	Structural Design-Ii - Lab	7CE08	✓		
282	112719110	Project And Seminar	7CE09	✓		
283	112719110	Water Resources Engg.-Ii	8CE01	✓		
284	112719110	Environmental Engg.-Ii	8CE02	✓		
285	112719110	Project Planning And Management	8CE03	✓		
286	112719110	Professional Elective-Ii: Advanced Waste Water And Industrial Waste Treatment	8CE04	✓		✓
287	112719110	Water Resources Engg.-Ii - Lab	8CE05	✓	✓	✓
288	112719110	Environmental Engg.-Ii - Lab	8CE06	✓		✓
289	112719110	Project And Seminar	8CE07	✓		



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Course Outcomes:

After Completing this course, students will be able to:

1. Explain the construction and working of DC Machines.
2. Illustrate the different Characteristics, types, their applications and parallel Operation of D.C. Generators.
3. Demonstrate the various characteristics, starting, speed control and braking operation on DC motors
4. Analyze the performance of DC machines by conducting the various tests on it.
5. Determine the parameters of equivalent circuits, performance parameters of single phase transformer and merits & demerits of autotransformer
6. Explain the construction, working, different connections, applications and testing of three phase transformer.

Unit I :

D.C. Machines: Construction, Principle of Operation, EMF Equation, Torque Equation, Armature winding – Lap, wave, single layer, double layer, Armature Reaction and commutation, method of improving commutation.

Unit II :

D.C. Generators:Types, Characteristics and Applications of D. C. Generators, Parallel Operation of D.C. Generators, Introduction to testing of D. C. Generators as per Indian standard.

Unit III :

D.C. Motors:Types, Characteristics & Modified Characteristics, Applications of D.C. Motors. Starting, Electric Braking, Speed Control of DC Motors. Losses, efficiency and testing of DC Motors.

Unit IV :

Single phase Transformer:Working Operation, EMF Equation, and separation of core losses in to its component, Equivalent Circuit, Parallel Operation, Open Circuit, Short Circuit & Sumpner's test on transformer as per Indian standard. Single phase Autotransformer: - construction, working, merits, demerits and its application.

Unit V :

Three Phase Transformer: Construction, Working, Types, connections, vector group connections, open delta Connection, OC, SC, Heat run test, load test, magnetic balance, vector group test on three phase transformer.

Unit VI :

Three Phase Transformer: Three-winding transformer, On load & Off load tap changers, Scott Connection, Power transformer and Distribution transformer, Waveforms of no load current & inrush current phenomenon.

Text Book:

Electrical Machines by D P Kothari & I J Nagrath Published by Tata McGraw-Hill Book Comp. New Delhi.

Reference Books:

- 1) C. Dawes: Electrical Engineering, Vol.I: Direct current (IV Edition), (McGraw Hill Book Company)
- 2) H. Cotton: Advance Electrical Technology, (Wheeler publication)
- 3) Indian Standard Guide for testing DC Machine. IS: 9320-1979, (Indian Standards Institution, New Delhi.)
- 4) Indian Standard Specification for safety transformer. IS: 1416-1972, (Indian Standards Institution, New Delhi.)

3EE04/3 EP04 – ENERGY RESOURCES AND GENERATION

Course Outcomes:

A student, on completion of this course, will be able to:

1. Explain the operation of Thermal, Hydro, Nuclear and Diesel power plants.
2. Summarize solar energy conversion, solar radiation measuring instruments, wind energy conversion and their applications.
3. Outline the principle and operation of fuel cells, ocean & tidal energy conversion, and other non-conventional energy resources.
4. Determine the various factors and curves related to electrical load & generating plant.

Unit I:

Conventional and non conventional energy sources, Indian Energy Scenario.

Thermal and hydro power plant: Layout of Thermal power plant, Selection of site, working of various parts: Economizer, air preheater, condenser, cooling tower, ash & coal handling plant, advantages & disadvantages. Layout of Hydro power plant, classification of hydro power plant according to available head, nature of load, functions of different components and their working, mini and micro hydro-electric power generation, advantages & disadvantages.



Unit II :

Nuclear and Diesel power plant: nuclear fission and fusion, Layout of Nuclear power plant, Selection of site, Functions of different components of nuclear plant, types of nuclear reactors , advantages & disadvantages of different nuclear reactors, nuclear waste disposal., safety measures.
Layout of Diesel power plant, functions of different components of diesel plant, advantages & disadvantages.

Unit III :

Solar Energy and its measurement: Solar cell, array & module, Solar constants, solar radiation at earth's surface, Solar radiation geometry, solar radiation measurement, estimation of average solar radiation, solar radiation on tilted surface, principle of solar energy conversion in to heat, types of solar collectors, energy balance equation and collector efficiency.

Unit IV:

a) **Fuel cells:** Chemistry applied to fuel cells, principle and operation ,classification and types of fuel cells, performance characteristics of fuel cells, classification of fuel cell system.

b) **Wind energy :**Basic principle of wind energy conversion, wind data and energy estimation, selection of site ,basic components of wind energy conversion system ,classification of WEC systems ,generating system, applications of wind energy.

Unit V :

Ocean, Tidal & Other non-conventional energy resources: Ocean energy resources, ocean energy routes, ocean thermal energy conversion, basic principle of tidal power, components of tidal power plants, operation methods of utilization of tidal energy, estimation of power and energy in single and double basin tidal system., Operating principles of energy from biomass, energy from biogas, geothermal energy, MHD power generation, energy from urban and rural waste.

Unit VI :

Load-Generation factors: connected load, maximum demand, demand factor, load factor, diversity factors, plant capacity and utilization factor, types of loads, load curve, chronological load curve, load duration curve, energy load curve, energy duration curve, load survey, base load and peak load station.

Text Book: Generation of electrical energy by B.R.Gupta, Eurasia Publishing House, New Delhi.

Reference Books:

1. Non conventional energy resources. By G.D.Rai, Khanna Publishers New Delhi
2. Solar energy by S.P.Sukhatme Tata McGraw Hill Publication
3. Principles of Power System by V.K.Mehta, S.Chand publication.
4. Conventional energy technology by S.B.Pandya, Tata McGraw Hill Publication.

3EE05/3 EP05ELECTRONIC DEVICES AND CIRCUITS

Course Outcomes:

After successfully completing the course, the students will be able to :

1. Demonstrate the knowledge of semiconductor physics and PN Junction Diode
2. Analyze the rectifier and regulator circuits.
3. Analyze the operational parameters of BJT
4. Analyze various multistage amplifier circuits
5. Demonstrate the knowledge of JFET, MOSFET, UJT and their operational parameters

UNIT-I:

P-N Junction diode theory, Energy bands in intrinsic and extrinsic silicon, carrier transport, diffusion current , drift current, mobility and resistivity, generation and recombination of carriers, PN junction diode , zener diode, zener diode as voltage regulator, Numericals based on voltage regulator (line and load regulation, Numericals based on resistivity, conductivity, mass action law)

UNIT-II:

Half wave, full wave center tapped full wave and bridge rectifier. Filters-C, LC and their analysis, clipping and clamping, Numericals based on clipping and clamping

UNIT-III:

Theory and Analysis of Bipolar Junction transistor, 'H' Parameter, methods of biasing, their needs, 'Q' and stability factors, compensation techniques.



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UNIT-IV

Study of typical transistor amplifier circuits i) Emitter follower, ii) Darlington emitter follower, iii) Bootstrap emitter follower, iv) RC coupled amplifier, v) Transformer coupled amplifier, vi) Cascaded amplifier, vii) Direct coupled amplifier, viii) Cascade stage.

UNIT-V :

FETs (JFET & MOSFET): Types, Characteristics and parameters (μ , g_m & R_{ds}), Applications of FET amplifiers, UJT: Characteristics, working, UJT as relaxation oscillator.

UNIT-VI :

Theory, construction and applications of Schottky diode, Tunnel diode, Varactor diode, Selenium diode, LED, Photo diode, PIN diode, photo-transistor.

Text Book: Millman's Electronic Devices & Circuits by J.Millman, C.Halkias, Satyabrata Jit TMH 3rd ed, 2nd reprint 2011.

Reference Books:

1. Electronic Devices and Circuits 5/e – David Bell Oxford University Press
2. Microelectronic Circuits 5/3 – Sedranad Smith Oxford University Press
3. Boylestad R. and "Electronics Devices & Circuits", Prentice Hall of India Private Limited, New Delhi (Fifth Edition), 1993.

3EE06/3 EP06/3EX06 ELECTRICAL CIRCUIT ANALYSIS LAB

Minimum eight experiments based on the syllabus content of 3EP02 Electrical Circuit Analysis. The intensive list of experiment is given below.

1. Verification of output response of series R-C circuit for step input
2. Study of dot convention and determination of
 - A) Mutual inductance
 - B) Coupling coefficient of b transformer
3. Verification of Mesh and Node analysis.
4. Verification of Superposition theorem.
5. Verification of Thevenin's theorem.
6. Verification of Maximum Power Transfer theorem.
7. Verification of reciprocity theorem.
8. Study of Milliman's theorem & verification.
9. Verification of Norton's theorem.
10. Determination of ABCD parameters T-network & Π -network.
11. Study of Tie set and Cut set schedule for a given network.
12. MATLAB simulation for α/p verification of any theorem.
13. Determination of Z and Y parameter.
14. Determination of hybrid parameter.

3EE07/3 EP07/3EX07 ELECTRICAL MACHINES - I LAB.

Minimum eight experiments based on the syllabus content of 3EP03 Electrical Machines – I.

The indicative list of experiments is given below.

1. Plot the OCC of DC generator and find its critical resistance and critical speed.
2. To study the build-up of DC shunt generator, calculate critical resistance at different speeds.
3. Plot/Compare: External, Internal Characteristics of DC Shunt/series/compound generator.
4. Calculate the efficiency and voltage regulation of DC generator by the direct load test.
5. Speed Control of DC Shunt motor by armature control & Field Control method.
6. Perform the direct load test on DC series/shunt/compound motor to plot its performance characteristics, and determine its efficiency and speed regulation.
7. Conduct the Swinburn's test on DC machine to estimate its performance at any desired load condition.
8. Conduct the Hopkinson's test on DC Machine to analyze its performance.
9. Perform Electric Braking Operation on DC shunt Motor.
10. Conduct the Polarity test and Ratio test on transformer
11. Calculate the Equivalent circuit parameters of single-phase transformer by performing OC & SC test on it and determine its efficiency and voltage regulation.



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YAVATMAL - 445001

SantGadge Baba Amravati University, Amravati



CERTIFICATE

This is to certify that the dissertation entitled **“WIRELESS ELECTRIC VEHICLE CHARGING SYSTEM”** is a bonafide work done under our supervision and is submitted to SantGadge Baba Amravati University, Amravati in partial fulfillment of the requirement for the Bachelor of Engineering in Electrical.

Submitted by

Mr. Ankush Kale
Mr. Pritish Chele
Ms. Pranjali Mahure

Mr. Jay Ade
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Mr. Devanand Uke

Prof. M. D. Hedau
Project Guide
Elect.Engg. Dept.

Dr. V.G. Neve
H.O.D. of
Elect. Engg. Dept.

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2020 - 2021


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ABSTRACT

In recent years with the rapid development of electric vehicles (EV's) of new energy industry, higher requirements are put forward for convenience, safety and reliability of the charging of electric vehicles and making it autonomous and with a reduced user intervention. Inductive charging, or wireless charging, is an upcoming technology for the electric vehicle or in the automotive industry. Wireless power transfer (WPT) is the present innovation utilizing magnetic resonance which could set blunder free from the disappointing wires. In fact, the WPT receives similar ideas which have just been created with the term inductive power transfer. WPT innovation is growing quickly as of late. The main function of wireless charging is to transmit power by an electromagnetic field across a given space. As electric vehicles are a better alternative to curb the ongoing pollution it is vital to make amendments in the battery charging process to attain greater reliability. Electric vehicle battery charging can be done by wireless power charging.

Wireless charging of electric vehicles can be implemented by the static charging system or dynamic charging system. Static charging system can be implemented to charge the vehicle when it is in static condition i.e. parking it at the charging point on the transmitter. Dynamic charging system can be implemented to charge the vehicle when it is in motion. Wireless power charging is done by inductive coupling. Inductive coupling can be done in both static and in dynamic wireless charging. By reconfiguring the transformer and altering high frequency, energy is being transferred with low energy losses and fewer demands on the primary circuit. Sufficient power for the battery can be transferred from the transmitter to the receiver without energy loss. Electric power is then transmitted to the chargeable batteries which is electrically coupled to the receiver through the air core transformer. The dynamic charging will promote the use of electric vehicles and reduce petroleum fuel consumption. Delays in traffic signals can now be provided with longer period of charging. Bad weather conditions like rain and snow do not affect the charging capabilities of electric vehicles.




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12. Perform the direct load test on single phase/three phase transformer and determine its efficiency and voltage regulation.
13. Conduct back to back test (Sumpner's test) on two single phase transformers and determine the temperature rise.
14. Conduct the magnetic balance test on three phase transformer.
15. Conduct the vector group test on three phase transformer.
16. Conversion of three phase to two phase supply system using Scott Connection
17. Capture the waveform of inrush current of single phase/three phase transformer using DSO.

Reference:

S.G.Tarnekar, P.K.Kharbanda, S.B.Bodkhe, S.D.Naik and D.J.Dahigaonkar "Laboratory Courses in Electrical Engineering", S. Chand & Co. New Delhi, 2013.

3EE08/3 EP08/3EX08 ELECTRONIC DEVICES & CIRCUITS LAB

Minimum eight experiments based on the syllabus content of 3EP05 Electronic Devices & Circuits. The intensive list of experiment is given below.


1. To study and verify V-I characteristics of semiconductor diode
2. To study and verify V-I characteristics of Zener diode.
3. To verify the performance of half wave rectifier circuit with and without filter.
4. To verify the performance of full wave bridge rectifier circuit and determination of load regulation.
5. To verify the performance of Zener voltage regulator.
6. To verify characteristics of bipolar junction transistor
7. To study and perform C-E amplifier gain with variation of load resistance.
8. To study and verify the characteristics of FET
9. To study UJT as a relaxation oscillator
10. To study phase shift oscillator & determine frequency of oscillation
11. To study characteristics of MOSFT
12. To study clipper circuits using diodes
13. To study clamper circuits using diodes
14. To study and verify operation of cascade amplifiers
15. To verify operation of transistor as a switch

3EE09/3 EP09/3EX09 ELECTRICAL TECHNOLOGY - LAB

Perform minimum Eight practicals / demonstration from the following list and prepare the report as a term work for this laboratory.

1. Introduction to standard symbols used in wiring diagrams
2. Introduction to different wiring accessories.
3. Demonstration of different types of wirings eg. Domestic wiring, commercial wiring, Industrial wiring.
4. Connection of Staircase wiring, Godown wiring, fluorescent lamp, Ceiling fan, air cooler etc
5. Domestic wiring diagrams
6. Connections of switch board, MCB and energy meter
7. Testing and electrical Maintenance of domestic appliances like lamps, electric iron, heater, geyser, air cooler, fan, microwave-oven, induction heater, etc.
8. Insulation resistance and earth resistance measurement
9. Conduct the load survey for domestic/commercial /Industrial consumers
10. Illumination system Design (selection of type and number of lamps required for any location)
11. Calculation of Energy bill for LT & HT consumers.
12. Safety precautions while working with electrical system
13. Demonstration of first aid treatment after getting electric shock.
14. Study of various components of solar power plant.
15. Design calculation of small capacity roof top solar power plant




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Reference Books:

1. Mathematical Statistics by J. N. Kapoor, Tata McGraw Hill Pub. Co. Ltd
2. Numerical Methods in Engineering and Science; B. S. Grewal (Khanna Publishers)
3. PERT and CPM- Principles & Application; L. S. Srinath (Affiliated East-West press pvt. Ltd)
4. Optimization for Engineering Design - Algorithms and Examples by Kalyan Moy Deb, PHI Pub.

4EE04/ 4EP05 /4EX04 ANALOG AND DIGITAL CIRCUITS

Course Outcomes:

After completing the course, students will be able to

1. Explain the principles of operational amplifiers, parameters of op-amp
2. Illustrate the linear and nonlinear applications of op-amp
3. Demonstrate the knowledge of Voltage regulator and Timer ICs
4. Describe the working of Logic families and their applications.
5. Demonstrate the knowledge of combinational and sequential circuits and its application

Unit I:

Introduction to IC's: Operation amplifier; Block schematic internal circuits, Level shifting, overload protection, study of IC 741 op-amp, Measurement of op-amp parameter.

Unit II:

Linear and Non-linear Application of Op-amp: **Inverting and non inverting amplifiers**, voltage follower, integrator, differentiator differential amplifier, op amp as adder subtractor, op amp as a log and antilog amplifier

Sinusoidal RC-phase shift and Wein bridge oscillators, clipping, clamping and comparator circuits using op-amps.

Unit III:

Other linear IC's : Block schematic of regulator IC 723, and its applications, study of 78XX, 79XX and its applications, SMPS, Block schematic of timer IC 555 and its applications as a timer, a stable, mono stable, bistable multivibrator and other applications, Operation of phase lock loop system and IC 565 PLL, its application.

Unit IV: Basic Logic Circuits : Logic gate characteristics, NMOS inverter, propagation delay, NMOS logic gate, CMOS inverter, CMOS logic gates, BJT inverter, TTL, NAND gate, TTL output, state TTL logic families, ECL circuits, composition logic families.

Unit V:

Combinational Digital Circuits: Standard gate assemblies, Binary adder, Arithmetic functions, Digital comparator, Parity check generator, Decoder / demultiplexer, Data selector / multiplexer, Encoder

Unit VI:

Sequential Circuits and Systems: Bistable Latch, Flip-Flop clocked SR,J-K, T, D type shift Registers, counter. Design using flip-flops, Ripple and synchronous types, application of counters

Books Recommended:-

Text Book: Millman, Microelectronics, 2nd Ed., McGraw Hill.

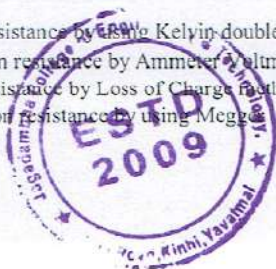
Reference Books:

1. Gayakwad, Op-Amp & LLG, 2nd Ed.
2. Malvino & Leach, Digital Principles & Applications, 4th Ed., McGraw Hill.
3. K.B.Botkar, Integrated Electronics (Khanna Publishers.)

4EE07/ 4EP06 /4EX06 ELECTRICAL MEASUREMENTS & INSTRUMENTATION- LAB

Minimum eight experiments based on the syllabus content of 4EP02 Electrical Measurements & Instrumentation. The intensive list of experiment is given below.

1. Measurements of Low resistance by Kelvin double Bridge.
2. Measurements of Medium resistance by Ammeter/voltmeter method/Wheatstone Bridge
3. Measurement of High resistance by Loss of Charge Method.
4. Measurement of Insulation resistance by using Megger.



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6EE05 UTILISATION OF ELECTRICAL ENERGY

SECTION-A

- Unit I: Concept of electrical drive, classification, advantages of electrical drive, selection criterion for electrical motor, size, specification and type of motor, mechanical features of motor, transmission of drive, industrial application, general workshop, Textile mill, Paper mill, Cement mill, Coal mining, Sugar mill, Printing industry.
- Unit II: Types of duties, continuous, intermittent and short time, heating and cooling of motor, rating calculations for these duties, use of fly wheel and fly wheel calculations. Introduction for conducting and reporting the test on induction motors as per Indian standard.
- Unit III: Characteristics of DC motors, three-phase induction motors, single-phase induction motors. Quadrantal diagram of speed-torque characteristics of motors, starting methods, different methods of speed control, braking of motors, plugging, rheostatic and regenerative braking.

SECTION -B

- Unit IV: Requirement of ideal traction system, system of track electrification and their comparison, speed time curves, energy consumption calculation, calculation of tractive efforts.
- Unit V: Traction motors, general features and types, characteristics, control of locomotive motor coaches, series-parallel control. Overhead equipments, collector gear for overhead equipments.
- Unit VI: a) Nature of light-units, luminous efficiency, Glare production of light, Polar curves, control of light by reflection, refraction and diffusion. Lighting calculations, factory lighting, flood lighting, street lighting.
b) Methods of heating and welding furnaces


TEXT BOOKS :

- 1) E.O.Taylor : Utilization of Electric Energy in SI Units, published by Orient Longman Ltd.
- 2) S.K.Pillai : A First Course in Electrical Drives, published by New Age International.

REFERENCE BOOKS :

- 1) Vedam Subrahmanyam : Electric Drives, published by Tata McGraw Hill Publishing Co. Ltd., New Delhi.
- 2) C.L.Wadhwa : Generation Distribution and Utilization of Electrical Energy, published by New Age International Pvt. Ltd.
- 3) Specification of Three Phase Induction Motors as per Indian Standard, published by Indian Standard Institute, New Delhi.
- 4) H.Pratap : Utilization of Electrical Energy.




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SantGadge Baba Amravati University, Amravati



CERTIFICATE

This is to certify that the dissertation entitled "**SIMULATION AND DESIGN OF WIRELESS CHARGING OF ELECTRIC VEHICLE**" is a bonafide work done under our supervision and is submitted to SantGadge Baba Amravati University, Amravati in partial fulfillment of the requirement for the Bachelor of Engineering in Electrical.

Submitted by

Miss. Jaya A. Kamble
Miss. Sonam A. Wankar
Miss. Pranjali S. Masaram

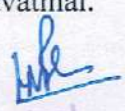
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ABSTRACT

Wireless power transfer (WPT) using magnetic resonance is the technology which could set human free from the annoying wires. In fact, the WPT adopts the same basic theory which has already been developed for at least 30 years with the term inductive power transfer. WPT technology is developing rapidly in recent years. At kilowatts power level, the transfer distance increases from several millimeters to several hundred millimeters with a grid to load efficiency above 90%. The advances make the WPT very attractive to the electric vehicle (EV) charging applications in both stationary and dynamic charging scenarios.

FOR energy, environment, and many other reasons, the electrification for transportation has been carrying out for many years. In railway systems, the electric locomotives have already been well developed for many years. A train runs on a fixed track. It is easy to get electric power from a conductor rail using pantograph sliders. However, for electric vehicles (EVs), the high flexibility makes it not easy to get power in a similar way. Instead, a high power and large capacity battery pack is usually equipped as an energy storage unit to make an EV to operate for a satisfactory distance. Until now, the EVs are not so attractive to consumers even with many government incentive programs. Government subsidy and tax incentives are one key to increase the market share of EV today. The problem for an electric vehicle is nothing else but the electricity storage technology, which requires a battery which is the bottleneck today due to its unsatisfactory energy density, limited life time and high cost.




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UNIT-V: Numerical Analysis : Solution of algebraic and transcendental equations by Newton-Raphson method & method of false position. Solution of system of linear equations by Gauss-Seidal method, Relaxation method. Solution of first order ordinary differential equations by Picard's, modified Euler's, Runge-Kutta and Taylor's method. (10 Hrs.)

UNIT-VI: Vector Calculus :- Scalar and vector point functions, Differentiation of vectors, Gradient of a scalar point function, Directional derivatives, Divergence and curl of a vector point function and their physical meaning, line, surface, volume integrals, irrotational and solenoidal vector fields, Stoke's and Divergence theorem (without proof). (10 Hrs.)

Books Recommended :-

Text Books:

1. Text book on Applied Engineering Mathematics, Vol. II, J.N. Wartikar and P.N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
2. Higher Engineering Mathematics, B.S Grewal, Himalaya Publishing House.
3. Applied Mathematics, Vol. III, J.N. Wartikar and P.N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.

Reference Book : Advanced Engineering Mathematics, Erwin Kreyzig, John Wiley.

3ME02 MANUFACTURING PROCESSES

Course Learning Objectives :

1. To study the manufacturing processes in sand casting industries, tooling and equipment
2. To study the metal melting process, melting furnaces and defects in casting
3. To study the various types of casting processes
4. To study the mechanical working of metals and allied processes
5. To study the mechanical joining processes and fastenings
6. To study welding processes and surface treatment processes

Course Outcomes :

Students will understand the :

1. basic concept of foundry process and related activities
2. concept of complete sand casting process with advance casting methods
3. fundamentals of welding processes
4. various processes like electroplating, anodizing etc and their importance in industries

SECTION- A

Unit-I : Introduction to manufacturing processes & classification; Introduction to pattern making Pattern materials, pattern making tools, allowances, Types of patterns, functions of patterns, General properties of moulding sands, Mold hardness. Preparation of sand moulds of different types, Moulding processes, core making, core prints, core boxes. Sand casting Processes - Basic principle and Terminology of sand casting, design of gating and riser system – by numerical approach. (9Hrs)

Unit-II : Technology of melting and casting - Melting furnaces, crucibles, pit, open hearth, gas fired cupola, cupola operation and electric hearth furnaces, Electric furnaces - Direct Arc, Indirect arc and electric induction furnace.

Defects in castings and its types, Causes and remedies of casting defects. Origin and classification of defects, shaping faults, Inclusion and sand defects, Gas defects, shrinkage defects, contraction defects, dimensional errors. Inspection and testing of castings:- Radiography, ultrasonic, Eddy current testing, fluorescent penetrant test. (7 Hrs)

Unit III: Casting processes and their principle of operation and applications permanent mold casting, slush casting, shell molding, Investment or lost wax casting, vacuum process, centrifugal casting, continuous casting, Die casting equipment and processes for Gravity, pressure and vacuum casting methods, cleaning of castings, Modernisation & Mechanization of foundries. (8 Hrs)

SECTION – B

Unit IV: Mechanical working of metals: Principle of hot and cold working process, and its types. Extrusion, rolling, drawing, sheet metal forming, etc. (8 Hrs)



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Unit VI: Submerged arc welding & resistance welding :- Heat generation in resistance welding, operational characteristics of resistance welding processes such as spot welding, projection welding, butt welding. Principle of operation of friction welding, forge welding, plasma arc, thermit welding. Welding defects, Testing and Inspection of welds, Ultrasonic, Electroslag, Electron Beam, laser welding, weldability. Surface Treatment-Electroplating, electroforming, and anodising, metal spraying, shot peening, polishing, mechanical cleaning. (9 Hrs)

Books Recommended :

Text Books:-

1. Workshop Technology Vol. I by Bawa, Tata Mc-Graw Hill Publication.
2. Workshop Technology Vol I by Hajra Chaudhary, Dhanpat Rai & Sons 2001.

References:-

1. Workshop Technology Vol I by Raghuvanshi.
2. Manufacturing Processes by J.P. Kaushish; PHI
3. Processes and Materials of Manufacture by R.A.Lindberg, PHI Pub 2001.
4. Manufacturing technology Vol. I, by P. N. Rao.

3ME07 MANUFACTURING PROCESSES - LAB

Practices:-

1. Study of safety precautions in workshop practices.
2. Foundary:- Any two of the following jobs Sand preparation and practice in moulding of various types of patterns:- Pattern making - one job, Moulding - one job Casting - one job.
3. Joining Processes :Two composite jobs involving electric welding, gas welding and resistance welding process.
4. One job on Mechanical Working of Metals like piercing / drawing / bending/ embossing/ spinning/ upsetting, etc.

A journal should be prepared and submitted on above term work.

The practical examination shall consist of a job preparation and college assessment should be based upon the jobs, term work and viva examination.

3ME03 MECHANICS OF MATERIALS

Course Learning Objectives :

1. To develop theoretical basis for stress, strain concept in various components under study
2. To study mechanical behavior of engineering material
3. To familiarize about finding shear force, bending moment, torsion, slope and deflection of various types of beams with different loading conditions
4. To build the necessary background to apply the knowledge of mechanics of materials on engineering applications

Course Outcomes :

Students will be able to -

1. Determine the stress & strain in the member subjected to axial, bending & torsional load
2. To observe different types of material behavior such as elastic, plastic, ductile and brittle
3. Apply SF and BM diagrams to analyse resistance offered by the beam and able to solve practical problems in real world
4. Apply deflection criteria to check the stability of beam

SECTION-A

Unit-I: 1. Mechanical properties: Concept of direct, bending and shear stresses and strains, stress-strain relations, Biaxial and triaxial loading, elastic constants and their relationship, stress-strain diagrams and their characteristics for mild steel, and other metals, factor of safety, stress and strain of bar due to self weight.

2. Uniaxial stresses and strains: Stresses and strains in compound bars in uniaxial tension and compression, temperature stresses in simple restrained bars and compound bars of two metals only, introduction to



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CERTIFICATE

This is to Certify that the project report entitled "**AUTOMATIC MOTOR OPERATED JACK**" has been successfully completed by **RAJESH WAMAN GANDATWAR, RITESH CHANDRABHAN BORCHATE, RUPESH P. SAWALE, RUSHIKESH ARVIND PATTE, SACHIN ASHOK MANDAWKAR, SACHIN D. SHAMSUNDAR** under the guidance of **PROF. B. K. CHAVHAN** in recognition to the partial fulfillment for the award of the degree of Bachelor of Engineering in Mechanical Engineering at "Jagadamba College of Engineering & Technology Yavatmal – 445001. (An institution affiliated to Sant Gadge Baba Amravati University, Amravati)

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ABSTRACT

In small-scale industries and automobile maintenance shops, there are frequent needs of **tightening and loosening of screws, drilling, boring, grinding machine.** Huge and complicated designed parts cannot be machined with the help of an ordinary machine and further for every operation separate machine is required therefore increasing the number of machines required and increasing the area required for them to be accommodated and hence overall initial cost required is increased.

In a single machine all the above specified operation can be carried out, i.e., after drilling, the drill head is removed from the barrel key and the required tools like grinding wheels, boring tool etc., can be attached, and the operation can be performed. By the application of pneumatics, the pneumatic cylinder with piston which is operated by an air compressor will give the successive action to operate this machine. By this we can achieve our industrial requirements.

Keywords: drilling, grinding wheels.



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RECOMMENDED BOOKS:

Text books :

1. Thermal engineering; Mahesh M Rathore; Tata McGraw-Hill
2. Thermal Engineering R.Yadav; Central publication
3. Non-conventional Energy Sources B. H. Khan Tata McGraw-Hill
4. Non-conventional Energy Sources G. D. Rai.

Reference books:

1. Steam Turbine; Kearton; Oscar Publications.
2. Thermal Power Engineering; Mathur Mehta; Tata McGraw-Hill
3. Power Plant Engineering. P. K. Nag
4. Power Plant Engineering; R. K. Rajput ; Laxmi Publications
5. Thermal Engineering, P.L.Ballaney; Laxmi Publications.

4ME03 MANUFACTURING TECHNOLOGY

Course Learning Objectives :

1. To study the mechanics of metal cutting, tool characteristics and cutting forces
2. To study the turning operations using lathe and CNC machines
3. To study the working of drilling and boring machines
4. To study the working of milling and gear cutting machines
5. To study the machining operations using grinding, shaper, planer and slotter machines
6. To study the unconventional machining processes

Course Outcomes :

Students will be able to -

1. Apply the knowledge of theory of metal cutting, tool selection & calculate cutting forces
2. Demonstrate the knowledge of basics of turning operations
3. Understand the drilling and boring operations and working of drilling & boring machines
4. Understand the milling and gear cutting operations and working of respective machines
5. Understand the working of grinding, shaper, planer and slotter machines
6. Understand the knowledge of unconventional machining processes

SECTION – A

UNIT I : Theory of Metal cutting; Mechanics of Metal cutting, Tool material, Tool Geometry, Cutting tool classification, Tool life, Tool wear, Calculation of Cutting forces, Machinability, Cutting fluids, Chip thickness ratio, Merchant circle. (8 Hrs)

UNIT II : Construction, Operations and accessories of centre lathe, introduction of capstan & turret lathe, indexing mechanism, bar feeding mechanism, Machine tool classification. Numerical approach. Taper turning & Screw cutting & basic concept of CNC. Introduction, working principal & CNC turning operation. (10 Hrs)

UNIT III : a) Drilling operation : Drilling M/cs general purpose, Mass production and special purpose drilling M/cs.
b) Introduction & types of Boring. Boring M/c :- Horizontal, Vertical and jig Boring M/c. Introduction to Broaching and its types, broach terminologies, etc. (8 Hrs)

SECTION - B

UNIT IV : (a) Calculation of machining time for Milling.
(b) Milling M/c :- Types, Types of Milling Cutters, Dividing head, Compound and differential indexing.
c) Gear producing M/cs. (6 Hrs)

UNIT V : a) Grinding Machines: Bench grinders, surface grinders, centres grinders, types of bonds & Abrasive modification of grinding wheels.
b) Study of various part & Operation of Shaper, Planer, Slotter. (6 Hrs)

UNIT VI : Unconventional Machining Processes:-
a) Mechanical Processes:- Ultrasonic Machining - principle and applications. process parameters: Abrasive and water parameters involved.
b) Thermal processes:- Election Beam Machining - Generation of beam, principle and applications : Laser Beam machining applications : Plasma-arc machining- Concept and generation of plasma, principle of PAM, applications.



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CERTIFICATE

This is to Certify that the project report entitled "**HYDROPNEUMATIC BAR CUTTER**" has been successfully completed by SHEIKH ARIF SHEIKH VALI, SHRIPAD ATRAM MUSALE, SHRIPAD P. LINGOT, SHUBHAM CHINCHALKAR, SHUBHAM VASUDEV RAGHATE, SURAJ VITTHAL PIMPALSHENDE under the guidance of PROF. S. S. BELE in recognition to the partial fulfillment for the award of the degree of Bachelor of Engineering in Mechanical Engineering at "Jagadamba College of Engineering & Technology Yavatmal – 445001. (An institution affiliated to Sant Gadge Baba Amravati University, Amravati)

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Dr. H. M. Baradkar
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ABSTRACT

Shaper is a reciprocating type machine tool which is primarily intended to produce flat surfaces. The surfaces may be horizontal, vertical or inclined. This machine involves the use of a single point cutting tool similar to a tool used in lathe machine.

The intermediate gear unit may comprise either a spur gear and a planetary gear assembly, or a pair of planetary gear assemblies. Change of rotation within the gear unit can be effected easily.

Spur gear drive comprising a driven gear and driving gear wherein the driving gear has double crowned teeth defined as (i) an envelope to a family of surfaces generated by a skew or straight rack-cutter having a parabolic tooth profile in normal section and then (ii) as an envelope to a family of tool surfaces that are generated while the tool performs a plunging motion with respect to the driving gear in the direction of the shortest distance between the axes of rotation of the tool and the driving gear and tool plunging motion is varied by a parabolic function, whose variable is displacement of the tool in a direction parallel to the rotational axis of the driving gear.

The dual direction gear mechanism implemented in shaper machine in this paper. There is used sun gear, ring gear and planet gear. Ring gear and sun gear is meshed and the planet gear is meshed in sun gear. The planet and sun gear is connected with electrical motor. The motor is rotating at clock wise direction the ring and sun gear also rotating clock wise direction. The ring gear is having 50 teeth in 180° and sun gear is having 14 teeth in 145° but planet gear is having 28 teeth in 360° . This planet gear is rotated by ring and planet gear at so we get front and backward direction and also we get dual direction ram of the shaper machine.

Keywords: Spur gear, Planetary gear assembly.



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Unit V : Basic principle, construction & applications of sensors and transducers, contact - non- contact type, optical proximity sensors. Switches, contact type, magnet type, electromagnetic type, sound, light, pressure, vibration transducers, Hall effect-sensors A.C./D.C. Tachogenerators. (8 Hours)

Unit VI: Industrial applications - classes of duty selection of an electric drive for particular applications such as steel mill, paper mill, cement mill, textile mill, sugar mill, electric traction, coal mining, etc. Induction heating, surface hardening & Dielectric heating. (8 Hours)

BOOKS RECOMMENDED :

Text Books:

1. A First Course on Electrical Drives - S.K. Pillai.
2. Basic Electrical Technology (Vol. 11) - B.L. Theraja

Reference Books :

1. Drives and Control - N. Dutta
2. Mechatronics - W. Bolton, Addison Wesley, Longman Ltd.
3. A Course in Electrical, Electronics Measurement and Instrumentation, By A.K.Sawhney, Dhanpat Rai & Sons,

4ME09 BASIC ELECTRICAL DRIVES AND CONTROL - LAB

List of Experiments :

Any EIGHT practicals from the following list :

1. To study the Specification of Various Electrical Machines.
2. To study the D.C. Motor Starters.
3. To study the Running and Reversing of D.C. Motor.
4. Speed Measurements using Magnetic Pick-up.
5. To study the Speed reversal of counter Current Breaking of 3-phase Induction Motor.
6. To control the speed of D.C. Motor by a) Armature Control b) Field Control.
7. To perform Load Test on Induction Motor.
8. To study Dynamic/Rheostatic Breaking of D.C. Motor.
9. To study Characteristics of Thyristor.
10. To study the speed -Torque Characteristic of Servo Motor.

4ME05 HYDRAULIC AND PNEUMATIC SYSTEMS

Course Learning Objectives:

1. To get fundamental background about the hydroelectric power plants
2. To study operation, working principle & performance characteristics of hydraulic turbines
3. To study operation, working principle & performance characteristics of centrifugal pump, reciprocating pump and other hydraulic pumps
4. To study the behavior of compressible fluid flow
5. To study different hydrostatic & hydro kinematics industrial applications

Course Outcomes:

Students will be able to -

1. Demonstrate basic concepts of prime movers and turbines
2. Utilize the knowledge of centrifugal and reciprocating pumps for applications
3. Reveal the importance of other water lifting devices
4. Solve the elementary treatment on compressible fluid flow
5. Understand the concept of hydrostatic and hydrokinetic systems
6. Use the knowledge of hydraulics & pneumatics in developing project work.

SECTION - A

Unit I : Hydraulic Turbines - Theory of impulse and reaction turbines. Pelton, Francis and Kaplan turbines, their construction, classification, analysis, characteristics and governing, draft tube. (10 Hours)

Unit II : Centrifugal pumps - Basic Theory, Classification, construction, operation, characteristics, multistage, NPSH and cavitations in pumps. (7 Hours)

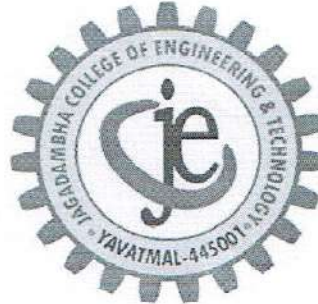


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CERTIFICATE

This is to Certify that the project report entitled "**PNEUMATIC PRINTING MACHINE**" has been successfully completed by **KUNAL SATISH SARDAR, MAJIDALI ANSARALI BHATI, PAVAN VISHNU PATWEKAR, PRANAY VIJAY SATPUTE, QUAZI AVAISUDDIN FASIHUDDIN, RAHUL G. PANDARE** under the guidance of **PROF. A. M. SHENDE** in recognition to the partial fulfillment for the award of the degree of Bachelor of Engineering in Mechanical Engineering at "Jagadambha College of Engineering & Technology Yavatmal – 445001. (An institution affiliated to Sant Gadge Baba Amravati University, Amravati)

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ABSTRACT

An engineer always focus on challenges of bringing ideas and concept of life. Hence, sophisticated machines and new modern technique have to be continuously developed and implemented for economical manufacturing of products. At that time we should take care that there has been no compromise made with the quality of product and also the accuracy of product. In the age of automation machine become an integral part of human life. By using automation machine prove itself that is giving the high production rate than that of the manual production rate. An engineer is constantly conformed to the challenges of bringing ideas and design. Now a days everyone wants to increase their production and make their machine multipurpose. So the pneumatic mono logo printing machine for punch and emboss the machine components name as well as symbol. This machine is easy to operate and simple to maintain requirement of automated plants. Therefore we are tried our hands on pneumatic mono logo printing machine is one of the principle machine impress and printing industry. It is generally used for the embossing purpose.

Key Words: Pneumatics, automation, printing, low cost.




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SECTION – B

Unit IV: Torsion: Theory of torsion & assumptions, derivation of torsion equation, polar modulus, stresses in solid & hollow circular shaft, power transmitted by shaft, closed coiled helical spring with axial load. Thin cylinders subjected to internal pressures.

Unit V: Principal stresses: Biaxial stress system, principal stresses, principal planes, Mohr's circle of stresses, principal strains. Combined direct & bending stresses.

Unit VI: Slope & deflection of beams: Slope & deflection in statically determinate beams subjected to point loads, uniformly distributed loads, moments by Macauley's method. Theory of long columns, Euler, Rankin's formula.

Books Recommended:

1. E. P. Popov, "Mechanics of Materials", Prentice Hall of India, New Delhi.
2. S. Timoshenko and O. H. Young, 'Elements of Strength of Materials', East West Press Private Ltd., New Delhi.
3. Ferdinand L. Singer, 'Strength of Materials', Harper and Row, New York.
4. Shames, I. H., 'Introduction to Solid Mechanics', Prentice Hall of India, New Delhi.
5. R. K. Bansal, Strength of materials, Laxmi Publications Pvt Ltd.
6. Junnarkar, S. B., Mechanics of materials.
7. Mubeen, A., Mechanics of solids, Pearson education (Singapore) Pvt. Ltd.
8. Beer and Johnston, Mechanics of materials, Mc-Graw Hill.
9. S. Ramamrutham, Strength of Materials, Dhanpat Rai Publishing Co Pvt Ltd.

3CE03 – BUILDING CONSTRUCTION & ENGINEERING GEOLOGY

Learning Objectives of Subject:

1. To understand various types and components of civil structure.
2. To learn about the type of infilling material, its features and construction methodology.
3. To understand various levels in building – floor, sill, lintel, roof levels and their need.
4. To understand the need and type of vertical and horizontal circulation.
5. To make aware of knowledge and importance of rock, soil and its impact for site selection.
6. To help one to understand the reason for Earthquake and its impact on soil / rock properties.

Course outcomes:

At the end of the subject the students will be able -

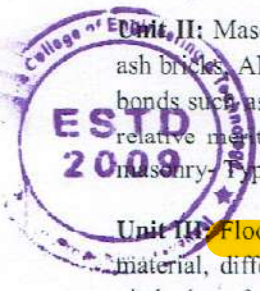
1. To understand Load bearing and Frame structure.
2. To recognize various types of construction material and its suitability
3. To recognize the various levels in building and its need.
4. To know types of staircase, doors, windows and other related fixtures.
5. To recognize types of rock and minerals and its construction properties.
6. To know reason for earthquake and seismic waves.

SECTION - A

Unit I: Introduction: Definition, types of buildings as per national building code, components of buildings and their functions, Types of structure – load bearing & framed structures. Foundation: Definition and necessity, loads of foundation, Bearing Capacity soil, field methods of improving bearing capacity. Types of foundation – shallow foundation and Types of Shallow foundation. Causes of failure of foundations and precautions to be taken.

Unit II: Masonry: Classification of bricks, manufacturing of bricks, tests on bricks, properties of burnt bricks, fly ash bricks, ALC Blocks. Brick masonry construction – Technical terms, general principles, commonly used types of bonds such as stretcher, header, English bond and Flemish bond, their suitability. Formwork: Different types, their relative merits, demerits, period for removal of formwork for different members. Earthquake resistant bands in masonry- Types, location and application.

Unit III: Floors: Types of Floors – Basement floor, ground floor and upper floors, Floorfinishes – Types of flooring material, different types of floor finishes, suitability, method of construction, criteria for selection. Roofs – Flat, pitched roof, steel roof trusses, types and suitability; types of roof covering. Arches, lintels. Types and their



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Unit V: Plastering - Necessity, types, processes of different types of plastering, defects in plastered work. Scaffolding – Purpose, types and suitability. Special Aspects of Construction – Damp proofing – causes of dampness, its effects, various methods of damp proofing. Fire proof construction – Fire protection requirements for a multistoried building. Sound proof Construction – Sound absorbents and their characteristic. Expansion & construction joints in building.

Unit VI: Introduction - Different branches of Geology and importance of Geology in Civil Engineering. Folds, faults, joints in Geology. Geological studies related to site selection for dams and reservoirs. Petrology - rock cycle, rock weathering and soil formation, study of common rock types. Earthquake Engineering - earthquake waves, causes and effects, magnitude and intensity, earthquake zones of India.

Books Recommended:

1. Mackay W.B.: Building Construction, Vol. I, II, III, Longmans.
2. Sushil Kumar: Building Construction, Standard Publishers Distributors.
3. Singh Parbin: General & Engineering Geology.
4. Mukherjee: A Text Book of Geology.
5. Tuylrell G.W.: The Principle of Petrology.
6. Wadia D.N. : Geology of India.
7. Sane L.S.: Construction Engg. Manak Talas, Mumbai.
8. National Building Code of India, 2016.
9. Punmia B.C.: Building Construction.
10. A Manual of Earthquake Resistant, Non-Engineered Construction Indian Society of Earthquake Tech.

3CE04 – TRANSPORTATION ENGINEERING

Learning Objectives of Subject:

1. To learn about basics of Road construction like surveys, alignment principles, types of roads.
2. To study and understand various road studies for safe road design principles and essential geometry.
3. To learn about various road pavements its construction and maintenance procedure.
4. To learn about railway transportation and terms related to it.
5. To learn about construction concepts of Airport runway, Apron layout, various survey and terms related to Airport Transportation.
6. To learn about Tunnels and Bridges components types and related transportation study.

Course outcomes:

At the end of the subject the students will be able –

1. To identify type of roads and its utility.
2. To understand the application of various road studies at time of survey and actual construction.
3. To design the various types of road pavements.
4. To understand rules regulations, signals, type of gauges and railway sleepers density.
5. To recognize the Airport features and design concept of components for Aero plains movement.
6. To identify types and components of Tunnels and bridges and its design components.

SECTION-A

Unit-I Highway: Road Transport characteristics, classification of Roads, Road Patterns, Alignment principles, Survey for highway.

Unit-II Geometric Design: Cross sectional elements, Right of way, Camber, Gradient, Typical Highway cross section in embankment and in cutting, PIEV Theory, stopping sight distance, overtaking sight distance, Horizontal alignment, curves, superelevation.

Unit-III Pavement Design and Traffic Engineering: Components of Flexible and Rigid pavement, Design factor, Traffic Characteristics, Traffic Studies, Construction and Maintenance – WBM Surface dressing, bituminous roads and construction procedure. Road parking system, traffic control devices and 3 E's of traffic

SECTION-B

Unit-IV: Railway: Railway transportation, track sections, embankment & cutting. Points and Turnings, Air Road, Railway



Principal

Jagadamba College of Engineering
Amravati

CERTIFICATE

This is to certify that the Project Entitled

“EARTHQUAKE ANALYSIS OF BUILDING USING Etabs”

Has been successfully completed by

Mr. Chaitanya Bharat Thakare

Mr. Roshan Yuvraj Jambhulkar

Mr. Rafique Rashid Chaudhari

Ms. Tejaswi Devendra Taksande

Mr. Sohil Abid Khan

Mr. Yash Digambar Mesevar

Ms. Kalpita Chavhan

Mr. Rohit Marotrao Awachat

Mr. Aditya Dakhore

In partial fulfillment for the degree of

Bachelor of Engineering
(Civil Engineering)

Awarded by

Sant Gadge Baba Amravati University, Amravati, (M.S.)

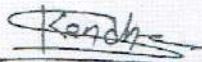
During academic year 2020-2021 under my guidance

Guided by



Prof. R. J. Raut

Asst. Prof. of Civil Engg. Dept
Jagadambha College of Engineering and Technology
Yavatmal



Prof. S. S. Kendhe
Head of Civil Department
Jagadambha College Of Engineering
And Technology, Yavatmal



Dr. H. M. Baradkar
Principal
Jagadambha College Of Engineering
And Technology, Yavatmal




Principal
Jagadambha Collage of Engineering &
Technology Arni Road, Kinhi, Yavatmal

ABSTRACT

Now a day's multi storey buildings are constructed for a purpose of residential and commercial, with open ground storey is becoming common feature. For the purpose of parking usually the ground storey is kept free without any construction except column. Buildings which have discontinuity of column and building having columns transfer the load to the beam in lateral direction are called **floating column building**. A column is meant to be an upright member ranging from footing level and conveying the load to the lowest the term floating column is additionally an upright member that ends at its lower level rest on the beam that may be a horizontal member.

The beam successively transfer the load to alternate column below it. Such columns in the structures analyzed and design. Result Are compare in the form of storey displacement, storey shear with and without column. **TAB has been utilize for analysis above building.**




Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal

Unit-VI: Tunnel and Bridges: Tunnels- necessity, types, tunnel alignment, Size and shape of tunnels, and Tunnel lining, Tunnel drainage, ventilation & lighting of tunnels. Bridge Engineering-Components, classification and identification, data collection, site selection, economic span, Estimation of flood discharge, water way, scour depth, depth of foundation, Afflux, clearance and free board, different structural form – culverts, types of foundation, abutments, piers and wing wall.

Books Recommended:

- 1) Khanna S.K. & Justo C.E. : Highway Engineering
- 2) Rao G.V. : Principles of Transportation & Highway Engg.
- 3) Dr.Kadiyali L.R. : Traffic Engg. & Transport Planning.
- 4) Bindra S.P. : Principles & Practice of Bridge Engg.
- 5) Saxena & Arora : Railway Engineering.
- 6) Agrawal M.M. : Railway Engineering.
- 7) Khanna S.K., Arora M.G., Jain S.S. : Airport Planning & Design,
- 8) Srinivasan: Tunnel Engineering.
- 9) Sharma S.K. : Principles, Practice & Design of Highway Engg.
- 10) Duggal A.K. & Puri V.P. : Laboratory Manual in Highway Engg.

3CE05 – CONCRETE TECHNOLOGY & RCC

Learning Objectives of Subject:

1. To understand basic construction material - Cement, its property and suitability tests.
2. To learn about meaning of concrete, strength of concrete, mixing proportion and suitability test.
3. To understand meaning of **RCC** and its need.
4. To learn various properties of concrete and use of different admixtures.
5. To learn about special concrete materials and methods.
6. To be able to perform mix design of concrete

Course outcomes:

At the end of the subject the students will be able -

1. To know need and composition of binding material, cement.
2. To recognize concrete and RCC and will be able to perform desired test for suitability,
3. To analyze RCC Components like slab and lintels.
4. To decide and utilize the admixtures as per the need of Concrete.
5. To understand importance of mix design.

SECTION-A

Unit I: Cement: Physical properties of Portland cement, laboratory tests on cement, types of cements. Aggregate: Classification of aggregate, physical properties, bulking and moisture content, specific gravity, bulk density.

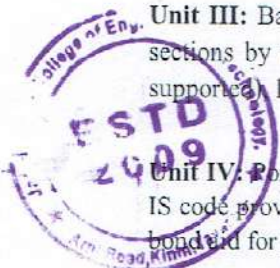
Unit II: Properties of fresh concrete: Workability of concrete, methods of measuring workability, nominal mix, mixing, centering & formwork, placing, compaction and curing of concrete. Properties of hardened concrete: Grades of concrete, **properties of concrete**, compressive, tensile, and shear strength, modulus of elasticity, creep, shrinkage. Durability of concrete, laboratory tests on concrete.

Unit III: Basic elastic theory and concept of reinforced concrete, types of reinforcement, Analysis of rectangular sections by working stress method, modes of failure, design of singly reinforced beams, one-way slabs (simply supported), lintels, and chajjas.

SECTION-B

Unit IV: Pozzolana and Admixtures: Plasticizer, retarders, accelerators, water proofing agents, **technology of concrete**, IS code provisions. Construction chemicals: concrete curing compounds, polymer bonding agent, surface retarders, bond breaker for plastering, protective and decorative coating.

Unit V: Special concrete: Ready Mix Concrete, Light weight concrete, fiber reinforced concrete, Roller compacted



Principal

Jagadamba College of Engineering & Technology, Amravati, Yavatmal

1. Determination of Los Angeles value
2. Determination of Abrasion value of Aggregates by the use of devil machine
3. Determination of Aggregate Impact value
4. Determination of Aggregate Crushing value
5. Determination of Flakiness and Elongation Index of Aggregate.
6. Determination of Viscosity of Bituminous material
7. Determination of softening point of bituminous material.
8. Determination of ductility of bitumen.
9. Determination of marshal stability value

3CE09 CONCRETE TECHNOLOGY & RCC – LAB

List of Practicals in Concrete Technology & RCC Lab (Minimum eight practical from the list should be performed) :

1. Mix Design (Compulsory) by IS method.
2. Compulsory site visit and submission of site visit report.
3. Fineness of cement
4. Soundness of cement
5. Consistency and setting time of the cement
6. Compressive strength of cement
7. Sieve analysis of aggregate.
8. Bulking of sand (fine aggregate).
9. Silting of sand.
10. Workability by slump cone test compaction factor test
11. Admixture: Density, Compatibility Test
12. Workability by flow table method.
13. Compressive & Tensile strength of concrete.

FOURTH SEMESTER

4CE01 BUILDING PLANNING DESIGNING & CAD

Learning Objectives of Subject:

1. To understand need of engineering drawings and methods to draw it.
2. To learn about various planning principles and able to apply on residential buildings.
3. To understand seasonal and climatic condition and corresponding provisions in structure.
4. To know regional rules regulation related to building construction.
5. To learn various types of plan – Block , Site , Line , Detail , Section etc.
6. To learn about smart buildings.

Course outcomes:

At the end of the subject the students will be able -

1. To make engineering drawings by First angle and Third angle method.
2. To apply building planning principles practically while developing projects.
3. To study the climatic conditions and decide the corresponding provision in structure.
4. To know about Bylaws, Town development authority rules and terms.
5. To draw various plans manually and computationally.

SECTION-A

Unit I: Importance of building drawing for Civil Engineering in construction & industry, estimation, Scales for various drawings. Types of line and their application. Methods of dimensioning in architectural drawing. Abbreviations and graphical symbols used in Civil Engineering Drawing as per IS: 962. Compare first angle and third angle method of projection. Layout of sheet for civil engineering drawing. Requirements of drawing and documents as per plan sanctioning authorities. Define FSI and TDR.



[Signature]
Principal

Jagadamba College of Engineering & Technology, Amravati

CERTIFICATE

This is to certify that the Project Entitled

**“DYNAMIC ANALYSIS OF INDUSTRIAL STEEL
STRUCTURE BY USING BRACINGS AND DAMPERS
UNDER WIND LOAD AND EARTHQUAKE LOAD”**

Has been successfully completed by

Mr. Shivam Tulsidas Mane

Mr. Aniket Pramodrao Mahure

Mr. Abhishek Ulhas Bahire

Mr. Mayur Prakash Chavhan

Mr. Ragib Ahmad Zafar Ahmed

Mr. Kaustubh Rajesh Ingole

Ms. Vasundhara Bhagat

Mr. Sameer Ahemad Sheikh

Mr. Aditya Kondaliker

In partial fulfillment for the degree of

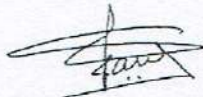
Bachelor of Engineering
(Civil Engineering)

Awarded by

Sant Gadge Baba Amravati University, Amravati, (M.S.)

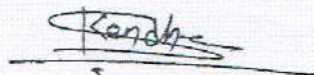
During academic year 2020-2021 under my guidance

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Prof. S. R. Raut

Asst. Prof. of Civil Engg. Dept
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Yavatmal



Prof. S. S. Kendhe
Head of Civil Department
Jagadambha College Of Engineering
And Technology, Yavatmal



Dr. H. M. Baradkar
Principal
Jagadambha College Of Engineering
And Technology, Yavatmal

Principal
Jagadambha Collage of Engineering &
Technology Arni Road, Kinhi, Yavatmal




ABSTRACT

The structural system of the building has to be support the lateral load due to earthquake and wind in addition to gravity loads. A lateral load developes high stresses and produces sway causing vibration and drift . If the industrial steel structures are not design to resist the lateral load then they may be collapse resulting in the less life of contents.

Therefore, it is important for structure to design the structure with great precautions. the objective of this project is to prepare simple and innovative and effective structural technology and methodology for the seismic control which can be used for industrial Steel Structures.




Dr. Hemant M. Baradka.
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal



CERTIFICATE

OF COMPLETION

Presented to

Kaushal Gajanan Talkokulwar

for successful completion of online internship

MACHIN LEARNING FOR TRADING

7th May 2020 to 29th May 2020




Principal
Jagadamba Collage of Engineering &
Technology Arni Road, Kinhi, Yavatmal


Nitesh Khandelwal
Director, QuantInsti®



CERTIFICATE OF TRAINING

The certificate is presented to

Ku Samiksha Bhaskar Deotale

For successfully completing the 30 days online "Solar Industrial Training"
as a part of our company
from 15th May 2020 to 18th June 2020

A handwritten signature in blue ink, appearing to be 'H.B.', written over a horizontal line.

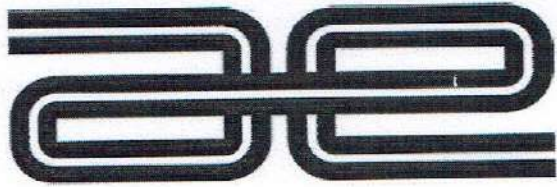
Principal

Jagadamba Collage of Engineering &
Tech. Road Kinhi Yavatmal



A handwritten signature in black ink, appearing to be 'S. D. Deotale', written over a horizontal line.

Managing Director



AUTOMATE ENGINEERING

Office Address 1st Floor, Malhar Pride, Shree Control Chowk, Narhe Industrial Area, Pune 43

Phone No: +91 7768999659

E-mail: connect.automate@gmail.com

Website: www.automateengg.com

INTERNSHIP CERTIFICATE

Name: Ku Ankita Mirase

College: Jagadambha college of engineering and technology, yavatmal

Department: Electrical Engineering

Domain of Internship: Factory Automation

Training date from: 10th June to 10th July 2020

During the period of Training Program at AUTOMATE ENGINEERING, the Candidate was found punctual, hardworking and inquisitive.

For AUTOMATE ENGINEERING,

Authorized Signature




Principal
Jagadambha College of Engineering &
Technology Arni Road, Kinhi, Yavatmal



Internship Certificate

This is to certify that **Ku Sakshi L. Banait** has completed internship project at Prabodhini Media and Enterprises Ltd in development from 10/JUNE/2020 to 30/APR/2021. During the internship period she worked in the Following Technologies:

- ASP.NET
- SQL Server Database
- C# Language

During her internship we found very respective, intelligent, motivated and hard-working person.

We wish her very best in her future Endeavors.

Mr. Kumar Chiplunkar
Managing Director



Principal
Jagadamba Collage of Engineering &
Technology Arni Road, Kinhi, Yavatmal

SBMEC
Management & Engineering Services
SBMEC Group

Phone: +91 0712 2271639

Mobile: +91 940 400 1887

Website: www.sbmec.co.in

Email: info@sbmec.co.in

Registered Address: 82, Tirupati Nagar, Koradi Road, Mankapur, Nagpur – 440 030 MH

Ref: SBMEC/NGP/07/2020/28

Date: 25/07/20

TO WHOM IT MAY CONCERN

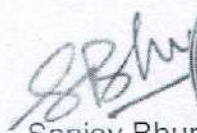
This is to certify that **Ms Kajal Ganeshkumar Lodha**, a student of Jagadambha College of Engineering and Technology, Yavatmal (MH) has successfully completed her online internship as Android Application Developer. She was involved in all activities related to Mobile App Development. She was dedicated and disciplined during the entire duration. Internship details are as below

Start date: 25th May 20

End date: 24th July 20

We wish her all the very best for his future endeavours.

Sincerely,


Sanjay Bhure
Founder & CEO
SBMEC Group
Email: info@sbmec.co.in
Website: <https://www.sbmec.co.in>




Principal
Jagadambha Collage of Engineering &
Technology Arni Road, Kinhi, Yavatmal

Magnum Net Solution


Internship Certificate

This certificate is presented to

Bhagyashri M. Bhashkar

in recognition of his/her excellence, effort and
achivement in being an outstanding student.




Principal
Jagadamba Collage of Engineering &
Technology Amni Road, Kinhi, Yavatmal




ADINATH INFOTECH

CERTIFICATE OF COMPLETION


This Certificate is present to

Sneha Raju Tamboli

For successfully completing the 30 days online "EMBEDDED SYSTEM DESIGN AND MICROCONTROLLER BASED SYSTEM DESIGN" as a part of our company from 10th April 2020 to 11th May 2021



Managing Director
Adinath Infotech,


Principal
Jagadamba Collage of Engineering & Technology
Arni Road, Kinhi, Yavatmal



TO WHOM IT MAY CONCERN

This is to certify that
Sana Naushad Shrve

Department of Electronics And Telecommunication Engineering has successfully completed one month i.e. (From 9th December 2020 to 23rd December 2020) long internship programmed at this Branch/Company. During the period of internship programmed with us, He/She was found punctual, hardworking and inquisitive.

We wish her / his success in life.

For, PBR Research



Authorised Signature

www.pbrresearch.com

pbr3dp@gmail.com

www.instagram.com/pbr_makerspace/

942376529 / 9427271093 / 0721-2991637

Navathe plot,
Badnera road,
Amravati
Maharashtra 444607



Principal
Jagadamba Collage of Engineering &
Technology Arni Road, Kinhi, Yavatmal

MAHAGENCO

Maharashtra State Power Gen. Co. Ltd.

THERMAL POWER STATION, PARAS

Dist. Akola 444 109

ISO 50001 : 2011 Certified



Vacation Industrial Training

This is to certify that Mr./Miss. Pratik Shriram Kale Student of Jagadamba College of Engineering & Technology, Yavatmal has Successfully undergone Winter in Plant Industrial Training at Training Sub Centre, TPS Paras, from DL 18/12/2019 to 11/01/2020

During the period of training his/her performance has been found to be very good.

Wish the very best his future endeavors



[Signature]
CHIEF ENGINEER
MSPGCL TPS, PARAS.

Place : Paras
Date : 11.01.2020



[Signature]
Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering & Technology, Arni Road, Kinhi, Yavatmal

Vinit Transformers

Repairer of Distribution Transformers & CT/PT units

W-2, MIDC, Lohara, Yavatmal - 445001

Date: 28-07-2019

TO WHOM IT MAY CONCERN

This is to certify that Ku.Rachita Gajanan Amolekar under (Department of Electrical Engineering) has successfully completed 30 days (From 27-06-2019 to 28-07-2019) long internship program at this Branch/Company. During the period of her internship program with us, they were found punctual, hardworking and inquisitive.

We wish her every success in life.



For, M/S Vinit Transformer, MIDC, Lohara , Yavatmal.



Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal



PRISTINE AQUATICS

Plot No. A-15. M.I.D.C., Lohara, Dist. Yavatmal 445001

Bisleri

CO - PACKER

Certificate of Internship

This is to certify that Ku.Sonali Raju Chavhan under (Department of Electrical Engineering) has successfully completed 30 days (From 20-05-2019 to 21-06-2019) long internship program at this Branch/Company. During the period of her internship program with us, they were found punctual, hardworking and inquisitive.

We wish her every success in life.

For, M/S Pristine Aquatics, MIDC, Lohara , Yavatmal.



M/S Pristine Aquatics



Dr. Hemant M. Baradkar
Principal
Jagadambha College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal

M/S. PACHKAWADE AGRO ENGINEERING CORPORATION

Deals in : •All Types of Pumps & Generators •HDPE/PVC Pipes and Cables •Raingun and Sprinkler Sets
• Solar and Agricultural Equipment • Oilmill / Ginning Spares Reconditioning and Fabrication Work

OFFICE : - Opposite S. T. Stand, Yavatmal, FACTORY / GODOWN : - Plot A-74, MIDC Lohara, Yavatmal
CONTACT : - 9422866992; 8975128153, E-MAIL : - pachkawadeengineering@gmail.com

Date: 05/01/2020

TO WHOM IT MAY CONCERN

This is to certify that Ku. Vaibhavi Ramesh Pabale under (Dept of Electrical Engg.) has successfully completed 15 days (From 19 Dec, 2019 to 05 Jan, 2020) long internship program at this Branch/Company. During the period of her internship program with us, they were found punctual, hardworking and inquisitive.

We wish her every success in life.

For, M/S Pachkawade Agro Engineering Corporation.



Authorised Sugnature



A handwritten signature in blue ink, appearing to read "HMB".

Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal

Internship Certificate

This is to certify that Ku. Roshani Rathod student of Jagadamcha College of engineering and Technology, Yavatmal has successfully completed his/her online internship as **Android Application Developer**. He/she was involved in all the activities related to mobile app development. He was dedicated and disciplined during the entire duration. Internship details are as below

Start Date: 15th June 2019

End Date: 15th April 2020

We wish him/her all the very best for future endeavours.



Head Training
Geekslab Technologies Pvt. Ltd.



Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal



GANDHAM TOW
NEW BOWENPALLY, 500
HYDERABAD, TELANGANA
info@betabluefoundati
www.betabluefoundatic

BBF

BELIEVE IN EXCELLENCE

INTERNSHIP COMPLETION LETTER

This is to certify that Ku. Ashwini Manohar Bhele has completed online internship project at beta Blue Foundation in development from 10/10/2019 to 04/04/2020. During the internship period he/she worked in Following Technologies:

- C# language
- ASP.Net Technology
- SQL server Database

During his/her internship we found very respective , intellegent,motivated and hard-working person.

We wish him/her very best in future endeavors.

Regards,
HEAD HR MANAGER
AVINASH CHAUHAN



BETA BLUE FOUNDATION



Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatma



TheTechIntern.

PARMANAND APARTMENT, 4TH FLOOR, INDORA
SQUARE, NAGPUR, MAHARASHTRA 440017

+91 9112233473 /2/1
HELLO@THETECHINTERN.COM

INTERNSHIP LETTER

July 19, 2019

TO WHOM IT MAY CONCERN

This is to certify that **Rushikesh Nachane** has undergone his Internship with TheTechIntern, Nagpur from **17th June 2019 to 17th July 2019**.

During the internship he worked on different modules of company projects and demonstrated good skills in **Data Science and Machine learning, Python, Web Penetration and Ethical Hacking**.
He was diligent and enthusiastic with zeal to do best on his Project. He also assisted in technical documentation and modification.

He demonstrated good designing and coding skills. He has excellent written and verbal communication skills, is well organised, can work independently and is able to effectively multi task to ensure that the assignments are looked after and completed in a professional and timely manner.

We wish **Rushikesh Nachane** the very best for his career and future endeavours.

Authorised Signatory
Mahesh Rakheja, Director, TheTechIntern.



Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Ami Road, Kinhi, Yavatmal

WWW.THE TECH INTERN.COM

Reg. Off : 2nd Floor, Above
Jamata Bank,
Arvenagar, Pune. 411052
mail: hr1@ssptechnosys.com
www.ssptechnosys.com



REF: INT-SSP1063-2019

Date: 26/07/2019

TO WHOM IT MAY CONCERN

This is to certify that Ms. Ashwini Manohar Bhele student of has completed a Two Month Internship on "Web development Technology" as a partial fulfillment of requirement towards of her Internship program.

Duration- 24th May 2019 to 25th July 2019.

During the period of internship with us she was found punctual, hardworking and inquisitive. As abided by intellectual property and confidentiality policy of SSP Technology Pune. She is unable to produce the source code of above mentioned project.
We wish her every success in life.

A handwritten signature in blue ink, appearing to read "Omprakash S.", is written over a horizontal line.

AUTHORIZED PERSON SIGNATURE
SSP TECHNOLOGY PUNE



A handwritten signature in blue ink, appearing to read "HMB", is written over a horizontal line.

Dr. Hemant M. Batawala
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal

Raymond UCO

Denim Private Limited

India, Romania, Belgium

Raymond UCO Denim Pvt. Ltd
Plant: Plot C3, MIDC, Lohara, Yavatmal, 445 001,
Maharashtra, India
Tel: (91-7232) 304500 / 304545
Fax: (91-7232) 249237
www.raymond.in

RUDPL/HR&A/YTML/2019


27/09/2019

To Whomsoever It May Concern


This is to certify that Mr .Pawan G. Butke student of Jagdambha college of Engineering, Yavatmal has successfully completed his inplant training at Raymond UCO Denim Pvt. Limited, Yavatmal for the period from to 07/07/2019 to 07/08/2019.

He was found to be hardworking, enthusiastic and cooperative in his approach and completed his inplant training satisfactorily.

For Raymond UCO Denim Pvt. Limited


C.M. Paturkar
Sr. Manager-HR& Admin




Dr. Hemant M. Baradkar
Principal
Jagadambha College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal

REGD OFFICE
New Road, Kinhi, Jagadambha College of Engineering &
Technology, Yavatmal, Dist. Yavatmal, 445 001

Scanned by CamScanner



Date: 05/01/2020

To Whom So Ever IT May Concern

This is to certify that Pavan Vishnu Patwekar has completed apprenticeship in Raajiv Honda Workshop from 19/12/2019 till 05/01/2020.

During this period her work was found satisfactory.

We wish her luck for future endeavors.

For Raajiv Autoworld (P) Ltd
HR Manager



Dr. Hemant M. Baradkar
Principal
Jagadamba College of Engineering &
Technology, Arni Road, Kinhi, Yavatmal

Raajiv Honda Plot-1B, Wadgaon, Arni Road, Yavatmal- 445001
Tel: 07232-244910, 242420