Electrical Engineering Department
Government College of Engineering, Karad

Curriculum for Final Year Electrical from Academic Year 2024-25

Institute Vision
To emerge as a technical Institute of national repute driven by excellence in imparting value based education and innovation in research to face the Global needs of profession
Institute Mission
To *create* professionally competent engineers *driven* with the sense of responsibility towards *nature and society*
Department Vision
To produce Electrical Engineers to meet the requirements of Industry with *professional, ethical* and *social* responsibility
Department Mission
To impart *quality* education in Electrical Engineering To *upgrade* curriculum continuously to meet the industrial requirements To develop ability to research, *innovation* and entrepreneurship To promote *awareness* about social and ethical responsibility

Program Educational Objectives

PEO 1	Student will have a sound foundation of mathematical, scientific and engineering *fundamentals* necessary to *formulate, solve* and *analyze* engineering problems and to *prepare* them for *graduate studies* as well as *research* and *innovation*
PEO 2	Student will have an excellent *academic ambience* of collaborative learning which will help them to *assimilate* difficult theoretical concepts through modeling, simulation, well designed laboratory sessions, industrial training etc. by ***using modern tools***.
PEO 3	*Employability* of students will be enhanced by continually *upgrading* the curricula to *satisfy* dynamic *industry* requirements in tune with the state-of-the-art *scientific and technological developments* and *entrepreneurship skills* will be inculcated
PEO 4	Students will demonstrate professional, *ethical* attitude and ability to relate engineering issues to broader *environmental and social* context through life-long learning

Program Outcomes (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOME (PSO)

1. Design solution for power system problems using appropriate tool and design power apparatus that meet specific needs with appropriate consideration to its social impact

Government College of Engineering, Karad

SCHEME OF INSTRUCTION & SYLLABI

Programme: Electrical Engineering

'Scheme of Instructions: Final Year B. Tech. in Electrical Engineering

Semester – VII(w.e.f. AY. 2024-25)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME				
									CT-1	CT-2	TA/CA	ESE	TOTAL
1	OEC	EE2701	Computer Network & Communication	3	-	-	3	3	15	15	10	60	100
2	PEC	EE27*2	Elective – III	3	-	-	3	3	15	15	10	60	100
3	**PEC**	**EE27*3**	**Elective – IV**	3	1	-	4	4	15	15	10	60	100
4	PCC	EE2704	Switchgear and Protection	3	-	-	3	3	15	15	10	60	100
5	PCC	EE2705	Electrical Drives	4	-	-	4	4	15	15	10	60	100
6	OEC	EE2706	Computer Network & Communication Lab	-	-	2	2	1	-	-	50	--	50
7	PEC	EE27*7	Elective – III Lab	-	-	2	2	1	-	-	25	25	50
8	PEC	EE27*8	Elective – IV Lab	-	-	2	2	1	-	-	25	25	50
9	PCC	EE2709	Switchgear and Protection Lab	-	-	2	2	1	-	-	25	25	50
10	PCC	EE2710	Electrical Drives Lab	-	-	2	2	1	-	-	25	25	50
11	P/S/IT	EE2711	Case study	-	-	2	2	1	-	-	50	--	50
12	P/S/IT	EE2714	Industrial Training & Technical Presentation	-	1	-	1	1	-	-	50	--	50
13	**Audit**	**EE27*5**	**Audit Course- Lab I**	-	-	4	4	**Audit**	-	-	-	-	-
			Total	**16**	**02**	**16**	**34**	**24**	**75**	**75**	**300**	**400**	**850**

L- Lecture T-Tutorial P-Practical

CT1- Class Test 1 TA/CA- Teacher Assessment/Continuous Assessment

CT2- Class Test 2 ESE- End Semester Examination (For Laboratory End Semester performance)

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Course Category	HSMC (Hum., Soc. Sc, Mgmt.)	BSC (Basic Sc.)	ESC (Engg. Sc.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	OEC (Open Elective courses from other discipline)	MCC (Mandatory Courses)	Project / Seminar / Industrial Training
Credits	--	--	--	08	09	03	--	04
Cumulative Sum	10	22	27	46	15	15	Yes	07

PROGRESSIVE TOTAL CREDITS :118+24 = 142

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SCHEME OF INSTRUCTION & SYLLABI

Programme: Electrical Engineering

Scheme of Instructions: Final Year B. Tech. in Electrical Engineering (ACADEMIC MODE)

Semester – VIII(w.e.f. AY.2024-25)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME				
									CT-1	CT-2	TA/CA	ESE	TOTAL
1	HSMC	EE2801	Laws for Engineers	3	-	-	3	3	15	15	10	60	100
2	OEC	EE2802	Embedded System	3	-	-	3	3	15	15	10	60	100
3	PEC	EE28*3	Elective – V	3	-	-	3	3	15	15	10	60	100
4	OEC	EE2804	Embedded System Lab	-	-	2	2	1	-	-	25	50	75
5	PEC	EE28*5	Elective – V Lab	-	-	2	2	1	-	-	25	50	75
6	P/S/IT	EE2806	Project	-	-	14	14	7	ISA-I 50	ISA-II 50	50	150	300
7	**Audit**	**EE28*1**	**Audit Course- Lab II**	-	-	4	4	**Audit**	-	-	-	-	-
			Total	**09**	**00**	**22**	**31**	**18**	**95**	**95**	**130**	**430**	**750**

L- Lecture T-Tutorial P-Practical

CT1- Class Test 1 TA/CA- Teacher Assessment/Continuous Assessment

CT2- Class Test 2 ESE- End Semester Examination (For Laboratory End Semester performance)

Intermediate assessment of the project work (ISA-I & ISA-II) shall be done 2 times by a departmental committee after every 4weeks from start of project work. The contact Hrs shown are for students to work in a group of minimum 4 students per group.

Course Category	HSMC (Hum., Soc. Sc, Mgmt.)	BSC (Basic Sc.)	ESC (Engg. Sc.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	OEC (Open Elective courses from other discipline)	MCC (Mandatory Courses)	Project / Seminar / Industrial Training
Credits	03	--	--	---	04	04	--	14
Cumulative Sum	13	22	27	46	19	19	--	14

PROGRESSIVE TOTAL CREDITS: 142+18= 160

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SCHEME OF INSTRUCTION & SYLLABI

Programme: Electrical Engineering

Scheme of Instructions : Final Year B. Tech. in Electrical Engineering (INDUSTRY MODE)

Semester – VIII(w.e.f. AY.2024-25)

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	EXAM SCHEME				
									CT-1	CT-2	TA/CA	ESE	TOTAL
1	MOOCs	EE2807	(MOOC – 1)/ Online course offered by department	-	-	-	-	3	-	-	-	-	100
2	MOOCs	EE2808	(MOOC – 2)/ Online course offered by department	-	-	-	-	3	-	-	-	-	100
3	P/S/IT	EE2809	Industrial Project	-	-	-	-	12	ISA-I 75	ISA-II 75	100	300	550
			Total	**00**	**00**	**00**	**00**	**18**	**75**	**75**	**100**	**300**	**750**

Intermediate assessment of the project work (ISA-I & ISA-II)shall be done 2 times by a Guide after every 4weeks from start of project work

Course Category	HSMC (Hum., Soc. Sc, Mgmt.)	BSC (Basic Sc.)	ESC (Engg. Sc.)	PCC (Programme Core courses)	MOOCS	OEC (Open Elective courses from other discipline)	MCC (Mandatory Courses)	Project / Seminar / Industrial Training
Credits	00	--	--	---	06	--	--	12
Cumulative Sum	10	22	27	46	21	15	Yes	19

PROGRESSIVE TOTAL CREDITS: 142+18= 160

* The faculty coordinator shall be appointed for OEC EE2807 & PEC EE2808 for continuous monitoring of students' progress for the opted online MOOC course.

** The Industrial Project guide from department will be allotted to every student to continuous monitor the progress of Industrial Project work.

For MOOC 1 and 2 department will declare list of MOOC 1/2 from which student have to select any one.

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List of PROGRAM ELECTIVE courses:

Verticals	Advanced Power System		Advanced Electrical Modelling		Industrial Control & Atomization		Energy & Utilization	
Elective – III	EE2712	Restructured Power System	EE2722	Special Electrical Machines	EE2732	Industrial Automation and Control	EE2742	Smart Grid
Elective – IV	EE2713	Generation planning and load forecasting	EE2723	Electrical Equipments and Machines	EE2733	Process Control Engineering	EE2743	Power System Operation and Control
Elective – V	EE2813	FACTS	EE2823	Electric and hybrid vehicles	EE2833	Advanced Control System	EE2843	Power Quality and harmonics

Verticals	Advanced Power System		Advanced Electrical Modelling		Industrial Control & Atomization		Energy & Utilization	
Elective – III Lab	EE2717	Restructured Power System Lab	EE2727	Special Electrical Machines Lab	EE2737	Industrial Automation and Control Lab	EE2747	Smart Grid Lab
Elective –IV Lab	EE2718	Generation planning and load forecasting Lab	EE2728	Electrical Equipments and Machines Lab	EE2738	Process Control Engineering Lab	EE2748	Power System Operation and Control Lab
Elective – V Lab	EE2815	FACTS Lab	EE2825	Electric and hybrid vehicles Lab	EE2835	Advanced Control System Lab	EE2845	Power Quality and harmonics Lab

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COMMON INSTRUCTIONs

Departments shall suggest & execute

1. *MOOCs* for students adapting *Industry Mode* to fulfil the credit requirements. Copy of certificates / grade card shall be submitted to Controller of Examinations, GCE Karad through Program Coordinator prior to ESE.

	Audit Course Lab I	Audit Course Lab II
AIMLDS	**EE2715**: Foundations of Data Science and Machine Learning Lab	**EE2811:** Advanced AI Techniques and Applications Lab
AIOT	**EE2725:** AIoT Development Lab	**EE2821:** Advance AI and IoT Integration Lab
ARVR	**EE2735:** Immersive Game Development Lab	**EE2831:**Advanced ARVR Techniques and Applications Lab
SAP ERP	**EE2745:** ABAP Programming for SAP HANA Lab	**EE2841:** ABAP programming in Eclipse LAB
Electric vehicle Mechanical Perspective	**EE2755:** EV design and 3D Modeling lab	**EE2851:** : EV design analysis and Simulation Lab
Electric vehicle Electrical Perspective	**EE2765**: : Foundation of Electrical Vehicle Lab	**EE2861:** Advanced Electrical Vehicle Lab
Image Processing	**EE2775:** Fundamentals of Image Processing Lab	**EE2871:** Advanced Image Processing Lab

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