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Annasaheb Dange College of Engineering and Technology

Ashta - 416301, Dist. : Sangli, Maharashtra

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ADCET

S.Y. M.Tech. – Electrical Power System

[Level 6.5, PG Degree] Semester - III

Sr. No.	Course Category	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Marks)				
										Theory			Laboratory	
										MSE	TA	ESE	CIA	ESE
01	SS	T1	0PSSS6**	Self Learning Course - I	4	-	-	4	4	-	-	100	-	-
02	VS	L1	0PSVS603	Dissertation Phase – I	-	-	24	-	12	-	-	-	50	50
03	VS	L2	0PSMA604	Internship	-	-	-	-	2	-	-	-	50	-
				Total	**4**	**-**	**24**	**4**	**18**					

Legends: L-Lecture, T-Tutorial, P-Practical, S-Self Study, Cr-Credits, MSE - Mid-Semester Examination. CIA-Continuous Internal Assessment, TA - Teachers Assessment, ESE-End-Semester Examination

Minimum Passing Criteria	TA (Theory) : ≥ 8 / 20	MSE + ESE (Theory) : ≥ 32 / 80	TA (Theory) / CIE (Lab) : ≥ 20 / 50	ESE (Lab) : ≥ 20/50

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ADCET

S.Y. M.Tech. – Electrical Power System

[Level 6.5, PG Degree] Semester - IV

Sr. No.	Course Category	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Marks)				
										Theory			Laboratory	
										MSE	TA	ESE	CIA	ESE
01	SS	T1	0PSSS6**	Self Learning Course - II	4	-	-	4	4	-	-	100	-	-
02	VS	L1	0PSVS607	Dissertation Phase – II	-	-	28	-	14	-	-	-	50	50
				Total	**4**	**0**	**28**	**4**	**18**					

Legends: L-Lecture, T-Tutorial, P-Practical, S-Self Study, Cr-Credits, MSE - Mid-Semester Examination. CIA-Continuous Internal Assessment, TA - Teachers Assessment, ESE-End-Semester Examination

Minimum Passing Criteria	TA (Theory) : ≥ 8 / 20	MSE + ESE (Theory) : ≥ 32 / 80	TA (Theory) / CIE (Lab) : ≥ 20 / 50	ESE (Lab) : ≥ 20/50

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ADCET

Department : Electrical Engineering
Programme : M.Tech. – Electrical Power Systems
Curriculum Revision : Revision: R0, with effect from the AY 2025 – 26 to the students of PG Programme.

Course Category	Acronym	I	II	III	IV	Total	% of Category
Program Specific Mathematical Course (PSMC)	MC	4	0	0	0	4	5
Research Methodology	RM	4	0	0	0	4	5
Program Core	PC	7	9	0	0	16	20
Program Elective	PE	7	8	0	0	15	18.75
Open Elective	OE	0	3	0	0	3	3.75
Vocational and Skill Enhancement Course (VSEC)	VS	0	2	14	14	30	37.5
Self Learning Course (SLC)	SS	0	0	4	4	8	10
	Total	22	22	18	18	80	100

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Course Information:

Class, Semester	S.Y. M.Tech, Semester - III					**Category**	**VS**
Course Code, Course Title	**0PSVS603, Dissertation Phase - I**					**Type**	**L1**
Prerequisites							
Teaching Scheme (per week)	**Lecture**	**Tutorial**	**Practical**	**Self Study**	**Credits**		
	-	-	24	-	12		
Examination Scheme (Marks)	**Theory**	**MSE**	**TE**	**ESE**	**Practical**	**CIA**	**ESE**
		-	-	-		50	50

Course Outcomes (COs) :
Upon successful completion of this course, the student will be able to:

CO1	**Identify** and formulate a research problem in the chosen area of specialization through an extensive literature survey.
CO2	**Analyze** existing research works to identify research gaps and define clear objectives, scope, and expected outcomes.
CO3	**Design** an appropriate methodology, framework, experimental setup, or implementation strategy to address the identified problem.
CO4	**Conduct** preliminary investigations, feasibility studies, simulations, or prototype development relevant to the proposed work.
CO5	**Prepare** and present a structured dissertation proposal/report demonstrating technical writing, research planning, and communication skills.

- Students shall undertake Dissertation Phase I in Semester III focusing on problem identification, literature survey, and initial methodology design in the chosen area of specialization. The work shall be carried out individually under the guidance of an assigned faculty supervisor. The topic shall be finalized with prior approval from the Department.
- During this phase, students shall conduct an extensive literature review, identify research gaps, and define a clear problem statement along with objectives and expected outcomes. Students shall design an appropriate methodology/approach, including tools, techniques, and implementation strategies. Initial experimentation, feasibility analysis, or prototype development may also be carried out wherever applicable.
- Students shall meet their faculty guide regularly to discuss progress, receive feedback, and refine the proposed work. The details of meetings, discussion points, observations, and action items shall be recorded in a Project Diary/Research Log Book.
- Students shall maintain a Project File containing literature survey records, progress reports, meeting notes, experimental results, and other relevant documents. Proper documentation of all work carried out shall be maintained throughout the semester.
- Students shall submit periodic progress reports as prescribed by the department. The progress of the dissertation work shall be reviewed during the Synopsis Presentation, Progress Presentation–I, and Progress Presentation–II.
- At the end of Semester III, students shall submit a Dissertation Phase I Report containing the introduction, literature survey, problem definition, research objectives, proposed methodology, work completed, and preliminary results, if any.
- The final assessment shall be based on the quality of the dissertation report, maintenance of the Project Diary and Project File, progress achieved during the semester, presentations made before the evaluation committee, and performance in the viva-voce examination.

Dissertation Phase – 1			
Continuous Internal Assessment (50)		End Semester Examination (50)	
Synopsis Presentation	15	Dissertation Report Phase – 1	25
Progress Presentation - I	15	Viva Voce Examination	25
Progress Presentation - II	20		

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Department of Electrical Engineering

Course Information:

Class, Semester	S.Y. M.Tech, Semester - III					**Category**	**VS**
Course Code, Course Title	**0PSVS604, Internship**					**Type**	**L2**
Prerequisites							
Teaching Scheme (per week)	**Lecture**	**Tutorial**	**Practical**	**Self Study**	**Credits**		
	-	-	-	-	2		
Examination Scheme (Marks)	**Theory**	**MSE**	**TE**	**ESE**	**Practical**	**CIA**	**ESE**
		-	-	-		50	-

Course Outcomes (COs) :

Upon successful completion of this course, the student will be able to:

CO1	Deploy advanced engineering concepts within an approved industry, research laboratory, or startup environment to execute domain-specific tasks relevant to the specialization.
CO2	Utilize industry-specific tools, technologies, and structured methodologies to analyze the assigned industrial process or problem statement.
CO3	Collaborate within multidisciplinary teams while adhering to organizational workflows, safety protocols, and ethical regulatory standards.
CO4	Analyze technical challenges or process inefficiencies encountered during the internship and propose structured, sustainable modifications.
CO5	Produce a clearly structured technical report and deliver an oral presentation summarizing the internship methodology and project outcomes.

Internship Requirements and Guidelines:

- Students shall undergo a **minimum two-week internship** after completion of Semester II and before the commencement of Semester III. The internship shall be carried out in a domain relevant to the student's specialization and may be undertaken in industries, research laboratories, start-ups, or academic research environments.
- Prior approval from the Department Internship Coordinator or Head of the Department shall be obtained before commencement. Students shall submit an internship offer letter or confirmation along with a brief outline of the proposed work to be carried out. (i.e. a request letter from the Dept and Confirmation Letter from the industry or organization to be maintained.)
- A Faculty / Project Guide will act as a mentor of student(s) to monitor, evaluate, and guide their internship activities. Student must obtain and submit an Internship Certificate from the organization to the Internship Coordinator.
- Upon completion of the internship, students shall submit a detailed internship report during Semester III. The report shall include the organization profile, objectives of the internship, description of the work carried out, tools and technologies used, problem statement, methodology adopted, results or outcomes achieved, learning experiences, challenges faced, and conclusions with future scope.
- Student should deliver a presentation on internship work as part of term assessments; submit an internship diary and report for evaluation.
- During the internship, students must maintain high **professionalism** by following workplace rules, acting ethically, and communicating professionally. They are expected to apply their **engineering skills** using industry tools, conducting experiments, and solving real-world problems. Students must actively build **industry knowledge** by learning engineering standards and project management practices. The internship serves as a platform for **professional development**, helping students improve their teamwork, time management, and networking to boost their employability. Finally, they must focus on **learning and growth** by connecting classroom theory to practical applications, keeping a daily journal, and exploring future career paths.
- Assessment shall be conducted by a panel of faculty members during Semester III. Feedback from the industry mentor, if available, may be considered as part of the evaluation process. Students shall submit the internship completion certificate, internship report (hard or soft copy), and presentation slides at the time of evaluation.

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- The report shall be assessed based on content quality, technical depth, clarity, organization, methodology, and documentation. The presentation and viva voce shall assess presentation skills, technical understanding, practical insights or demonstration, ability to respond to questions, and overall professionalism and communication.

Evaluation Criteria	Evaluated By	Marks (Out of 50)	Description / Assessment Basis
Workplace Performance	Industry Supervisor	10 Marks	Evaluated based entirely on the external supervisor's performance rubric feedback, focusing on workplace punctuality, professionalism, and core engineering skills.
Technical Report & Documentation	Department Evaluation Committee	20 Marks	Assesses the overall quality, engineering depth, structural formatting, and clarity of the submitted final internship report along with the completion certificate and daily log.
Technical Presentation & Viva-Voce		20 Marks	Evaluates the student's oral presentation delivery, tool/software demonstrations, response accuracy during the question-and-answer session, and overall verbal communication skills.

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Course Information:

Class, Semester	S.Y. M. Tech, Semester – III						**Category**	**SS**	
Course Code, Course Title	**OPSSS6XX, Self-Learning Course I**						**Type**	**T2**	
Prerequisites									
Teaching Scheme (per week)	**Lecture**	**Tutorial**	**Practical**	**Self-Study**	**Credits**				
	04	-	-	04	04				
Examination Scheme (Marks)	**Theory**	**MSE**	**TA**	**ESE**	**Practical**	**CIA**	**ESE**		
		-	-	100		-	-		

Every M.Tech. Student shall successfully complete one 12-week course offered under the NPTEL Postgraduate (PG-Level) category. The course shall be recommended and approved by the concerned Department based on the student's specialization, research domain, dissertation topic, and project requirements to ensure academic relevance and alignment with the programme outcomes.

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Course Information:

Class, Semester	S.Y. M.Tech, Semester – IV					**Category**	**VS**
Course Code, Course Title	**0PSVS607, Dissertation Phase - II**					**Type**	**L1**
Prerequisites	**0CEVS603**						
Teaching Scheme (per week)	**Lecture**	**Tutorial**	**Practical**	**Self Study**	**Credits**		
	-	-	28	-	14		
Examination Scheme (Marks)	**Theory**	**MSE**	**TE**	**ESE**	**Practical**	**CIA**	**ESE**
		-	-	-		50	50

Course Outcomes (COs) :
Upon successful completion of this course, the student will be able to:

CO1	**Implement** the proposed methodology/framework to solve the identified research problem.
CO2	**Conduct** experiments, simulations, testing, or analytical studies and systematically collect relevant data.
CO3	**Analyze** and interpret results using appropriate tools and techniques to validate the proposed solution.
CO4	**Evaluate** the effectiveness of the developed solution and draw meaningful conclusions based on the findings.
CO5	**Prepare** a comprehensive dissertation report and effectively communicate research outcomes through technical presentations, viva-voce, and publications.

- Students shall undertake Dissertation Phase II in Semester IV, focusing on the implementation, experimentation, analysis, validation, and completion of the research work proposed in Dissertation Phase I. The work shall be carried out individually under the guidance of the assigned faculty supervisor. During this phase, students shall implement the proposed methodology, develop the required models, prototypes, software, hardware, or experimental setup, and conduct detailed investigations as per the approved research plan.
- Students shall perform comprehensive experimentation, testing, simulation, or analysis, as applicable, and critically evaluate the results obtained. Wherever applicable, the proposed work shall be compared with existing methods to demonstrate its effectiveness, improvements, or research contributions.
- Students shall meet their faculty guide regularly to review progress, discuss results, address challenges, and receive feedback. The details of meetings, discussion points, observations, and corrective actions shall be recorded in the Project Diary/Research Log Book.
- Students shall maintain a Project File containing implementation details, experimental records, simulation results, data analysis, meeting notes, progress reports, publications, and all relevant supporting documents. Proper documentation of all work carried out shall be maintained throughout the semester.
- Students shall submit periodic progress reports as prescribed by the department. The progress of the dissertation work shall be reviewed during Progress Presentation–III and Progress Presentation–IV (Demonstration).
- Students shall prepare and submit at least one research paper based on their dissertation work to a reputed journal/ conference, or other recognized scholarly forum as per departmental guidelines. Evidence of submission/acceptance/publication shall be included in the Project File and shall form part of the continuous assessment.
- At the end of Semester IV, students shall submit a comprehensive Dissertation Phase II Report incorporating the work carried out in both phases, including problem statement, literature review, methodology, implementation, results, analysis, conclusions, research contributions, and future scope.
- Students shall present and demonstrate their work before the evaluation committee. The final assessment shall be based on the quality of implementation, technical contribution, dissertation report, demonstration, paper publication/submission, maintenance of the Project Diary and Project File, and performance in the viva-voce examination.
- Students shall ensure that the dissertation report complies with the UGC Regulations on Academic Integrity and Prevention of Plagiarism and the norms prescribed by the University/Institute. Prior to submission, the dissertation report shall be checked using approved plagiarism detection software, and the Similarity Index Report duly verified by the guide shall be attached to the dissertation report. Only reports satisfying the permissible similarity limits shall be accepted for evaluation.

Dissertation Phase – II			
Continuous Internal Assessment (50)		End Semester Examination (50)	
Progress Presentation - III	15	Dissertation Report Phase – II	25
Progress Presentation – IV (Demonstration)	20	Viva Voce Examination	25
Paper Publication	15		

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Course Information:

Class, Semester	S.Y. M. Tech, Semester – IV						**Category**	**SS**	
Course Code, Course Title	**OPSSS6XX, Self-Learning Course II**						**Type**	**T2**	
Prerequisites									
Teaching Scheme (per week)	**Lecture**		**Tutorial**		**Practical**		**Self-Study**		**Credits**
	04		-		-		04		04
Examination Scheme (Marks)	**Theory**	**MSE**		**TA**	**ESE**	**Practical**	**CIA**		**ESE**
		-		-	100		-		-

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Course Information:

Class, Semester	F.Y. B.Tech, Semester - II					**Category**	**ES**
Course Code, Course Title	**3CSES111, Basic Electrical and Electronics Engineering**					**Type**	**LIT2**
Prerequisites	-						
Teaching Scheme (per week)	**Lecture**	**Tutorial**	**Practical**	**Self-Study**	**Credits**		
	2	-	2	1	3		
Examination Scheme (Marks)	**Theory**	**MSE**	**TE**	**ESE**	**Practical**	**CIA**	**ESE**
		40	20	40		50	00

Course Outcomes (COs) :

Upon successful completion of this course, the student will be able to:

CO1	Apply basic electrical laws to solve AC and DC circuits.
CO2	Explain the construction and working of electrical machines and protective equipment's.
CO3	Explain the operating principles of semiconductor devices and its applications
CO4	Apply number systems and Boolean algebra to simplify expressions and design logic circuits.
CO5	Analyze combinational and sequential logic circuits to evaluate circuit performance.

Syllabus:

Module	Contents	Lecture Hours
1	**DC Circuits:** Ohms's Law, Equivalent Resistance, Kirchhoff current Law, Kirchhoff voltage laws, Mesh analysis, Nodal analysis.	5
2	**AC Circuits:** Representation of sinusoidal waveforms, peak, average & RMS values. real, reactive and apparent power, power triangle, Analysis of single-phase ac circuits. (R, L and C)	5
3	**Electrical Installation:** Protecting devices – HRC fuse MCB, earthing – plate and pipe wiring circuits – simple, stair case and godown wiring **Electrical Machine:** Principle, Construction and working of DC motor and single-phase transformer,	5
4	**Semiconductor devices and applications:** Introduction to PN junction and Zener diode, half wave and full wave rectifier, UPS, Bipolar junction transistors: input output characteristics.	5
5	**Fundamentals of Digital Electronics:** Number Systems: Decimal, Binary, Octal, Hexadecimal. Boolean Algebra- theorems. Reducing Boolean Expressions. Logic Gates	5
6	**Combinational and Sequential circuits:** Introduction to combinational circuits- Half adder, Full adder, Half Subtractor, Full Subtractor, Introduction to sequential Circuits- Flip-Flops.	5
	Total Lecture Hours	30

List of Experiments with CO Mapping

S.No.	Title / Topic of the Experiment	CO Mapped
1	Experimental Verification of Kirchhoff's Laws.	CO 1
2	Measurement of Power and Power Factor in a Single-phase Circuit.	CO 1
3	Load Test on Single Phase Transformer.	CO 2
4	Demonstration of wiring circuits.	CO 2
5	Experimental verification of Semiconductor Diode Characteristics	CO 3
6	Experimental verification of Zener Diode Characteristics	CO 3
7	Study of characteristics of Single-Phase Half-wave and Full-wave rectifiers.	CO 3
8	Verification of truth tables of basic logic gates	CO 4
9	Implementation of basic logic gates using universal gates	CO 4
10	Implementation of half adder and full adder.	CO 5
11	Implementation of half subtractor and full subtractor.	CO 5
Total Practical Sessions	15	**Total Practical Hours** 30

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Text Books

1. D. P. Kothari, I. J. Nagrath, Basic Electrical Engineering, 4th, Tata McGraw Hill, 2019
2. D. C. Kulshreshtha, Basic Electrical Engineering, 2nd, McGraw Hill, 2020
3. D. P. Kothari, Basic Electrical & Electronics Engineering, 2nd, TMH New Delhi, 2020
4. D. Patranabi, Sensors and transducers, 2nd, PHI learning Pvt. Ltd., 2003

References:

1. Milman and Halkias, Integrated Electronics, 2nd, McGraw Hill, 2010
2. A.K. Thereja and B.L. Thereja, Electrical Technology volume II, 24th, S. Chand & Co. Publications, 2024
3. L. Bakshi and A. Bakshi, Basic Electrical Engineering, 1st, Technical Publications, Pune, 2005
4. Albert Malvin, David Bates, Electronic Principles, 7th, McGraw Hill Education, 2017

Online Learning Resources

1. Basic Electrical Circuits by Prof. Gajendranath Chowdary https://onlinecourses.nptel.ac.in/noc25_ee91/preview
2. Introduction to Semiconductor Devices by Prof. Naresh Kumar https://onlinecourses.nptel.ac.in/noc25_ee92/preview
3. Digital Circuits by Prof. Santanu Chattopadhyay https://onlinecourses.nptel.ac.in/noc25_ee125/preview

Experiments that may be performed through virtual labs:

S.No	Experiment Name	Experiments Links
1.	Simulation & Experimental verification of Kirchhoff's law	https://bes-iitr.vlabs.ac.in/exp/kirchhoff-law/simulation.html
2.	Load Test on Single Phase Transformer.	bes-iiitr.vlabs.ac.in
3.	Verification of logic gates	de-iiitr.vlabs.ac.in

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