



SECOUND-YEAR DIPLOMA ENGINEERING SYLLABUS

Semester: 3rd

Course Code: 002203301

Type of Course: PCC-3

Course Name: AC CIRCUIT

Course Prerequisites: Engineering Physics

COURSE OBJECTIVE(S):

The Purpose of this course is to help the students to learn principles of AC circuits to maintain electrical system. It is the most important core engineering courses for electrical technocrats and students should try to develop mastery over the fundamental concepts.

TEACHING & EXAMINATION SCHEME:

Teaching Scheme (Hrs/Week)				Examination Scheme				
Theory	Tutorial	Practical	Credit	SEE		CA		
				Th	Pr	MSE	PLE	LA
3	1	0	4	60	0	20	20	0
				Total				
				100				

SEE: Semester End Examination; CA: Continuous Assessment; Th: Theory; Pr: Practical; MSE: Mid Semester Examination; PLE: Participatory Learning Experience; LA: Laboratory Assessment

TOTAL Theory Hours: No. of Th. and Tut.Hrs/Week*15 = 45

COURSE CONTENT(S):

Unit No.	Content	Hours	Weightage (%)
1	AC Fundamentals 1.1 Principles of generation of alternating voltage. Cycle, Time period, Frequency, Amplitude, Average value, R.M.S value, Form Factor, Peak Factor, Phase difference. 1.3 Vector representation of alternating quantities. 1.4 Addition, subtraction, multiplication and Division of alternating quantity.	12	18%
2	Single Phase AC Series Circuits 2.1 Waveform, vector diagram and expression of voltage, current and power in pure: Resistance, Inductance, Capacitance. 2.2 AC through R-L, R-C, R-L-C Series circuits 2.3 Resonant Condition and frequency in RLC series circuit. 2.4 Active, Reactive and Apparent power with Examples. 2.5 Lagging, Leading and Unity Power Factor. 2.6 Causes & Disadvantages of Low power factor and advantages of improvement in Power factor. 2.7 Series Resonance.	15	24%
3	Single Phase AC Parallel Circuits 3.1 Phasor method for solving AC Parallel circuits. 3.2 Admittance method for solving AC Parallel circuits. 3.3 Complex algebra method for solving AC parallel circuits. 3.4 Resonant frequency and resonance condition in parallel AC circuits.	10	14%



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	3.5 Comparison: Series and Parallel Resonance.		
4	Three Phase Circuits 4.1 Comparison between Single and Three phase system. 4.2 Principles of Generation of three phase alternating voltage 4.3 Line and phase voltage, line and phase current Three-phase star connection 4.5 Three phase delta connection 4.6 Numerical based on three phase circuits	08	14%
	TOTAL	45	100%

Text Book(s):

Title of the Book	Author(s)	Publication
AC circuit	R.P AJWALI	AtulPrakashan
Elements of Electrical Engineering	U.A PATEL	Atul Prakashan-2010

Reference Book(s):

Title of the Book	Author(s)	Publication
Electrical technology-1	B.L THERAJA A. K THERAJA	S.Chand, New Delhi
Principles of Electrical Engineering	B.R GUPTA	S.K. Kataria & sons-New Delhi
Electronics Principles	S.K SAHEDEV	Dhanpatrai-New Delhi-2022
Basics of Electrical and Electronics Engineering	RAVISH. R SINGH	Tata Mcgeaw Hill-New Delhi-2018

Web Material Link(s):

- a) <https://www.electricaltechnology.org/>
- b) <https://www.vlab.co.in/>

Equivalent/Corresponding Course on NPTEL (SWAYAM):

COURSE EVALUATION:

Sr. No.	Activity	Marks	Weightage
1	Semester End Examination (External Th)	60	60%
2	Internal Examination	40	40%
2(a)	Mid Semester Examination	20	
2(b)	Attendance	10	



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2(c)	Assessment Types (Any One from 2(c).1 to 2(c).7)	10	
2(c).1	Subject (Course) based Mini-Project		
2(c).2	Industry/Site Visit & Report		
2(c).3	Assignment		
2(c).4	Seminar		
2(c).5	Case Study		
2(c).6	Surprise Class Quiz		
2(c).7	Design Exercise		
2(c).7	Presentation		
2(d)	Practical (if Applicable)		

* For 4 Credit Subjects

1 Credit = 25 Marks

Theory: 3 Credits = 75 Marks

Practicals: 1 Credit = 25 Marks

SEE Evaluation will be of 100 marks and converted to 50 Marks (75 Th + 25 Pr)

CA Evaluation will be of 100 Marks and converted to 50 Marks. (75 Th + 25 Pr)

Distribution of Marks for Theory Evaluation as per Bloom's Taxonomy Level:

Level	Remember	Understand	Apply	Analyze	Evaluate	Create
% Weightage	20%	20%	15%	15%	15%	15%

COURSE OUTCOMES: *(in the range of 4 to 6)*

CO1	Interpret the various terminologies, wave-form and vector representation of alternating quantities.
CO2	Apply principles of AC series circuits to solve electrical circuits.
CO3	Analyze the luminance levels for the various locations.
CO4	Apply principles of AC Parallel circuits to solve electrical circuits
CO5	To understand the knowledge of polyphase circuits and star-delta connections.