Prasad V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

PVP20

Department of Freshman Engineering

Engineering Physics

	Т											II		
		Code Course Basic Scie		· D 1			EGE		-	G T				
	1	Basic Science		Branch		ECE		Cou	Course Type		Theory			
Credita		3		TT	L-T-P		200		Dwaw	D		NT:1		
Credits		30			Semester End		3-0-0 70			Prerequisites Total		Nil 100		
Continuous		30					/0					100		
Internal Evaluation				Evaluation		L			Iviai	Marks				
поп					Co	nirse (Jutcon	166						
ıcces	sful co	mnleti	on of th	ne com					to					
	2 0 11													
	<u> </u>													
	<u>•</u>													
												nes &		
		5	Strengt	th of c	orrela	tions (3:High	, 2: Me	dium, 1	:Low)				
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
3												1	2	
3												1	2	
												1	2	
	3											1	2	
								2	2		2	1	2	
						Sylla	abus							
).					,	Syllabı	18					Mappe	d CO's	
	Fiber Optics: Introduction, advantages of optical fibers, principle and													
classification of fibers, fiber optic communication, fiber optic								CO1,CO2						
							c		CO5, CO6					
							orce),	applica	tions.					
			U				14	•	1! 4! -	11.1	4			
								_						
(Qualitative), frequency dependence of polarization, Lorentz field (quantitative), Clausius-Mossotti equation. Magnetic materials: Introduction, magnetic dipole moment, magnetization, magnetic susceptibility and permeability, origin of														
								CO1,	CO3					
								CO4,	CO6					
-														
													CO1,CO3	
												CO5, CO6		
	lion cces Und dechr App App Anal Exar Co O1 3 3	ccessful co Understan technical as Apply the l Apply basi Analyze the Examine th Ability to electromage Contribut O1 PO2 3 3 3 3 3 3 4 3 5 Fiber structu classifi sensors Dielect polariz (Qualit (quanti Magne magne perman theory, Electro Electro derivat	ccessful completi Understand the technical aspects. Apply the knowle Apply basic laws Analyze the theor Examine the med Ability to unde electromagnetism. Contribution of Toll PO2 PO3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ccessful completion of the Understand the electric technical aspects. (L2) Apply the knowledge of Apply basic laws of electromagnetism, principal Examine the mechanism Ability to understand electromagnetism, principal Contribution of Course Strength O1 PO2 PO3 PO4 Strength O1 PO2 PO3 PO4 Structure, acceptance classification of fiber sensors (Temperature Dielectric and Magnetic and Magnetic materials polarizability, susception (quantitative), Clause Magnetic materials permanent magnetic theory, hysteresis, so Electromagnetics: Electrostatic field: derivation of Coulon	ccessful completion of the courunderstand the electric, magazechnical aspects. (L2) Apply the knowledge of Physical Apply basic laws of electromaga Analyze the theory of solids and Examine the mechanism of electromagnetism, principles of Contribution of Course Outstrength of contribution of Fibers, fibers of Contribution of Fibers of Contribution of Fibers, fibers of Contribution of of Con	Coccessful completion of the course, the Understand the electric, magnetic, technical aspects. (L2) Apply the knowledge of Physics and of Apply basic laws of electromagnetism Analyze the theory of solids and dedu Examine the mechanism of electromagnetism, principles of semic Contribution of Course Outcomes Strength of correlation of PO2 PO3 PO4 PO5 PO6 Tiber Optics: Introduction, advastructure, acceptance angle, nurclassification of fibers, fiber optics sensors (Temperature, displacement Dielectric-materials: Introduction polarizability, susceptibility and (Qualitative), frequency depended (quantitative), Clausius-Mossotti Magnetic materials: Introduction magnetization, magnetic susce permanent magnetic moment, clatheory, hysteresis, soft and hard in Electromagnetics: Electrostatic field: Electric poderivation of Coulombs law from the control of the course of the cour	Course Coccessful completion of the course, the studer Understand the electric, magnetic, optical echnical aspects. (L2) Apply the knowledge of Physics and optical Apply basic laws of electromagnetism and malyze the theory of solids and deduce differentiation of the concepts of electromagnetism, principles of semiconduct Contribution of Course Outcomes towar Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 Strength of correlations (201 PO2 PO3 PO4 PO5 PO6 PO7 PO6 PO	Course Outcom ccessful completion of the course, the student will understand the electric, magnetic, optical commetchnical aspects. (L2) Apply the knowledge of Physics and optical Princip Apply basic laws of electromagnetism and material Analyze the theory of solids and deduce different a Examine the mechanism of electromagnetic, in sen Ability to understand the concepts of optical electromagnetism, principles of semiconductor device contribution of Course Outcomes towards ach Strength of correlations (3:High O1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 Structure, acceptance angle, numerical apert classification of fibers, fiber optic communicates sensors (Temperature, displacement and force), Dielectric and Magnetic materials Dielectric-materials: Introduction, electron polarizability, susceptibility and dielectric con (Qualitative), frequency dependence of pot (quantitative), Clausius-Mossotti equation. Magnetic materials: Introduction, magnetic susceptibility and permanent magnetic moment, classification of theory, hysteresis, soft and hard magnetic materials Electromagnetics: Electrostatic field: Electric potential, Coule derivation of Coulombs law from Gauss law.	Course Outcomes Course Outcomes	Course Outcomes ccessful completion of the course, the student will be able to Understand the electric, magnetic, optical communication and electrical aspects. (L2) Apply the knowledge of Physics and optical Principles in optoelect Apply basic laws of electromagnetism and materials for engineerical apply to understand the concepts of optical fibers, the electromagnetism, principles of semiconductor devices and submit Contribution of Course Outcomes towards achievement of Particular of Policy Pol	Course Outcomes Cessful completion of the course, the student will be able to Understand the electric, magnetic, optical communication and semic technical aspects. (L2) Apply the knowledge of Physics and optical Principles in optoelectronic dapply basic laws of electromagnetism and materials for engineering applications and semiconductor devices and submit a report contribution of Course Outcomes towards achievement of Program Strength of correlations (3:High, 2: Medium, 1:Low) O1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 3 Syllabus Fiber Optics: Introduction, advantages of optical fibers, principle structure, acceptance angle, numerical aperture, modes of propagiclassification of fibers, fiber optic communication, fiber optic sensors (Temperature, displacement and force), applications. Dielectric and Magnetic materials Dielectric-materials: Introduction, electronic polarization, dielepolarizability, susceptibility and dielectric constant, types of polarization, magnetic materials: Introduction, magnetic dipole momagnetization, magnetic susceptibility and permeability, origi permanent magnetic moment, classification of magnetic materials. Electromagnetics: Electromagnetic materials, Coulombs law and Gauss derivation of Coulombs law from Gauss law, applications of Gauss.	Course Outcomes	Course Outcomes Coessful completion of the course, the student will be able to Understand the electric, magnetic, optical communication and semiconductor principle chinical aspects. (L2) Apply the knowledge of Physics and optical Principles in optoelectronic devices. (L3) Apply basic laws of electromagnetism and materials for engineering applications. (L3) Analyze the theory of solids and deduce different analytical parameters. (L4) Examine the mechanism of electromagnetic, in sensors and semiconductor devices. (L4) Ability to understand the concepts of optical fibers, the theory of solids, la electromagnetism, principles of semiconductor devices and submit a report. Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low) O1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 3	

Prasad V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

PVP20

Department of Freshman Engineering

	electrostatics in dielectric medium, Poisson's and Laplace equations.	
	Magnetostatic field: Bio-Savart law, Faraday's and Ampere's laws in	
	integral and differential form, displacement current, continuity equation	
	and Maxwell's equations (qualitatively).	
4	Semiconductor Physics	
	Introduction, origin of energy band, intrinsic and extrinsic semiconductors, generation and recombination, carrier concentration in intrinsic semiconductors, variation of Fermi level with temperature in intrinsic semiconductor, n-type and p-type semiconductors, carrier concentration in n type and p type semiconductors, variation of Fermi level with temperature in extrinsic semiconductors.	CO1,CO3, CO4, CO6
5	Semiconductor Devices	
	Drift and diffusion currents in semiconductors, Hall effect and its	CO1, CO2,
	applications, p-n junction diode formation and V-I characteristics, direct	CO1, CO2,
	and indirect band gap semiconductors, construction and working of	CO3, CO0
	photodiode, LED, solar cell	

Learning Resources

Text Books

- 1. R. K. Gaur, S. L. Gupta, "Engineering Physics", Dhanpat Rai Publications, 8th Edition, 2001.
- 2. S. O. Pillai, Solid State Physics, New age international publishers, 7th edition (2016).

Reference Books

- 1. A Text Book of Engineering Physics, M.N.Avadhanulu & P.G.Kshrisagar, S.Chand Publications, fourth edition, 2014.
- 2. Semiconductor Devices & Physics, S.M.Sze, Wiley, 2008.
- 3. Applied Physics, P.K. Palanai Swamy, Sci-Tech Publications. December, 2018
- 4. Engineering Physics, Dr.M.Arumugam, Anuradha Publications, Second edition, 2005.
- 5. Introduction To Electrodynamics, David.J.Griffths, Pearson Education India Learning Private Limited, Fourth edition, 2015.

e- Resources & other digital material

- 1. http://physicsforidiots.com/physics/electromagnetism/
- 2. https://www.arcelect.com/fibercable.htm
- 3. http://freevideolectures.com/Course/3048/Physics-of-Materials/36
- 4. https://www.iitk.ac.in/mse/electronic-materials-and-devices
- 5. https://link.springer.com/chapter/10.1007/978-3-319-48933-9_35