

<b>Course Code</b>	21MAB209T	<b>Course Name</b>	TRANSFORMS AND COMPUTATIONAL TECHNIQUES	<b>Course Category</b>	B	Basic Sciences	L	T	P	C
							3	1	0	4

<b>Pre-requisite Courses</b>	Nil	<b>Co-requisite Courses</b>	Nil	<b>Progressive Courses</b>	Nil
<b>Course Offering Department</b>	Mathematics		<b>Data Book / Codes / Standards</b>	Nil	

<b>Course Learning Rationale (CLR):</b>		<b>The purpose of learning this course is to:</b>		<b>Program Outcomes (PO)</b>												<b>Program Specific outcomes</b>				
CLR-1 :	CLR-2 :	CLR-3 :	CLR-4 :	CLR-5 :	1	2	3	4	5	6	7	8	9	10	11	12				
Compute the Fourier series expansion and express sine and cosine series	Analyze Fourier Transforms and its properties and solve discrete-time signal problems using z transforms	Construct and solve partial differential equations using various techniques., Identify partial differential equations and utilize Fourier series techniques to solve one dimensional wave and heat equations	Apply the numerical techniques for solutions of ordinary differential equations	Apply the numerical techniques for solutions of partial differential equations	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3	
CO-1:	CO-2:	CO-3:	CO-4:	CO-5:	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Explain the Fourier series expansion of a function in terms of sine and cosine series	Apply Fourier transforms techniques in signal analysis, Solve discrete-time signal problems using z transforms	Identify partial differential equations and utilize Fourier series techniques to solve one dimensional wave and heat equations	To solve the numerical solutions of ordinary differential equations	To solve the numerical solutions of partial differential equations	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

<b>Unit-1 - Fourier series</b>	<b>Hour</b>
Dirichlet's conditions – Fourier Series – Functions having arbitrary periods – Odd and even function - Half range sine and cosine Fourier series - Parseval's identity – Harmonic Analysis.	
<b>Unit-2 - Fourier Transforms and Z Transforms</b>	<b>Hour</b>
Fourier transform pair –Fourier sine and cosine transforms – Transforms of simple functions - Convolution theorem (without proof) – Parseval's identity - Z – transforms: Properties of Z transforms – Inverse Z transforms – Convolution theorem (without Proof) – Solution of linear difference equations with constant coefficients using Z-transform	
<b>Unit-3 - Partial Differential Equations and Their Application</b>	<b>Hour</b>
Classification of second-order partial differential equations - Linear Partial differential equations of second and higher order with constant coefficients of homogeneous type-Solutions of one dimensional wave equation - One dimensional equation of heat conduction - Steady state conditions with zero boundary	
<b>Unit-4 - Numerical Solutions of First Order Ordinary Differential Equations and Numerical Integration</b>	<b>Hour</b>
Solutions of first order simultaneous differential equations by Taylor's series method - Euler's method and its applications - Runge-Kutta method of fourth order (No proof) - Trapezoidal rule – Simpson's one third and Simpson's three eighth rules	
<b>Unit-5 - Numerical Solutions of Partial Differential Equations</b>	<b>Hour</b>
Classification of Second order PDE-Solutions of Elliptic Equations- Solutions of Laplace Equations by Liebmann's iterative process- Solutions of Poisson Equations- Solutions of Parabolic equations by Bender-Schmidt formula- Solutions of Parabolic equations by Crank-Nicolson formula- Solutions of Hyperbolic equations by Explicit formula.	

<b>Learning Resources</b>	1. Erwin Kreyszig, <i>Advanced Engineering Mathematics</i> , 10th Edition, John Wiley & Sons, 2015.	4. P. Kandasamy, et. al. <i>Engineering Mathematics</i> , Vol.II & Vol.III (4 <sup>th</sup> revised edition), S. Chand & Co., New Delhi, 2000
	2. B.S. Grewal, <i>Higher Engineering Mathematics</i> , Khanna Publishers, 43rd Edition, 2015.	5. P.Kandasamy et. al., <i>Numerical Methods</i> , S Chand & Co., New Delhi, 2003.
	3. B.V. Ramana, <i>Higher Engineering Mathematics</i> , 3rd Edition, Tata McGraw Hill New Delhi, 2010.	6. T. Veerarajan, <i>Transforms and Partial Differential Equations</i> , Tata McGraw-Hill, New Delhi, 3rd edition, 2012

<b>Learning Assessment</b>							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (50%)		Life-Long Learning CLA-2 (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	20%	-	20%	-
Level 2	Understand	20%	-	20%	-	20%	-
Level 3	Apply	30%	-	30%	-	30%	-
Level 4	Analyze	30%	-	30%	-	30%	-
Level 5	Evaluate	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-
	<b>Total</b>	100 %		100 %		100 %	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. Mr. Madhan Shanmugasundaram, Infosys Technologies madshan@gmail.com	1. Prof. Y.V.S.S. Sanyasiraju, IIT Madras sryedida@iitm.ac.in	1. Dr. V. Subburayan, SRMIST hod.maths.ktr@srmist.edu.in
	2. Prof. K.C. Sivakumar, IIT Madras kcskumar@iitm.ac.in	2. Dr. E.P. Siva, SRMIST sivae@srmist.edu.in

<b>Course Code</b>	21PDH201T	<b>Course Name</b>	SOCIAL ENGINEERING	<b>Course Category</b>	H	Humanities & Social Sciences	L	T	P	C
							2	0	0	2

<b>Pre-requisite Courses</b>	Nil	<b>Co-requisite Courses</b>	Nil	<b>Progressive Courses</b>	Nil
<b>Course Offering Department</b>	Career Development Centre	<b>Data Book / Codes / Standards</b>	Nil		

<b>Course Learning Rationale (CLR):</b>		<b>The purpose of learning this course is to:</b>		<b>Program Outcomes (PO)</b>												<b>Program Specific outcomes</b>		
				1	2	3	4	5	6	7	8	9	10	11	12			
				Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
<b>CLR-1 :</b>	create personal and social awareness and responsibility			-	-	-	-	-	2	2	3	3	3	-	-	-	-	-
<b>CLR-2 :</b>	learn about environment and approach towards social issues			-	-	-	-	-	3	3	2	3	2	-	-	-	-	-
<b>CLR-3 :</b>	train students on social competencies to become self-reliant, resourceful and industrious			-	-	-	-	-	2	1	2	3	3	-	-	-	-	-
<b>CLR-4 :</b>	understand social entrepreneurship			-	-	-	-	-	2	2	3	3	2	-	-	-	-	-
<b>CLR-5 :</b>	develop a mindset to contribute to the society			-	-	-	-	-	3	2	3	3	2	-	-	-	-	-
<b>Course Outcomes (CO):</b>		<b>At the end of this course, learners will be able to:</b>																
<b>CO-1:</b>	identify and addresses needs of social responsibilities			-	-	-	-	-	2	2	3	3	3	-	-	-	-	-
<b>CO-2:</b>	resolve social problems			-	-	-	-	-	3	3	2	3	2	-	-	-	-	-
<b>CO-3:</b>	understand social responsibility competencies and Corporate Social Responsibility activities			-	-	-	-	-	2	1	2	3	3	-	-	-	-	-
<b>CO-4:</b>	build a business plan to meet social needs			-	-	-	-	-	2	2	3	3	2	-	-	-	-	-
<b>CO-5:</b>	gain real time experience through student social responsibility project and presentation			-	-	-	-	-	3	2	3	3	2	-	-	-	-	-

<b>Unit-1 -</b>	<b>6 Hour</b>
Introduction to Social Engineering – Importance – Social Ethics – Vision & Mission towards society – Social Change – Individual Social Responsibility (ISR)	
<b>Unit-2 -</b>	<b>6 Hour</b>
UNSDGs – Relevance & impact of SDGs – Social Marketing – Marketing mix - Process	
<b>Unit-3 -</b>	<b>6 Hour</b>
PRC – Self-determination – Self regulation – Well-being (PERMA) – Volunteerism – SRC – Contributing to community & environment – Solving problems peacefully – Valuing diversity – Building relationships	
<b>Unit-4 -</b>	<b>6 Hour</b>
NGO – functions – Types – Approaches – NPO – Corporate Social Responsibility – Evolution - Benefits – Types – Legal Mandate	
<b>Unit-5 -</b>	<b>6 Hour</b>
Social Entrepreneurship – History – Impact – Types – Social Entrepreneurs – Social Enterprises – Social Business model canvas	

<b>Learning Resources</b>	1. Joel Makeower, <i>Beyond The Bottom Line: Putting Social Responsibility to work for your Business and the World</i> , Oct, 1995	5. Nicholls, Alex, ed., <i>Social Entrepreneurship – New Models of Sustainable Social Change</i> , Oxford University Press, 2008
	2. Simen Sinek, <i>Start with Why, How great leaders Inspire Everyone to Take Action</i> , Penguin UK, 2011	6. Ronald R. Sims, <i>Ethics and Corporate Social Responsibility: Why Giants fall</i> , 2003
	3. Adam Grant, <i>Give and Take: Why Helping others drives our success</i> , Orion Publishing Group, 2014	7. Robert A. Rohm, <i>Positive Personality Profiles</i> , Personality Insights, Inc, 2006
	4. David Bornstien, <i>How to change the world</i> , Oxford University Press, 2007	8. Neil Malhotra, <i>Frontiers in Social Innovation</i> . Harvard Business Review Press, 2022

<b>Learning Assessment</b>							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (50%)		Life-Long Learning CLA-2 (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	20%	-	20%	-
Level 2	Understand	20%	-	20%	-	20%	-
Level 3	Apply	30%	-	30%	-	30%	-
Level 4	Analyze	30%	-	30%	-	30%	-
Level 5	Evaluate	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-
	<b>Total</b>	100 %		100 %		100 %	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. Mr. Ajay Zener, Director, Gradsquare	1. Dr.J.Vanitha, Dept. of Sociology, Loyola College.	1. Dr.P.Madhusoodhanan
		2. Mr.P.Priyanand, SRMIST
		3. Ms.M.Kavitha, SRMIST

Course Code	21ASS101T	Course Name	APPLIED ENGINEERING MECHANICS	Course Category	S	Engineering Sciences	L	T	P	C
							3	0	0	3

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Aerospace Engineering		Data Book / Codes / Standards	Nil	

Course Learning Rationale (CLR):		The purpose of learning this course is to:		Program Outcomes (PO)												Program Specific outcomes			
CLR-1 :	CLR-2 :	CLR-3 :	CLR-4 :	CLR-5 :	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
Apply the concept of static equilibrium of particles and rigid bodies.	Apply the concept of centroid and moment of inertia about different axes on static structures	Apply the concept of the dynamics of particles	Apply the concept of the dynamics of rigid bodies.	Solve problems related to space mechanics.	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning			
CO-1:	Determine the forces under static equilibrium	3	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO-2:	Calculate the centroids and determine moment of inertia	3	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO-3:	Determine the forces acting on particle for kinetics and kinematics	3	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO-4:	Determine the forces acting on rigid body for kinetics and kinematics	3	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO-5:	Solve the problems of orbital mechanics and projectile motions	3	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-

<b>Unit-1 - Statics of Particles</b>	<b>9 Hour</b>
Fundamentals of mechanics - Forces on particles - Resolution and Resultant of forces - Principle of Transmissibility - Forces in space - Moment of force - Varignon's theorem - Equivalent system of forces -Free body diagram - Types of supports and Equilibrium of rigid bodies in two dimensions – Statically determinate and indeterminate structures.	
<b>Unit-2 - Properties of Surfaces And Volumes</b>	<b>9 Hour</b>
Determination of centroids by integration - centroids of lines, areas and volumes - Determination of moment of inertia by integration, Parallel and Perpendicular axis theorems - Polar moment of inertia - Mass moment of inertia.	
<b>Unit-3 - Dynamics of Particles</b>	<b>9 Hour</b>
Rectilinear motion: Uniform motion and Uniformly accelerated motion - Rectangular components of velocity. Curvilinear Motion-Normal and tangential components - Radial and transverse components. Cylindrical coordinates, Newton's second law – D' Alembert's principle - Principle of work and energy, principle of impulse and momentum.	
<b>Unit-4 - Dynamics of Rigid Bodies</b>	<b>9 Hour</b>
Kinematics of rigid bodies: Fixed axis rotation - General plane Motion-Absolute and Relative velocity in plane motion - Instantaneous center of rotation in plane motion - Principle of work and energy, Principle of impulse and momentum for the plane motion of a rigid body	
<b>Unit-5 - Applications in Space Mechanics</b>	<b>9 Hour</b>
Angular momentum of a particle- Rate Of change of angular momentum - Newton's Law of Gravitation – Kepler's Law of motion - Conservation of angular momentum, conservation of energy, Space Mechanics – Central Force Motion, Trajectory of a particle under a central force: Application to space mechanics	

<b>Learning Resources</b>	1. Ferdinand P. Beer, E. Russell Johnston Jr., David Mazurek, Philip J Cornwell, "Vector Mechanics for Engineers: Statics and Dynamics", McGraw - Hill, New Delhi, Tenth Edition, 2013.	3. NPTEL Engineering Mechanics Lectures by IIT Guwahati 'https://nptel.ac.in/courses/112103109/'
	2. Shames, I.H., and Krishna Mohana Rao, G., "Engineering Mechanics (Statics and Dynamics)", Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), 2006.	

<b>Learning Assessment</b>							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (50%)		Life-Long Learning CLA-2 (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	20%	-	20%	-
Level 2	Understand	30%	-	30%	-	30%	-
Level 3	Apply	50%	-	50%	-	50%	-
Level 4	Analyze	-	-	-	-	-	-
Level 5	Evaluate	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-
<b>Total</b>		100%		100%		100%	

<b>Course Designers</b>		
<b>Experts from Industry</b>	<b>Experts from Higher Technical Institutions</b>	<b>Internal Experts</b>
1. Dr. R. Krishnamurthy, Group Director, Design Group, DRDL-DRDO, Hyderabad, rkmurthy@drdl.drdo.in	1. Dr. K. M. Parammasivam., Ph.D., Post-doc (Japan), Professor, Department of Aerospace Engineering Madras Institute Of Technology Campus, Anna University, Chennai, Indiamparams@mitindia.edu	1. Mr.K.B.Ravichandrakumar, Assistant Professor, SRMIST
2. Dr. A Sakthivel, Scientist 'G', Regional Director RCMA (Helicopters), CEMILAC, DRDO, Bengaluru	2. Dr.S. Nadaraja pillai, Professor, Department of Mechanical Engineering, Sastra university Thanjavur, nadarajapillai@mech.sastra.edu	2. Mr. K.lynthezhuthon, Assistant Professor, SRMIST

Course Code	21EEEC201J	Course Name	ANALOG ELECTRONICS	Course Category	C	Professional Core	L	T	P	C
							3	0	2	4

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Electrical and Electronics Engineering	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):		Program Outcomes (PO)												Program Specific outcomes		
The purpose of learning this course is to:		1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
CLR-1 :	Develop amplifier circuits in the field of electronics	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning			
CLR-2 :	Evolve oscillator circuits in audio and radio applications															
CLR-3 :	Develop op-amp circuits for linear and non linear applications															
CLR-4 :																
CLR-5 :																
Course Outcomes (CO):		At the end of this course, learners will be able to:														
CO-1:	Design voltage, power and feedback amplifiers	3	-	3	-	-	-	-	-	2	2	-	-	3	-	-
CO-2:	Design oscillators and multivibrators	3	-	3	-	-	-	-	-	2	2	-	-	3	-	-
CO-3:	Design wave generating circuits, filters and converters employing op-amps	3	-	3	-	2	-	-	-	2	2	-	-	3	2	-
CO-4:																
CO-5:																

<b>Unit-1 - Small Signal Amplifiers</b>	<b>15 Hour</b>
Biasing methods of BJT in CE configuration- Operation of CE, CB, CC Amplifier- h-parameters- Small and Large signal analysis of amplifiers- Bias stability - Biasing methods of JFET - Operation of JFET (CS) amplifier- Biasing methods of MOSFET (CS)- Small signal analysis of CS amplifier- Design of amplifier circuits. Laboratory Practices: Low voltage audio amplifiers.	
<b>Unit-2 - Power Amplifiers and Feedback Amplifiers</b>	<b>15 Hour</b>
Power amplifiers-Class A, B, C power amplifier-Frequency response and Efficiency of RC coupled and Transformer coupled class A power amplifier-Operation of Class B and Class AB push pull power amplifier-Class C power amplifiers- Design of power amplifiers. Operation and analysis of Differential amplifier-Cascode and Cascade circuits. Feedback amplifiers – Types and analysis of feedback amplifiers-Design of feedback amplifiers.Laboratory Practices: Power and feedback amplifiers.	
<b>Unit-3 - Oscillators and Multivibrators</b>	<b>15 Hour</b>
Oscillators-classification-Analysis of RC Phase shift oscillator and Hartley's oscillator - Armstrong oscillator-Crystal Oscillator-UJT Relaxation oscillators-Design of Oscillators- Multivibrator-Types-Operation and analysis of Astable Multivibrator and Monostable Multivibrator-Design of multivibrators-Voltage-time and current-time based circuits-Series and shunt voltage regulator using transistors. Laboratory Practices: Oscillators and multivibrators.	
<b>Unit-4 - Op Amp- Characteristics and Applications</b>	<b>15 Hour</b>
Introduction to Linear ICs and Fabrication process-DC and AC characteristics of IC741 op amp-Linear and Non-Linear Applications of op-amp- Design on linear and non-linear applications of op-amp. IC 555 Timer in Astable and Monostable operation - Oscillators- Wein bridge Oscillator using IC 741. Voltage regulator using IC 723. Simple MOSFET based op-amp circuits. Laboratory Practices: Op-amp applications.	

<b>Unit-5 - Filters and Converters</b>	<b>15 Hour</b>
Filter basics and types, Design of I and II Order LPF and HPF, Design of BPF and BR- Switched variable filters and state variable filters- Classification and operation of Analog to Digital converters and Digital to Analog converters.Laboratory Practices: Filters and converters	

<b>Learning Resources</b>	1. Stephen H. Lewis, Robert G. Meyer, Paul R. Gray, Paul J. Hurst, "Analysis & Design of Analog Integrated Circuits", 5th Edition, Wiley & Sons, Incorporated, John, 2009.	4. R. A. Gayakwad, Op-Amps and Linear Integrated Circuit, 4th Edition, Prentice Hall of India, 2004.
	2. Robert L. Boylestad, Louis Nashelsky, "Electronic Devices and Circuit Theory", 11th edition, Pearson Education India, 2015.	5. S. Smith, "Microelectronics Circuits", 5th edition, Oxford, 2005.
	3. Jacob Millman, Christos C. Halkias, Chetan D. Parikh, "Integrated Electronics: Analog and Digital Circuits and Systems", 2nd edition, Tata Mcgraw Hill Education Private Limited, 2011	

<b>Learning Assessment</b>							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (45%)		Life-Long Learning CLA-2 (15%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	-	20%	20%	-
Level 2	Understand	20%	-	-	20%	20%	-
Level 3	Apply	30%	-	-	30%	30%	-
Level 4	Analyze	30%	-	-	30%	30%	-
Level 5	Evaluate	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-
	<b>Total</b>	100 %		100 %		100 %	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. Mr. A. Manikanda Natarajan, Seshasayee Paper and Boards Limited, Tirunelveli	1. Dr. A. Venkadesan, NIT, Puducherry	1. Dr. R. C. Ilambirai, SRMIST
2. Mr. Deepan, TANGEDCO	2. Dr. R. Ramesh, Anna University	2. Dr. N. Kalaiarasi, SRMIST



Course Code	21EEEC202T	Course Name	ELECTROMAGNETIC THEORY	Course Category	C	Professional Core	L	T	P	C
							2	1	0	3

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Electrical and Electronics Engineering	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):		The purpose of learning this course is to:		Program Outcomes (PO)												Program Specific outcomes			
CLR-1 :	CLR-2 :	CLR-3 :	CLR-4 :	CLR-5 :	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
	Provide the basic skills required to understand, develop, and solve various engineering problems in electrostatic field and its applications.				Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning			
	Emphasise on the electromagnetic wave concepts for obtaining solution to real time problems.				3	3	-	-	-	-	-	-	-	2	-	-	1	-	-
					3	3	-	-	-	-	-	-	-	2	-	-	1	-	-
					3	3	-	-	-	-	-	-	-	2	-	-	-	-	-

<b>Unit-1 - Basics of Electrostatics</b>	<b>9 Hour</b>
Sources and effects of electromagnetic fields, Coordinate Systems, Gradient, Divergence, Curl, Stokes and Divergence theorem, Coulombs Law and its application, Electric Field Intensity, Field due to discrete and continuous charges, Torque on an Electric Dipole in an Electric Field, Gauss's law and applications. equipotential plots	
<b>Unit-2 - Electrostatics</b>	<b>9 Hour</b>
Potential theory, Electric field in free space, conductors, dielectrics, Dielectric polarization, Dielectric strength, Electric field in multiple dielectrics, Boundary conditions, Poisson's and Laplace's equations in electrostatic field, Capacitance calculation, Energy Stored and Energy Density in a Static Electric Field, Applications of electrostatics.	
<b>Unit-3 - Magnetostatics</b>	<b>9 Hour</b>
Static Magnetic Fields, Lorentz force, magnetic field intensity (H), Biot-Savart's Law, Ampere's Circuit Law, Oerstead's experiment, H due to straight conductors, circular loop, infinite sheet of current, flux density (B) for coaxial cables, Magnetization, Magnetic field in multiple media, Boundary conditions for static magnetic field, Scalar and vector potential, inductance calculation for coaxial cable, Magneto-static applications	
<b>Unit-4 - Time Varying Electromagnetic Field</b>	<b>9 Hour</b>
Magnetic potential, Faraday's law of Electromagnetic induction, transformer EMF, Displacement current, conduction current, Maxwell's equation, Phasor representation of time harmonic field, Energy in quasi-stationary Fields Case study on real time applications of Maxwell's equations, Applications of Poynting theorem, Software tool for 3D electromagnetic field simulations	

<b>Unit-5 - Electromagnetic Waves</b>	<b>9 Hour</b>
Electromagnetic wave generation and Helmholtz's equations. Wave parameters- velocity, intrinsic impedance- propagation constants, Skin depth, Wave equation for lossy dielectric, lossless dielectrics and inductors, Standing wave, Plane wave reflection and refraction, incidence of plane wave at the boundary between two region, Fresnel's coefficient, Goos- Hanchen effect, Snells law, Reflection coefficient, Transmission coefficient, Brewster and critical angle.	

<b>Learning Resources</b>	1. Mathew N. O. Sadiku, 'Principles of Electromagnetics', Oxford University Press Inc., 6th Edition, 2015.	4. Joseph. A. Edminister, 'Schaum's Outline of Electromagnetics, (Schaum's Outline Series), McGraw Hill, 4th Edition, 2013.
	2. William H. Hayt and John A. Buck, 'Engineering Electromagnetics', McGraw Hill Special Indian edition, 8th edition, 2017.	5. S.P. Ghosh, Lipika Datta, 'Electromagnetic Field Theory', McGraw Hill Education (India) Private Limited, 1st Edition, 2012
	3. Kraus and Fleish, 'Electromagnetics with Applications', McGraw Hill International Editions, 5th Edition, 2010.	

<b>Learning Assessment</b>							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (50%)		Life-Long Learning CLA-2 (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	15%		20%	-
Level 2	Understand	20%	-	15%		20%	-
Level 3	Apply	30%	-	30%		30%	-
Level 4	Analyze	30%	-	30%		30%	-
Level 5	Evaluate	-	-	10%	-	-	-
Level 6	Create	-	-	-	-	-	-
	<i>Total</i>	100 %		100 %		100 %	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. Dr. Bhaskarsahu, Schneider Electric Ltd.	1. Dr. K. S. Swarup, IIT Madras	1. Dr. R. Rajarajeswari, SRMIST
2. Mrs. S. Sweet Annie Grace-Scientist/Engr 'SG' ISRO	2. Dr. A. Venkadesan, NIT, Karaikal	2. Dr. D. Anitha, SRMIST

Course Code	21EEEC203J	Course Name	ELECTRICAL MACHINES - I	Course Category	C	Professional Core	L	T	P	C
							2	0	2	3

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Electrical and Electronics Engineering	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Program Outcomes (PO)												Program Specific outcomes		
CLR-1 :	Apply the basic laws of electromagnetic induction in rotating machines	1	2	3	4	5	6	7	8	9	10	11	12			
CLR-2 :	Understand the behavior of DC machines at no load and load conditions	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
CLR-3 :	Analyze the performance of transformer at various operating conditions															
CLR-4 :	Predetermine the operating conditions of machines as per standard practices															
CLR-5 :	Understand the design of DC machines and Transformers															
Course Outcomes (CO):	At the end of this course, learners will be able to:															
CO-1:	Comprehend the basics of electromagnetics and concept of rotating machines	3	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO-2:	Illustrate the characteristics of DC machines at various load conditions	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO-3:	Identify the different types of transformers and analyze the performance using equivalent circuit	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO-4:	Investigate the performance of DC machines and transformers by various tests	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO-5:	Examine the main dimensions of DC machines and transformers	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-

<b>Unit-1 - Electro Magnetic Induction and Basic Concept in Rotating Machines</b>	<b>12 Hour</b>
Introduction to magnetic circuits – Magnetically induced EMF and force – AC operation of magnetic circuits – Hysteresis and Eddy current losses. Energy in magnetic systems – Field energy & mechanical force – Single and Multiple excited systems. MMF of distributed windings – Magnetic fields in rotating machines – Generated voltages – Torque.	
<b>Unit-2 - Dc Machines</b>	<b>12 Hour</b>
Types of generator – Characteristics of DC generators – Commutation – Armature reaction - Parallel operation of DC generators – Applications. Types of motor – Characteristics of DC motors – Starters – Speed control – Losses and efficiency –Applications.	
<b>Laboratory Practice:</b> Characteristics of self and separately excited DC generators, Load test and speed control of shunt and series motors.	
<b>Unit-3 - Transformers</b>	<b>12 Hour</b>
Parts of the single and three phase transformers – Condition for maximum efficiency - Transformer on No load and Load – Phasor diagram -- Equivalent circuit – Regulation, losses, efficiency - Three phase transformer connections - Parallel operation of single phase and three phase transformers - Auto transformer – Special transformers: High frequency, CT, PT, isolation, power, distribution, tap changing - on load, off load, phase shifting transformer.	
<b>Laboratory Practice:</b> Load test and parallel operation of single phase and three phase transformers.	
<b>Unit-4 - Testing Of Dc Machines and Transformers</b>	<b>12 Hour</b>
Brake test, Swinburne's test, Retardation test, Hopkinson's test- Testing of transformer: polarity test, load test, open circuit and short circuit test, Sumpner's test – All day efficiency.	
<b>Laboratory Practice:</b> Swinburne's test and Hopkinson's test on DC machines, Open circuit test, short circuit test and Sumpner's test on single phase transformer, Load test and parallel operation of single phase and three phase transformers.	

**Unit-5 - Design Of Dc Machines and Transformers** **12 Hour**

Output Equation of DC machines - Choice of Specific Electric Loading and Specific Magnetic Loading, Separation of D and L, quantitative values. Output Equation of single and three phase transformers - Design of core and window dimensions of the transformer.

**Laboratory Practice:** CAD design of DC machines.

<b>Learning Resources</b>	1. D. P. Kothari, I. J. Nagrath, <i>Electrical Machines</i> , Tata-McGraw Hill, 5th edition, 2017.	3. Paul C. Krause, Oleg Waszynczuk, Scott D. Sudhoff, <i>Analysis of electric machinery and Drive systems</i> , IEEE Series, John Wiley & Sons, 3rd edition, 2013.
	2. A. E. Fitzgerald, C. Kingsley, <i>Electric Machinery</i> , McGraw Hill Education, 6th edition, 2013.	4. Sawhney, A.K., <i>A Course in Electrical Machine Design</i> , Dhanpat Rai & Sons, 4th edition, 2017.

<b>Learning Assessment</b>							
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)				Summative Final Examination (40% weightage)	
		Formative CLA-1 Average of unit test (45%)		Life-Long Learning CLA-2 (15%)			
		Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	-	20%	20%	-
Level 2	Understand	20%	-	-	20%	20%	-
Level 3	Apply	30%	-	-	30%	30%	-
Level 4	Analyze	30%	-	-	30%	30%	-
Level 5	Evaluate	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-
	<i>Total</i>	100 %		100 %		100 %	

<b>Course Designers</b>		
<b>Experts from Industry</b>	<b>Experts from Higher Technical Institutions</b>	<b>Internal Experts</b>
1. Mr. V. Kaushik, Ather Energy	1. Dr. B. ChittiBabu, IITD, Kanchipuram	1. Dr. V. Pradeep, SRMIST
2. Mr. Muralikrishna, National Instruments	2. Dr. V. Jamuna, Jerusalem College of Engineering	2. Dr. K. Vijayakumar, SRMIST

Course Code	21LEM201T	Course Name	PROFESSIONAL ETHICS	Course Category	M	Mandatory Courses	L	T	P	C
							1	0	0	0

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	English and Foreign Languages		Data Book / Codes / Standards	Nil	

Course Learning Rationale (CLR):		The purpose of learning this course is to:		Program Outcomes (PO)												Program Specific outcomes			
CLR-1 :	CLR-2 :	CLR-3 :	CLR-4 :	CLR-5 :	1	2	3	4	5	6	7	8	9	10	11	12	PSO-1	PSO-2	PSO-3
	To connect the learners to their potential - understand moral, professional and personal values.				Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning			
	To introduce the learners to professional ethics and to enable them towards decision making skills				-	-	-	-	-	-	-	3	-	-	-	3	-	-	-
	To draw the learners' attention towards business ethics.				-	-	-	-	-	3	-	3	-	-	-	-	-	-	-
	To strengthen and enhance professional ethics through psychological approach				-	-	-	-	-	-	-	3	2	-	-	3	-	-	-
	To cultivate a spirit of working in diverse world by understanding workplace ethics.				-	-	-	-	-	2	3	3	-	-	-	-	-	-	-

Course Outcomes (CO):		At the end of this course, learners will be able to:	
CO-1:	Equip themselves with an understanding of moral, professional and personal values		
CO-2:	Understand the need of ethics in shaping their profession The learners will hone their decision - making skills.		
CO-3:	Refine their business ethics based on psychological and philosophical perspective.		
CO-4:	Have an edge over the ethical systems in workplace.		
CO-5:	assess the need for a balance between ecology, engineering and economy		

<b>Unit-1 - Introduction</b>	<b>Hour</b>
Individual and Professional Ethics: Introduction to Professional Ethics, Morals, Values and Ethics - Personal and Professional - Sense of Engineering Ethics - Code of Ethics by NSPE - Making decisions with ethical dimensions - definition - roadmap to ethical decision making - common standards - internal obstacles - bias - empathy.	
<b>Unit-2 - Business Ethics</b>	<b>Hour</b>
Philosophical approaches to Business Ethics - ethical reasoning - ethical issues in business - Social Responsibility of Business - conflict of interest - cultural relativism - Ethical leadership - Resisting un - ethical authority and domination - Global Business Ethics.	
<b>Unit-3 - Psychological Approaches</b>	<b>Hour</b>
Ethical Theories - Psychological and Philosophical approaches - Myths about Morality - conflict of interest in psychological perspective - Courage - Integrity - ethical dilemma - Emotional Intelligence.	
<b>Unit-4 - Workplace Ethic</b>	<b>Hour</b>
Ethics in changing domains of Research - academic integrity - intellectual honesty - Role of Engineers and Managers - Ethical issues in Diverse workplace - competition - free will - Confidentiality - employee rights - Intellectual property rights - discrimination.	
<b>Unit-5 - Safety, Responsibilities and Rights</b>	<b>Hour</b>
Ecology, Engineering, Economy - Risk benefit analysis and reducing risk - SDGs - Corporate social responsibility and Corporate Sustainability - CSR in India - Sustainability Case Studies.	

<b>Learning Resources</b>	1. Subramanian. R., <i>Professional Ethics</i> , Oxford Publication, 2013.	5. <a href="https://www.nspe.org/resources/ethics/code-ethics">https://www.nspe.org/resources/ethics/code-ethics</a>
	2. Nagarasan. R.S. <i>Professional Ethics and Human Values</i> . New Age International Publications, 2006.	6. <a href="https://www.toolshero.com/tag/ethical-decision-making/">https://www.toolshero.com/tag/ethical-decision-making/</a>
	3. Mike W Martin and Roland Schinzinger, <i>Ethics in Engineering</i> , 4th edition, Tata McGraw Hill Publishing Company Pvt Ltd, New Delhi, 2014	7. <a href="https://pagecentertraining.psu.edu/public-relations-ethics/introduction-to-public-relations-ethics/lesson-1/ethical-theories/">https://pagecentertraining.psu.edu/public-relations-ethics/introduction-to-public-relations-ethics/lesson-1/ethical-theories/</a>
	4. <a href="https://soaneemrana.org/onewebmedia/Professional%20Ethics%20and%20Human%20Values%20by%20R.S%20NAAGARAZAN.pdf">https://soaneemrana.org/onewebmedia/Professional%20Ethics%20and%20Human%20Values%20by%20R.S%20NAAGARAZAN.pdf</a>	8. <a href="https://www.ewh.ieee.org/soc/pes/switchgear/presentations/tp_files/2017-1_Thurs_Shiffbauer_Singer_Engineering_Ethics.pdf">https://www.ewh.ieee.org/soc/pes/switchgear/presentations/tp_files/2017-1_Thurs_Shiffbauer_Singer_Engineering_Ethics.pdf</a>
		9. <a href="https://peer.asee.org/case-studies-in-engineering-ethics.pdf">https://peer.asee.org/case-studies-in-engineering-ethics.pdf</a>

<b>Learning Assessment</b>									
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)						Summative Final Examination (0% weightage)	
		Formative CLA-1 Average of unit test (20%)		Life Long Learning CLA-2 – (60%)		Summative (20%)		Theory	Practice
		Theory	Practice	Theory	Practice	Theory	Practice		
Level 1	Remember	30%	-	20%	-	20%	-	-	-
Level 2	Understand	40%	-	20%	-	20%	-	-	-
Level 3	Apply	30%	-	30%	-	30%	-	-	-
Level 4	Analyze	-	-	30%	-	30%	-	-	-
Level 5	Evaluate	-	-	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-	-	-
	<b>Total</b>	100 %		100 %		100%		-	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. Ms. Woanyuh Zoe Tsou Founder and proprietor, IF Lingua Cultural studio, Hsinchu, Taiwan.	1. Dr. S. Soundiraraj, Professor and Head, Dept. of English, College of Engineering, Anna University Guindy Campus, Chennai.	1. Dr. P. Tamilarasan Associate Prof & Head(i/c), Dept. of EFL, SRMIST.
	2. Dr. J. Mangayakarasi, Dean of Academics Affairs & Head, PG and Research, Dept. of English, Ethiraj College for Woman, Chennai.	2. Dr. J. Michael Raj Asst. Professor (SG), Dept. of EFL SRMIST
		3. Dr. S. Ramya Asst. Professor (Sr.G), Dept. of EFL, SRMIST
		4. Dr. K.R. Sondaraya Asst. Professor, Dept. of EFL, SRMIST.

Course Code	21PDM201L	Course Name	VERBAL REASONING	Course Category	M	Mandatory Courses	L	T	P	C
							0	0	2	0

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Career Development Centre	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Program Outcomes (PO)												Program Specific outcomes		
CLR-1 :	Understand the structure, organization, tone, and main idea of the passage	1	2	3	4	5	6	7	8	9	10	11	12			
CLR-2 :	Determine the grammatical, syntactical, and logical accuracy of sentences	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
CLR-3 :	Comprehend an argument's line of reasoning															
CLR-4 :	Enable students understand subtle meanings of words used in academic texts															
CLR-5 :	Recognize the logical coherence of ideas in a text															
Course Outcomes (CO):	At the end of this course, learners will be able to:															
CO-1:	Build vocabulary through methodical approaches and nurture passion for enriching vocabulary	-	-	-	-	-	-	-	-	2	3	-	3	-	-	-
CO-2:	Detect and correct grammatical, syntactical, and logical fallacies	-	-	-	-	-	-	-	-	2	3	-	3	-	-	-
CO-3:	Hone critical thinking skills by analyzing arguments with explicit and implicit premises to validate the author's point of view	-	-	-	-	-	-	-	-	2	3	-	3	-	-	-
CO-4:	Analyze and evaluate texts critically in multifarious ways	-	-	-	-	-	-	-	-	2	3	-	3	-	-	-
CO-5:	Identify relationships between sentences based on their function, usage and characteristics	-	-	-	-	-	-	-	-	2	3	-	3	-	-	-

<b>Unit-1 -</b>	<b>6 Hour</b>
Reading Comprehension, Spotting Errors – Subject Verb Agreement, Pronouns, Tense, Comparisons	
<b>Unit-2 -</b>	<b>6 Hour</b>
Sentence Correction – Modifiers, parallelism, Subjunctive Mood	
<b>Unit-3 -</b>	<b>6 Hour</b>
Sentence Completion – Single Blank, Double and Triple blanks, Sentence Completion- Grammar, Synonyms and Antonyms	
<b>Unit-4 -</b>	<b>6 Hour</b>
Critical Reasoning – Facts, Inference, Judgement, Strengthening and Weakening an Argument	
<b>Unit-5 -</b>	<b>6 Hour</b>
Para jumble, Para Completion, One word substitution,	

<b>Learning Resources</b>	1. Charles Harrington Elstor, <i>Verbal Advantage: Ten Easy Steps to a Powerful Vocabulary</i> , Random House Reference, 2002	3. Franklin GRE Word List, 3861 GRE Words, Franklin Vocab System, 2014 Wiley's GMAT Reading Comprehension Grail, Wiley, 2016
	2. Norman Lewis, <i>How to Read Better and Faster</i> , Goyal, 4 <sup>th</sup> Edition	4. Manhattan Prep GRE : Reading Comprehension and Essays, 5th Edition

<b>Learning Assessment</b>									
	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)						Summative Final Examination (0% weightage)	
		CLA-1 Average of first cycle experiments (30%)		CLA-2 Average of second cycle experiments (30%)		Practical Examination (40% weightage)		Theory	Practice
		Theory	Practice	Theory	Practice	Theory	Practice		
Level 1	Remember		40%		30%		30%		
Level 2	Understand								
Level 3	Apply		40%		40%		40%		
Level 4	Analyze								
Level 5	Evaluate		20%		30%		30%		
Level 6	Create								
	<i>Total</i>		100 %		100 %		100%		-

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1. Mr. Pratap Iyer, Study Abroad Mentors, pratap.iyer30@gmail.com	1. Mr Nishith Sinha, dueNorth India Academics LLP, nsinha.alexander@gmail.com	1. Dr. P. Madhusoodhanan, SRMIST
2. Mr. Ajay Zener, Director, Gradsquare ajayzener@gmail.com	2. Dr. Dinesh Khattar, Delhi University, dinesh.khattar31@gmail.com	2. Dr. Jayapragash J, SRMIST
		3. Dr. M. Snehalatha, SRMIST



Course Code	21LEM202T	Course Name	UHV-II: Universal Human Values – Understanding Harmony and Ethical Human Conduct	Course Category	M	CREDIT	L	T	P	C
							2	1	0	3

Pre-requisite Courses	Nil. Desirable : UHV-I: Universal Human Values – Introduction	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Value Education Cell	Data Book / Codes / Standards	Nil		

Course Learning Rationale (CLR):		Program Learning Outcomes (PO)											
The purpose of learning this course is to:		1	2	3	4	5	6	7	8	9	10	11	12
CLR-1 :	Help the students to understand need of value education, appreciate the essential complementarity between 'values' and 'skills' and to ensure sustained happiness and prosperity which are the core aspirations of all human beings,	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning
CLR-2 :	Help students initiate a process of dialog within themselves to know what they really want to be' in their life and profession.												
CLR-3 :	Help students to understand the meaning of happiness and prosperity for a human being. understanding holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.												
CLR-4 :	Help students on right understanding of the Human reality and the rest of existence, harmony at all the levels of human living, and live accordingly.												
CLR-5 :	Highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.												
Course Learning Outcomes (CO):		At the end of this course, learners will be able to:											
CO-1:	Evaluate the significance of value inputs in formal education and start applying them in their life and profession	-	-	-	-	-	-	-	3	2	-	-	3
CO-2:	Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.	-	-	-	-	-	-	-	3	2	-	-	3
CO-3:	Analyze the value of harmonious relationship based on trust and respect in their life and profession	-	-	-	-	-	-	-	3	2	-	-	-
CO-4:	Examine the role of a human being in ensuring harmony in society and nature.	-	-	-	-	-	2	2	3	-	-	-	3
CO-5:	Apply the understanding of ethical conduct to formulate the strategy for ethical life and profession.	-	-	-	-	-	-	-	3	2	-	-	3

<b>Unit-1 : Introduction-Basic Human Aspiration, its fulfillment through All- encompassing Resolution</b>	<b>9 Hour</b>
<i>The basic human aspirations and their fulfillment through Right understanding and Resolution, Right understanding and Resolution as the activities of the Self, Self being central to Human Existence; All-encompassing Resolution for a Human Being, its details and solution of problems in the light of Resolution</i>	
<b>Unit-2: Right Understanding (Knowing)- Knower, Known &amp; the Process</b>	<b>9 Hour</b>
<i>The domain of right understanding starting from understanding the human being (the knower, the experiencer and the doer) and extending up to understanding nature/existence – its interconnectedness and co-existence; and finally understanding the role of human being in existence (human conduct).</i>	
<b>Unit-3: Understanding Human Being</b>	<b>9 Hour</b>
<i>Understanding the human being comprehensively as the first step and the core theme of this course; human being as co-existence of the self and the body; the activities and potentialities of the self; Basis for harmony/contradiction in the self</i>	
<b>Unit-4: Understanding Nature and Existence</b>	<b>9 Hour</b>
<i>A comprehensive understanding (knowledge) about the existence, Nature being included; the need and process of inner evolution (through self-exploration, self- awareness and self-evaluation), particularly awakening to activities of the Self: Realization, Understanding and Contemplation in the Self (Realization of Co-Existence, Understanding of Harmony in Nature and Contemplation of Participation of Human in this harmony/ order leading to comprehensive knowledge about the existence).</i>	
<b>Unit-5: Understanding Human Conduct, All-encompassing Resolution &amp; Holistic Way of Living</b>	<b>9 Hour</b>

Understanding Human Conduct, different aspects of All-encompassing Resolution (understanding, wisdom, science etc.), Holistic way of living for Human Being with All- encompassing Resolution covering all four dimensions of human endeavor viz., realization, thought, behavior and work (participation in the larger order) leading to harmony at all levels from Self to Nature and entire Existence

<b>Learning Resources</b>	1. Gaur R.R., Sangal R., Bagaria G.P., 2019 (2nd Revised Edition), A Foundation Course in Human Values and Professional Ethics, Excel Books, New Delhi.	8. A N Tripathy, 2003, Human Values, New Age International Publishers.
	2. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA	9. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati.
	3. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.	10. E G Seebauer & Robert L. Berry, 2000, Fundamentals of Ethics for Scientists & Engineers, Oxford University Press
	4. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991	11. M Govindrajran, S Natrajan & V.S. Senthil Kumar, Engineering Ethics (including Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.
	5. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome’s report, Universe Books.	12. B P Banerjee, 2005, Foundations of Ethics and Management, Excel Books.
	6. A Nagraj, 1998, Jeevan Vidya EkParichay, Divya Path Sansthan, Amarkantak.	13. B L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.
	7. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.	

<b>Learning Assessment</b>									
	Bloom’s Level of Thinking	Continuous Learning Assessment (CLA)						Summative Final Examination (0% weightage)	
		Formative CLA-1 Average of unit test (20%)		Life Long Learning CLA-2 – (60%)		Summative (20%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	30%	-	20%	-	20%	-	-	-
Level 2	Understand	40%	-	20%	-	20%	-	-	-
Level 3	Apply	30%	-	30%	-	30%	-	-	-
Level 4	Analyze	-	-	30%	-	30%	-	-	-
Level 5	Evaluate	-	-	-	-	-	-	-	-
Level 6	Create	-	-	-	-	-	-	-	-
	<b>Total</b>	100 %		100 %		100%		-	

<b>Course Designers</b>		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
1.	1.	1.Dr.P.Supraja, SRMIST
	2.	