THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET301T	Applied Mathematics-III	3	1	-	4	30	70	100

Course Objectives	Course Outcomes
1. Introduce advanced concepts of Partial Differential Equations & Integral Transforms with their Applications. 2. Understanding of Linear Algebra through Matrices & Complex integration	**Students will be able to** 1. Identify and solve practical problems and analyze their physical and graphical interpretation by using Laplace Transforms. **2.** Use Fourier series methods to explore real-world time signals and application of Fourier Transform to analyse input-output relationships. 3. Apply the concept of advanced engineering mathematics to solve various complex engineering problems. **4.** Apply concepts of partial differential equations, Integral Transforms in various practical problems. **5.** Implement concept of Matrices and Eigen value problem and to solve Differential Equations. Form mathematical modal corresponding to engineering problems by using Matrices.

Unit I Laplace Transform	**[9 Hrs]**
Definition, properties, Evaluation of Integrals by Laplace Transform, Inverse Laplace Transform and its properties, Convolution theorem (Statement only), Unit Step Function, Applications of Laplace Transform	
Unit II Fourier Series & Fourier Transform	**[9 Hrs]**
Fourier series: Periodic Functions and their Fourier expansions, Even and Odd functions, Change of interval, Half Range Expansions.Fourier Transform: Definition, properties, Fourier Integral Theorem, Relation with Laplace Transform, Applications of Fourier Transform.	
Unit III Functions of Complex Variable	**[9 Hrs]**
Analytic function, Cauchy-Riemann Conditions, Harmonic Functions, Milne-Thomson Method, Cauchy Integral Theorem & Integral Formula (Statement only), Taylor's & Laurent's series (statement only), Residue Theorem (Statement only), Contour integration	
Unit IV Partial Differential Equations	**[9 Hrs]**
Partial Differential Equations of First Order First degree i.e. Lagrange's form, Linear Homogeneous Equations of Higher order with constant coefficients, Method of separation of variables, Applications of Partial Differential Equations	
Unit V Matrices	**[9 Hrs]**
Linear dependance of vectors, Characteristics equation, Eigen values and Eigen vectors, Reduction to Diagonal form, Sylvester's theorem (without proof), Solution of Second Order Linear Differential Equation with constant Coefficients by Matrix Method.	

Topics for self-learning: Application of Laplace Transform for solving Periodic function & Impulse function problems.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Higher Engineering Mathematics	B.S. Grewal	40th	Khanna
2	. Advanced Engineering Mathematics	Erwin Kreysizig	8th Edition	Wiley India
3	Applied Mathematics for Engineers & Physicist	L.R. Pipes and Harville		

Reference Books

S.N	Title	Authors	Edition	Publisher
1	. A Text Book of applied Mathematics--II	P.N. Wartikar &J.N. Wartikar		Poona Vidyarthi Griha Prakashan
2	Mathematics for Engineers	Chandrika Prasad		

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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET302T	Electronic Devices and Circuits	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
1. To introduce basic semiconductor devices, their characteristics and application 2. To understand analysis and design of simple semiconductor devices circuits 3. To learn to analyze the semiconductor devices behavior at the circuit level and its role in the various electronic applications.	After completion of the course students are able to, 1. Explain PN junction diode-types, Characteristics, and its applications 2. Illustrate transistor Characteristics & Compare biasing Techniques 3. Analyze and classify different types of negative feedback amplifiers. 4. Identify different types of oscillators and Find frequency of oscillation 5. Summarize FET and MOSFET Characteristics and Analyze different biasing circuits for FET

UNIT- Diodes and it's applications	**[9Hrs]**
PN junction diode, Junction capacitance of PN junction , Zener Regulator , LED, photo diode and solar cell, Rectifiers: Half wave, Full wave and Bridge rectifiers, Types of Filters, Ripple factor, Clipper & Clamper circuits	
Unit -II BJT Biasing:	**[10Hrs]**
Introduction, Transistor, construction, transistor operations, BJT characteristics, Ebers-Moll Model, load line, BJT biasing and methods, Stability factor,Thermal stabilization, Thermal runaway and Compensation circuits, Transistor as an Amplifier, frequency response of amplifiers, Introduction to h parameters.	
Unit -III Negative feedback amplifier	**[9Hrs]**
Principle of Negative feedback in electronic circuits, Voltage series, Voltage shunt, Current series, Current shunt types of Negative feedback, Typical transistor circuits effects of Negative feedback on Input and Output impedance, Voltage and Current gains, Bandwidth, Noise and Distortion, Coupling schemes in amplifiers	
UNIT- IV:BJT Applications	**[12Hrs]**
Oscillators : Principle of Positive feedback, Concept of Stability in electronics circuits, Barkhausen criteria for oscillation, Principle of operation of different RC and LC oscillators,Frequency stability of an oscillators, Power Amplifiers: Power dissipation in transistors, Harmonic distortion, Amplifiers Classification, Push-pull and complementary Push-pull amplifiers, Cross-over distortion, Audio Power amplifier	
Unit -V: Field Effect Transistor and MOSFET:	**[8Hrs]**
JFET and its characteristics, Pinch off voltage, Drain saturation current, JFET amplifiers, CS,CD,CG amplifiers ,their analysis using small signal JFET model , FET Biasing, The FET as VVR Overview of D-MOSFET, E-MOSFET, MOSFET, pMOSFE, Introduction to CMOS circuits.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Electronic devices and circuits	J. Millman and Halkias	2	TMH
2	Electronic Devices & Circuit Theory	Boylestad & Nashelsky	2	PHI
3	Electronic devices and circuits	Salivahanan, Suresh Kumar, Vallavaraj	3	TMH

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Integrated Electronics, Analog & Digital Circuits & Systems	J. Millman and Halkias	2	TMH
2	Electronics Principles	Albert Malvino	3	TMH
3	Electronics Circuits Discrete and Integrated ckt	Schilling & Beloove	--	TMH

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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET302P	Electronic Devices and Circuits lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
To study basic concepts, DC circuits, AC circuits, semiconductors, Semiconductor devices, Power supply, Bipolar and Field effect transistor amplifiers, Frequency response of amplifier.	After completion of the course students are able to, 1) Explain and demonstrate basic concepts of different semiconductor components 2) Summarize semiconductor devices and apply them in different electronic circuits. 3) Analyze different performance parameters of transistors. 4) Analyze, Formulate and classify the characteristics of semiconductor devices.

1. Minimum 8 practical based on the syllabus.
    a. Types of Diodes
    b. Transistor
    c. Applications of Diode/ Transistor
    d. FET
    e. Oscillator
    f. Power Amplifier
    g. MOSFET
    h. Regulator etc

Text Books

S.N	Title	Authors	Edition	Publisher
1	Electronic devices and circuits	J. Millman and Halkias	2	TMH Publications
2	Electronic Devices & Circuit Theory	Boylestad & Nashelsky	2	PHI publications.
3	Electronic devices and circuits	Salivahanan, Suresh Kumar, Vallavaraj	3	TMH Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Integrated Electronics, Analog & Digital Circuits & Systems	J. Millman and Halkias	2	TMH Publications
2	Electronics Principles	Albert Malvino	3	TMH Publications.
3	Electronics Circuits Discrete and Integrated	Schilling & Beloove	--	TMH Publications.

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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET303T	Digital Electronics	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
1. To acquaint students with various basic digital gates used in digital system and develop logical circuits using Boolean gates, construction of various combinational and sequential logic circuits using basic gates 2. The student will able to analyze, design, and evaluate digital circuits of medium complexity and differentiate various logic families.	After completion of the course students are able to, 1. Explain the fundamental concepts and use the basic logic gates and various reduction techniques of digital logic circuit 2. Analyze, design and implement combinational logic circuits 3. Analyze, design and implement sequential circuits 4. Analyze, design and implement various sequential circuits and its applications 5. Categorize, summarize different logic families and analyze digital system design using PLD

Unit 1 : Number System and Logic Simplification	**[6Hrs]**
Analog V/s Digital systems, Number Systems, Boolean algebra, Boolean identities, Digital Codes – Binary, Gray, Hex, ASCII, BCD, Self-Complimentary, Conversion, standard representations for logic functions, k map representation of logic functions (SOP & POS forms), minimization of logical functions for min-terms and max-terms (up to 4 variables), don't care conditions	
Unit 2 : Combinational Circuits	**[8Hrs]**
Adders, Subtractor, look ahead carry ALU, Digital Comparator, Parity generators/checkers, Multiplexers and their use in combinational logic designs, multiplexer trees, Demultiplexers, Encoders & Decoders, BCD - to 7 segment decoder, Binary Code converters	
Unit 3: Sequential Circuits	**[8Hrs]**
1 Bit Memory Cell, Clocked SR, JK, MS J-K flip flop, D and T flip-flops. Use of preset and clear terminals, Excitation Table for flip flops. Conversion of flip flops.	
Unit 4: Application of Sequential Circuits	**[8Hrs]**
Registers, shift registers, Counters (ring counters, twisted ring counters), Sequence Generators, ripple counters, up/down counters, synchronous counters**.**	
Unit 5 : Logic Families and Semiconductor Memories	**[6Hrs]**
Logic families TTL, ECL, CMOS and their characteristics – Fan-In, Fan-Out, Propagation Delay, Power dissipation, Noise Margin, Timing issues. Comparison of different logic Families. Memory elements (RAM, ROM, EPROM, EEPROM, NVRAM, SRAM, DRAM, Synchronous SRAM, DDR and QDR SRAM, Content Addressable Memory) Concept of Programmable logic devices, Logic implementation using Programmable Devices.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Fundamentals Of Digital Circuits,	Kumar, A Anand	2	Prentice Hall of India Private Limited
2	Integrated Electronics: Analog and Digital Circuits and Systems	Millman, Jacob	1	Tata Mcgraw- Hill Publishing Company Limited
3	Microprocessor Architecture, Programming, And Applications with the 8085	Ramesh Gaonkar		Penram International Publishing Pvt Ltd.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Ones And Zeros, Understanding Boolean Algebra, Digital Circuits and The Logic Of Sets	Gregg, John R		Prentice Hall Of India Private Limited.
2	Digital Circuits and Systems,	Venugopal, K R		Tata Mcgraw Hill Education Private Limited.
3	Digital Design- Principles And Practices	J. F. Wakerly	3rd Edition	Pearson,

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET303P	Digital Electronics lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
To acquire knowledge of digital electronics and implement digital logic circuits	After completion of the course students are able to, 5) Identify the various digital ICs and understand their operation. 6) Analyze, design, illustrate and implement combinational logic circuits 7) Design and implement sequential circuits like flip flops, registers, counters 8) Develop medium complexity logic circuits.

Expt. No.	Title of the experiment
1	To verify the truth table of different Logic Gates.
2	To study and verify the NAND and NOR gates as a universal gates.
3	To implementation of Half adder and Full Adder and to verify their truth table.
4	To study and verify truth table of Multiplexer and Demultiplexer.
5	To Implement and Verify the truth table of one bit and two bit comparator using logic gates
6	To study and verify truth table of Encoder and Decoder.
7	To study and verify the truth table of different types of Flip-flops .
8	To study the functioning of Up/Down counter.
9	Design and Simulation of Arithmetic Logic Unit
10	Mini Project: Design of Code converters on Breadboard.
11	Virtual Lab

Text Books

S.N	Title	Authors	Edition	Publisher
1	Fundamentals Of Digital Circuits,	Kumar, A Anand	2	Prentice Hall of India Private Limited
2	Integrated Electronics: Analog and Digital Circuits and Systems	Millman, Jacob	1	Tata Mcgraw- Hill Publishing Company Limited
3	Microprocessor Architecture, Programming, And Applications with the 8085	Ramesh Gaonkar		Penram International Publishing Pvt Ltd.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Ones And Zeros, Understanding Boolean Algebra, Digital Circuits and The Logic Of Sets	Gregg, John R		Prentice Hall Of India Private Limited.
2	Digital Circuits and Systems,	Venugopal, K R		Tata Mcgraw Hill Education Private Limited.
3	Digital Design- Principles And Practices	J. F. Wakerly	3rd Edition	Pearson,

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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET304T	Electronic Measurement and Instrumentation	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
The primary aim of this subject is to acquaint the students with the basic principles of measuring instruments and show how each of them can be exploited for the measurement of large number of variables.	After completion of the course students are able to, 1) To explain basic concepts and definitions in measurement 2) To explain the operation and apply it for designing electronic instruments for parameter measurement 3) To analyze different bridges for measurement of unknown impedances 4) To study and explain the working of different transducers. 5) To apply the knowledge gained by from transducers and different elements to demonstrate signal conditioning and analyzers.

UNIT I- Fundamentals of Electronic Measurement and Instrumentation	**[6Hrs]**
Necessity of electronic Measurement, Block diagram of electronic measurement system, Types of Measurements, Function of instruments and measurement systems, Applications of measurement system, Elements of measurement system, Types of instruments, Theory of errors, Accuracy and Precision, Types of errors, Statistical analysis, probability of errors, Limiting errors, Standards of measurement.	
Unit -II Electromechanical Instruments	**[8Hrs]**
Construction of Galvanometer, Suspension Galvanometer, Torque and deflection Galvanometer, PMMC mechanism, DC voltmeter; AC voltmeters; Peak, average and true rms voltmeters; Digital Multi-meters; Ammeters, AC indicating instruments; Power factor meter. Null deflection methods poly-phase induction type energy meters.	
Unit -III AC and DC Bridges	**[8Hrs]**
DC Bridges: Wheatstone Bridge, Kelvin Bridge AC Bridges and their applications: Maxwell's Bridge, Hay's Bridge, Schering Bridge, Desauty's Bridge, Wein Bridge, Detectors for AC bridges.	
UNIT- IV: Transducers	**[6Hrs]**
Static and dynamic characteristics, Classification of transducers, Capacitive transducer, Inductive transducer, Resistive transducer, RVDT, Strain Gauge, RTD, Optical Transducers, Hall effect transducer, Piezoelectric transducers, Transducers for measurement of Pressure, Temperature, Level, Displacement, .Study of basic sensors	
Unit -V: Signal Analyzer and Data Acquisition System	**[8Hrs]**
Construction and operation of Signal analyzer, Wave analyzer, Harmonic Distortion analyzer, Spectrum analyzer and Logic analyzer; Signal conditioning and its necessity, process adopted in signal conditioning, Functions of Signal conditioning, AC/DC Conditioning systems, Data conversion: techniques using OPAmp ADC, DAC	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Modern Electronic Instrumentation and Measurement	A.D. Helfrick and W.D. Cooper	--	PHI Publications.
2	Electrical and Electronic Measurement and Instrumentation	A.K. Sawhney	--	Dhanpat Rai & Sons
3	Electronics Measurements	TS.S. Kalsi	--	Mc Graw Hill Pub.

Reference Book:

S.N	Title	Authors	Edition	Publisher
1	Elements of Electronic Instrumentation and Measurement	Joseph J. Carr	--	Pearson Education
2	Electrical And Electronic Measurement	R.K. Rajput	--	PHI Publications.
3	Transducers and Instrumentation	DVS Murthy	--	PHI Publications.

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET304P	Electronic Measurement and Instrumentation lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
To learn basic measurement concepts and related instrumentation requirement as a vital ingredient of electronics Engineering.	After completion of the course students are able to, 1. To measure the impedance by various methods 2. To measure various physical parameters to analyze and reduce errors. 3. To use the various measuring instruments with PMMC and electrodynamometer mechanism in effective manner. 4. To demonstrate various transducer parameters by different techniques.

Expt. No.	Title of the experiment
1	Construction and Measurement of Low resistance using Kelvins Bridge.
2	Construction and measurement of Inductance using Hay's Bridge
3	Construction and measurement of Inductance using Schering's Bridge.
4	Measurement of length using LVDT and Bourdan's tube
5	Measurement of Strain using Strain Gauge
6	Flow measurement using optical transducer
7	Measurement of signal parameters using Digital Storage Oscilloscope
8	Study of Data Acquisition system.
9	Feature extraction of Some standard signal using Spectrum Analyzer.
10	Study of Water level Measurement using capacitive transducer
11	Study of distance Measurement using ultrasonic transducer
12	Construction of ammeter and voltmeter

Text Books

S.N	Title	Authors	Edition	Publisher
1	Modern Electronic Instrumentation and	A.D. Helfrick and W.D. Cooper	--	PHI Publications
2	Electrical and Electronic Measurement	A.K. Sawhney	--	Dhanpat Rai & Sons
3	Electronics Measurements	TS.S. Kalsi	--	"", Mc Graw Hill

Reference Book: Lab Manual

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Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ET305T	Network theory	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
1. To make the students capable of analyzing any given electrical network. 2. To make the students learn how to synthesize an electrical network from a given impedance /admittance function	After completion of the course students are able to, 1. Analyze the basic of AC and DC circuits using KVL & demonstrate source transformed network. 2. Analyze the basic of AC and DC circuits using KCL & demonstrate dual network 3. Apply different nnetwork Theorems to AC circuit to carry out application of theorem 4. Compare & analyze the series, parallel resonance circuits, 5. Evaluate the network in terms of all network parameters and formulate the network transfer function in frequency domain

UNIT I- Mesh Analysis and Electric Circuits	**[10Hrs]**
Types of sources (Voltage & Current), Source transformation and source shifting, Concept of V-shift and I-shift. Ccoefficient of coupling, dot convention, dot marking in coupled coils Mesh analysis, Mutual inductance, Basic equilibrium equations, Matrix approach for complicated networks, Super mesh & Iindependent and Ddependent sources to determine current, voltage, power, and energy.	
Unit -II Nodal Analysis and Electric Circuits	**[10Hrs]**
Nodal analysis, Basic equilibrium equations, Matrix approach for complicated networks, Super mode analysis, Nodal analysis of circuits containing resistors, inductors, capacitors, transformers, and both independent and dependent sources to determine current, voltage, power, and energy. Series Circuit, Parallel Circuit, Principe of duality	
Unit -III Network Theorem	**[10Hrs]**
Superposition, Thevenin's, Norton's and Maximum Power Transfer Theorems, Reciprocity Theorem, Compensation Theorem, as applied to ac circuits for both independent sources to determine current, voltage	
UNIT- IV: Frequency Selective Networks	**[8Hrs]**
Significance of Quality factor. Series Resonance: Impedance, Phase angle variations with frequency, Voltage and current variation with frequency, Bandwidth, Selectivity. Effect of Rg on BW & Selectivity. Magnification factor. **Parallel resonance:** Resonant frequency and admittance variation with frequency, Bandwidth and selectivity. General case: Resistance present in both branches. Comparison and applications of series and parallel resonant circuits.	
Unit -V: Electric Circuit Analysis using Laplace Transform & Two Port Network	**[12Hrs]**
Electric Circuit Analysis using Laplace Transform: - Review of Laplace transform, waveform synthesis, Analysis of electric analysis using Laplace transform for stranded input, Inverse Laplace Transform Techniques, Laplace Transform of Basic R, L and C components, Two Port Network Parameters Terminal characteristics of network: Z, Y, ABCD Parameters; Reciprocity and Symmetry conditions, Applications of the parameters . Network Functions: - Network functions for one port and two port networks, Pole-zeros of network functions and network stability, Network synthesis using pole – zero plot.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Network Analysis	M.E. Van Valkenburg	--	TMH Publications
2	Network and systems	D. Roy Choudhary	--	New Age Publication
3	Linear Network Theory	Kelkar and PanditVallavaraj	--	Pratibha Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Engineering Circuit Analysis	Hayt W.H. & J.E. Kemmerly	--	TMH Publications
2	Network analysis with Applications	William D Stanley	--	Pearson Education

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
23ET331M	MDM – I Smart Farming Technology	2	0	-	2	CA	ESE	Total
						15	35	50

Course Objectives	Course Outcomes
1) To explain the concept of smart farming 2) To explain the use of sensors used in smart farming applications 3) To understand the concept of smart farming through group activity and experiential learning.	1) To explain the concept of smart farming 2) To understand the use of different sensors for smart farming applications. 3) To relate different techniques of automation for smart farming applications 4) To develop a strong understanding of unmanned and smart farming for human comfort

UNIT- I: Introduction to Smart Farming	**[4 Hrs]**
Overview of Smart Farming (2 Hours):-Introduction to smart farming, Historical Evolution and Future Trends, Smart farming techniques. **Smart Greenhouses (2 Hours):**Climate Control Systems, Hydroponics and Aquaponics, AI in farming	
Unit -II Smart Farming Sensors and applications	**[8 Hrs]**
Soil Sensors (3 Hours) :-Soil Moisture Sensors, Soil Temperature Sensors: Detect the presence and levels of essential nutrients like nitrogen, phosphorus, and potassium.**Weather Sensors (2 Hours):**-Temperature Sensors, Humidity Sensors, Water Sensors, Wind Speed and Direction Sensors,**Environmental Sensors (3 Hours):**- Light Sensors (Photometers/Lux Sensors), CO2 Sensors, Air Quality Sensors ,Plant Sensors:- Chlorophyll Sensors,NDVI Sensors (Normalized Difference Vegetation Index).	
Unit -III Smart Farming Applications	**[8 Hrs]**
Automation and Robotics (2 Hours): Automated Farm Machinery, Robotics in Planting and Harvesting, Autonomous Vehicles in Agriculture, Concept of unmanned farming.**Technologies in Smart Farming (2 Hours):**-Internet of Things (IoT),Drones and Remote Sensing, GPS and GIS Technologies.**Crop Monitoring and Management (2 Hours):** Remote Sensing for Crop Health, Disease and Pest Management.**Livestock Monitoring and Management (2 Hours):** Wearable Technologies for Animals, Automated Feeding Systems, Health and Reproductive Monitoring Energy-Efficient Practices	
UNIT- IV: Precision Farming	**[6 Hrs]**
Farm Management :- Data acquisition and data analysis, Quality management, Seeding and planting.**Machinery Management**: Route planning, Process monitoring, Remote service.**Labour Management**: Tools and implements, Guidance systems, Leader–follower systems, Field Robots.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	SMART AGRICULTURE USING MODERN TECHNIQUES AND TECHNOLOGY	Dr. Nishith Gupta, Dr. Mahender Singh, Mrs. Neerja Patel Nagpure		
2	Smart Farming Technologies for Sustainable Agricultural Development	Ramesh C. Poonia, Xiao-Zhi Gao, Linesh Raja, Sugam Sharma, Sonali Vyas		
3	Artificial Intelligence and Smart Agriculture: Technology and Applications (Advances in Geographical and Environmental Sciences)	Kusum Pandey (Editor), N. L. Kushwaha (Editor), Chaitanya B. Pande (Editor), K. G. Singh (Editor)		Springer

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Automation in Agriculture - Securing Food Supplies for Future Generations	Stephan Hussmann		
2	Internet of Things and Analytics for Agriculture	Prasant Kumar Pattnaik Raghvendra Kumar Souvik Pal	Volume 2 [1st ed. 2020]	Springer publications
3	Agricultural Drones	K.R.Krishna		CRC Press(Taylor and Francis group

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
23ES301T	Value Education Course - I	2	-	-	2	15	35	50

Course Objectives	Course Outcomes
This course is intended • To develop a holistic perspective through self-exploration and development of clarity about harmony between self, family, society and nature.	**Students will be able to** • demonstrate awareness about concepts like self exploration & natural acceptance. • understand concepts of aspirations and happiness. • develop clarity of harmony and health in human being. • discuss concepts of conservation of nature and harmony in nature/existence and re-usability.

Unit I : Introduction to Self-Exploration **[6Hrs]**

- Purpose & motivation for studying universal human values.
- Self-Exploration–what is it? - Its content and process.
- 'Natural Acceptance' and Experiential Validation- as the process for self-exploration.

Unit II: Understanding Happiness and Prosperity **[6Hrs]**

- Understanding Happiness and Prosperity correctly.
- Continuous Happiness and Prosperity- A look at basic Human Aspirations.
- Right understanding, Relationship and Physical Facility.
- Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

Unit III: Understanding Harmony in human being **[6Hrs]**

- Understanding human being as a co-existence of the sentient 'I' and the material 'Body'.
- Understanding the needs of Self ('I') and 'Body' - happiness and physical facility.
- Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer).
- Understanding the characteristics and activities of 'I' and harmony in 'I'.
- Understanding the harmony of I with the Body: Sanyam and Health.

Unit IV: Co-existing with nature **[6Hrs]**

- Understanding the harmony in Nature.
- Interconnection and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature.
- Understanding Existence as Coexistence of mutually interacting units in all-pervasive space.
- Holistic perception of harmony at all levels of existence.
- Pollution, depletion of resources and role of technology.

Text Books

Sr.No.	Title	Authors	Edition	Publisher
1	Human Values and Professional Ethics	Gaur, Sangal, Bagaria	2010	Excel Books, New Delhi

Reference Books

Sr.No.	Title	Authors	Edition	Publisher
1	Jeevan Vidya: Ek Parichaya	A. Nagaraj	1999	Jeevan Vidya Prakashan, Amarkantak
2	Human Values	A.N. Tripathi	2004	New Age Intl. Publishers, New Delhi
3	The Story of My Experiments with Truth	M.K.Gandhi	2009	Fingerprint! Publishers

Online Resources

1	https://fdp-si.aicte-india.org/UHV-II%20Class%20Note.php
2	https://fdp-si.aicte-india.org/UHV-II_Lectures_PPTs.php