Course Title	Technical Management & Entrepreneurship	Semester	V
Course Code	MVJ20TIM51	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 4 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to:
• Describe the importance of management and functions of a manager.
• Explain the process of planning and organizing.
• Explain the requirements of direction and supervision and Explain the methods of establishing control.
• Identify the role of entrepreneurs in the economic development of the nation and recognize the barriers of entrepreneurship.
• Explain the importance of Intellectual property protection.

Module-1	L1,L2,L3	8 Hours

Syllabus Content:

Management: importance of management, definition, management functions, roles of a manager, levels of management, managerial skills, management and administration, management –a science or art, management – a profession, professional management v/s family management. Development of management thought; Early classical approaches, Neo classical approaches, modern approaches.

Application: Enterprises

Video Link: https://www.youtube.com/watch?v=mub7Z8Fl3ZU

Module-2	L1,L2,L3	8 Hours

Syllabus Content:

Planning: Nature, Importance of planning, forms, types of plans , steps in planning , limitations of planning, making planning effective , planning skills, strategic planning in Indian industry.

Organizing: Organization Meaning, process of organizing, span of management principles of organizing, Departmentation, organization structure, committees, teams.

Application: Industry

Video Link: https://www.youtube.com/watch?v=pCUs3UKwYpc

Module-3	L1,L2,L3	8 Hours

Syllabus Content:

Direction and supervision: Requirements of effective direction, giving orders, motivation, job satisfaction, morale , organizational commitment, first level supervision or front line supervision.

Controlling: Meaning and steps in controlling , Essential of a sound control system , Methods of establishing control.

Application: Industry

Video Link: https://www.youtube.com/watch?v=MufenDklR8E

Module-4	L1,L2,L3	8 Hours

Syllabus Content:

Entrepreneurship: Meaning of Entrepreneur; Evolution of the Concept, Functions of an Entrepreneur, Types of Entrepreneur, Entrepreneur – an emerging Class. Concept of Entrepreneurship – Evolution of Entrepreneurship, Development of Entrepreneurship, Stages in entrepreneurial process; Role of entrepreneurs in Economic Development; Entrepreneurship in India; Entrepreneurship – its Barriers.

Application: Industry

Video Link: https://www.youtube.com/watch?v=aozlwC3XwfY

Module-5	L1,L2,L3	12 Hours

Syllabus Content:

Introduction to IPR, origin and concepts of IPR, Concept of property, Forms of IP protection: Patents, copyrights, trademarks, designs, Trade secrets,Traditional knowledge, Geographical indications. Basic concepts and historical background of patent system and law- National and international scenario (American & European Patent Regimes). International Treaties/Conventions on IPR: Paris Convention, Berne convention, Madrid agreement, Rome convention, World Intellectual Property Organization (WIPO), World Trade Organization, TRIPS Agreement, Patent Co-operation Treaty

Application: Industry

Video Link: https://www.youtube.com/watch?v=hHQWCFE0J84

Practical Experiments:	L3	20 Hours

Case study on Enterprises:

Case study (Microsoft),

Case study (Captain G R Gopinath),

Case study (N R Narayana Murthy & Infosys)

Practical Sessions:

Idea Generation and Opportunity Recognition

Strategy and Business Model Analysis

Formulation of Project

Course outcomes:	
CO1	Describe the importance of management and functions of a manager.
CO2	Explain the process of planning and principles of organizing
CO3	Identify the role of entrepreneurs in the economic development of the nation.
CO4	Compare the different leadership styles.
CO5	Apply the ethical principles related to the intellectual property protection

Text/Reference Books:	
1.	Management and Entrepreneurship, N V R Naidu, T Krishna Rao 4th reprint.
2.	Law relating to Intellectual Property rights , B. L. Wadhera, 5th edition,Universal Law Publishing, 2011.
3.	Principles of Management, P C Tripathi, P N Reddy, 5th edition, TataMcGraw Hill, 2012
4.	Dynamics of Entrepreneurial Development & Management, Vasant Desai, Himalaya publishing house, 2009

CIE Assessment:
CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests Quizzes/mini tests (4 marks) Mini Project / Case Studies (8 Marks) Activities/Experimentations related to courses (8 Marks)
SEE Assessment:
• Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus. • Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions. • One question must be set from each unit. The duration of examination is 3 hours.
CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2					2	2				2	
CO2	2					2	2				2	
CO3	2					2	2				2	
CO4	2					2			2		2	
CO5	2					2		2			2	

High-3, Medium-2, Low-1

Course Title	Principles of Database Systems	Semester	V
Course Code	MVJ20CD52	CIE	50
Total No. of Contact Hours	50	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 4: 0 : 0)	Total	100
Credits	4	Exam. Duration	3 Hours

Course objective is to:
• Provide Key Knowledge in database system concepts, applications and advantages. • To get knowledge about SQL programming • Design a database as redundant and error free • Students can build a database application for real world problems • Can derive the knowledge or pattern from real world data

Module-1	L1,L2,L3	10 Hours

Introduction: Database-System Applications – Purpose of Database – View of Data – Database Languages – Relational Databases – Database Design – Data Storage and Querying – Transaction Management – Database Architecture – Data mining and Information Retrieval – Specialty Databases – Database Users and Administrators.

Introduction to Relational Model: Structure of Relational Database – Database Schema – Keys – Schema Diagrams – Relational Query Languages – Relational Operations – Relational Algebra.

Application: This module will give basic knowledge of database and SQL.

Video Link: https://www.youtube.com/watch?v=X9bQsAoqmfI

Module-2	L1,L2,L3	10 Hours

Introduction to SQL: Overview of the SQL Query Languages – SQL Definition – Basic Structure of SQL Queries – Additional Basic Operations – Set Operations – Null Values – Aggregate Functions - Nested Subqueries – Modification of Database.

Intermediate SQL: Join Expressions – Views – Integrity Constraints – SQL Data types and Schemas – Authorization.

Advanced SQL: Functions and Procedures – Triggers.

Application: Students can learn more complex queries and can design error free database using constraints.

Video Link: https://www.youtube.com/watch?v=fRMv14j5XJU

Module-3	L1,L2,L3	10Hours

Relational Database Design: Features of Good Relational Designs – Atomic Domains and First Normal Form – Decomposition Using Functional Dependencies – Functional-Dependency Theory – Algorithm for Decomposition – 2nd Normal Form, 3rd Normal Form, Boyce Codd Normal Form Decomposition using Multivalued Dependencies – 4th Normal Form and domain Key Normal Form.

Application: Students can learn how to divide the table without any data lose and can execute queries without any anomalies.

Video Link: https://www.youtube.com/watch?v=Ko_LE3TNO64&t=1s

Module-4	L1,L2,L3	10 Hours

Transaction: Transaction Concept – A Simple Transaction Model – Transaction Atomicity and Durability – Transaction Isolation – Serializability – Isolation Levels – Implementation of Isolation Level – Concurrency Control: Lock-Based Protocol – Timestamp-Based Protocols – Validation-Based Protocol.

Advanced SQL: Accessing SQL From a Programming Language.

Application design and Development: Application Programs and User Interfaces – Web Fundamentals – Servlet and JSP

Application: Students can develop a web-based application for accessing database.

Video Link: https://www.youtube.com/watch?v=w83Ug6IwVTw

https://www.youtube.com/watch?v=Thm0xW9oTow

https://www.youtube.com/watch?v=C_J6K8DodS8

Module-5	L1,L2,L3	10 Hours

Data Warehousing, Data Mining, and Information Retrieval: Data Warehousing and Mining – Data Warehousing – Data Mining – Classification – Association Rules – Data mining algorithms using Weka Tools.

Application: Students can develop an application using JAVA with Weka for data mining operations.

Video Link: https://www.youtube.com/watch?v=XlbM9ibjUuM

Practical Experiments

Accessing Database through JDBC (Hands-On)
Clustering – Using Weka tool (Hands-On)

Classification using Weka tool (Hands-On)
Machine Learning algorithms using Weka tool (Hands-On)

Course outcomes:	
CO1	Understand the database requirements of real-world problems
CO2	Querying the data according to different requirements
CO3	Design database for real world problems like bank, commercial shops
CO4	Develop application program to real world problems
CO5	Database mining to derive pattern among different data sets

Text/Reference Books:	
1.	Database System Concepts, Sixth Edition, by Abraham Silberschatz, Henery F. Korth, S. Sundarshan
2.	Fundamentals of Database Systems, RamezElmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson.
3.	Database Management System, Ramakrishnan and Gehrke, 3rd Edition, Mc-GrawHill, 2013.
4.	Data Mining Concepts and Techniques, Second Edition, by Jiawei Han and Micheline Kamber, Elsevier.

CIE Assessment:
CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests Quizzes/mini tests (4 marks) Mini Project / Case Studies (8 Marks) Activities/Experimentations related to courses (8 Marks)
SEE Assessment:
- Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.   - Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.   - One question must be set from each unit. The duration of examination is 3 hours.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	3	3	2	2	2	3	2
CO2	3	3	3	2	2	3	2	2	2	2	2	1
CO3	2	3	3	2	2	3	2	2	1	1	2	2
CO4	2	3	3	2	2	2	2	1	1	1	2	2
CO5	2	3	2	3	1	1	2	2	1	2	2	1

High-3, Medium-2, Low-1

Course Title	R Programming for Data Science	Semester	V
Course Code	MVJ20CD53	CIE	50
Total No. of Contact Hours	50	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 4: 0 : 0)	Total	100
Credits	4	Exam. Duration	3 Hours

Course objective is to:

- To program in R and how to use R for effective data analysis.
- To learn how to install and configure software necessary for a statistical programming environment.
- To discuss generic programming language concepts.

Module-1	L1,L2	10 Hours

Syllabus Content:Overview of R. What is R? What is S? Basic Features of R Free Software ,Design of the R System. Limitations of R. R Resources.

Module-2	L2,L3	10 Hours

Syllabus Content:Entering Input, Evaluation, R Objects, Numbers, Attributes, Creating Vectors, Mixing Objects, Explicit Coercion, Matrices, Lists Factors, Missing Values, Data Frames Names.

Module-3	L3,L4	10 Hours

Syllabus Content:Getting Data In and Out of R , Reading and Writing Data , Reading Data Files with read.table() , Reading in Larger Datasets with read.table(), Calculating Memory Requirements for R Objects Using the readr Package , , Binary Formats

Module-4	L3,L4,L5	10 Hours

Syllabus Content:Control Structures , if-else, for Loops , Nested for loops ,while Loops , repeat Loops , next, break.

Module-5	L3,L4,L5	10 Hours

Syllabus Content: Using Textual and Binary Formats for Storing Data Using dput() and dump()Functions in R , Your First Function , Argument Matching , Lazy Evaluation The … Argument, Arguments Coming After the … Argument, Loop Functions , Looping on the

Command Line, lapply() , sapply() , split() Splitting a Data Frame , apply() , Col/Row Sums and Means , Other Ways to Apply mapply().

Course outcomes:	
CO1	writing R functions, debugging, and organizing and commenting R code
CO2	Understand the basics in R programming in terms of constructs, control statements, string functions
CO3	Understand the use of R for Big Data analytics
CO4	Learn to apply R programming for Text processing
CO5	Able to appreciate and apply the R programming from a statistical perspective

Text/Reference Books:	
1.	Roger D. Peng: R Programming for Data Science ,[E-book]

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				2		2		2				1
CO2		3		2		2		2				2
CO3		3		2		2		2				3
CO4		3		2		2		2				2
CO5		3		2		2		2				3

High-3, Medium-2, Low-1

Course Title	Data Communication	Semester	V
Course Code	MVJ20CD54	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3: 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to: This course will enable students to
- To discuss the digital data communication techniques.
- Gain knowledge on basic concepts of data communication layers, protocols and performance.
- Understand a few representative protocols and network components.

Module-1	L1, L2	8 Hours

Syllabus Content: Data Communications, Networks, The Internet, Protocol sand standards,NetworkModels-Reference models OSI, TCP/IPModel, Addressing, Data&Signal-Analog and Digital, Periodic Analog Signals, Digital Signals, Transmission impairment, Data Rate Limits, Performance.

Module-2	L2, L3	8 Hours

Syllabus Content:Digital to Digital Conversions, Analog to Digital Conversions, Transmission Modes, Analog Transmission-Digital to Analog conversion, Analog to Analog conversion, Multiplexing- FDM, WDM, STDM, StatisticalTDM, Spread Spectrum, Guided Media-Twisted pair cable, Co-axial cable, Fiber optic cable, Unguided media-Wireless-Radiowaves, Microwaves, Infrared.

Module-3	L3, L4	8 Hours

Syllabus Content:Circuit switched networks, Datagram networks, Virtual circuit networks, Structure of a Switch-Structure of Circuit Switches & Packet Switches, Data Link Layer-Detection and Correction-Introduction, Block Coding-Error Detection and Correction, Hamming Distance, Minimum Hamming Distance, Linear Block Codes, Cyclic Codes-CRC, Polynomials, Checksum

Module-4	L3, L4, L5	8 Hours

Syllabus Content:Data Link Layer – Data Link Control- Framing, Flow and error control, Protocols, Noiseless Channels, Noisy Channels, HDLC, Point-to-Point Protocol- Framing, Transition phases, Multiple Access- Random access-Aloha, CSMA, CSMA/CD, CSMA/CA, Controlled access- reservation, polling, token passing, Channelization -

FDMA,TDMA,CDMA.

Module-5	L3, L4, L5	8 Hours

Syllabus Content:Wired LANs: Ethernet – Standard Ethernet, Fast Ethernet, Gigabit Ethernet, Wireless LANs- IEEE 802.11, Bluetooth - Architecture, Bluetooth layers, Radio layer, Baseband layer, L2CAP Connecting Devices–Hub, Repeater, Bridges, Transparent Bridges, Switches, Router, and Gateway.

Course outcomes:	
CO1	Analyze OSI and TCP network models and the layers associated functionalities
CO2	Analyze and apply different types of signal conversion techniques in physical layer
CO3	Analyze and apply different types of error detection and correction mechanisms..
CO4	Analyze flow control and Error control mechanism using standard data link layer protocols and Compare
CO5	Analyze different protocols used for Ethernet and various connecting devices used in networks.

Text/Reference Books:	
1.	BehrouzA.Forouzan, "Data Communication and Networking,", McGrawHill, 5thEdition,2012.
2.	WilliamStallings, "Data and Computer Communication", PearsonEducation,10thEdition, 2014.

CIE Assessment:
CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests Quizzes/mini tests (4 marks) Mini Project / Case Studies (8 Marks) Activities/Experimentations related to courses (8 Marks)
SEE Assessment:
• Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus. • Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions. • One question must be set from each unit. The duration of examination is 3 hours.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3		2							
CO2	2	2	3		2							
CO3	3	2	3		2							
CO4	2	1	3		2							
CO5	2	1	3		2							

High-3, Medium-2, Low-1

Course Title	Soft Computing	Semester	V
Course Code	MVJ20CD551	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3: 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to:
- To understand various types of soft computing techniques, and applications of soft computing   - To get an idea on : Artificial Intelligence, Various types of production systems, characteristics of production systems, Neural Networks, architecture, functions and various algorithms involved.   - To understand Fuzzy Logic, Various fuzzy systems and their functions, Genetic algorithms, its applications and advances.

Module-1	L1,L2	8 Hours

Syllabus Content:

Artificial neural network: Introduction, characteristics- learning methods – taxonomy – Evolution of neural networks- basic models - important technologies - applications. Fuzzy logic: Introduction - crisp sets- fuzzy sets - crisp relations and fuzzy relations: cartesian product of relation - classical relation, fuzzy relations, tolerance and equivalence relations, non-iterative fuzzy sets. Genetic algorithm- Introduction - biological background - traditional optimization and search techniques - Genetic basic concepts.

Module-2	L1,L2	8 Hours

McCulloch-Pitts neuron - linear separability - hebb network - supervised learning network: perceptron networks - adaptive linear neuron, multiple adaptive linear neuron, BPN, RBF, TDNN- associative memory network: auto-associative memory network, hetero-associative memory network, BAM, hopfield networks, iterative autoassociative memory network & iterative associative memory network – unsupervised learning networks: Kohonenself organizing feature maps, LVQ – CP networks, ART network.

Module-3	L3,L4	8 Hours

Membership functions: features, fuzzification, methods of membership value assignments-Defuzzification: lambda cuts - methods - fuzzy arithmetic and fuzzy measures: fuzzy arithmetic - extension principle - fuzzy measures - measures of fuzziness -fuzzy integrals - fuzzy rule base and approximate reasoning : truth values

and tables, fuzzy propositions, formation of rules-decomposition of rules, aggregation of fuzzy rules, fuzzy reasoning-fuzzy inference systems-overview of fuzzy expert system-fuzzy decision making.

Module-4	L3,L4,L5	8 Hours

Genetic algorithm and search space - general genetic algorithm – operators - Generational cycle - stopping condition – constraints - classification - genetic programming – multilevel optimization – real life problem- advances in GA.

Module-5	L3,L4,L5	8 Hours

Neuro-fuzzy hybrid systems - genetic neuro hybrid systems - genetic fuzzy hybrid and fuzzy genetic hybrid systems - simplified fuzzy ARTMAP - Applications: A fusion approach of multispectral images with SAR, optimization of traveling salesman problem using genetic algorithm approach, soft computing based hybrid fuzzy controllers.

Course outcomes:	
CO1	Explain soft computing techniques and their applications.
CO2	Analyze various neural network architectures
CO3	Understand perceptronsand counter propagation networks.
CO4	Define the fuzzy systems
CO5	Analyze the genetic algorithms and their applications.

Reference Books:	
1.	J.S.R.Jang, C.T. Sun and E.Mizutani"Neuro-Fuzzy and Soft Computing", PHI / Pearson Education, 2004.
2.	S.N.Sivanandam and S.N.Deepa: Principles of Soft Computing", Wiley India Pvt Ltd, 2011.
3.	S.Rajasekaran and G.A.Vijayalakshmi Pai "Neural Networks, Fuzzy Logic and Genetic Algorithm: Synthesis & Applications" Prentice-Hall of India Pvt. Ltd,2006.
4.	George J. Klir, Ute St. Clair, Bo Yuan "Fuzzy Set Theory: Foundations and Applications "Prentice Hall,1997.

CIE Assessment:
CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests

Quizzes/mini tests (4 marks)
Mini Project / Case Studies (8 Marks)
Activities/Experimentations related to courses (8 Marks)

SEE Assessment:

- Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
- Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.
- One question must be set from each unit. The duration of examination is 3 hours.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	0	0	0	0	0	0	0	1
CO2	3	3	2	2	0	0	0	0	0	0	0	1
CO3	3	3	3	2	0	0	0	0	0	0	0	1
CO4	3	3	2	2	0	0	0	0	0	0	0	1
CO5	3	3	3	2	0	0	0	0	0	0	0	1

High-3, Medium-2, Low-1

Course Title	Pattern Recognition	Semester	V
Course Code	MVJ20CD552	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3: 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to:
- To introduce the fundamentals of pattern recognition and classification.
- Understand Non-parametric Techniques
- Learn Bayesian decision theory, Maximum likelihood estimation, Hidden Markov Models, some of the non-parametric techniques.

Module-1	L1,L2	8 Hours

Basics of Probability, Random Processes and Linear Algebra (recap): Probability: independence of events, conditional and joint probability, Bayes theorem Random Processes: Stationary and non-stationary processes, Expectation, Autocorrelation, Cross-Correlation, spectra.
Linear Algebra: Inner product, outer product, inverses, eigen values, eigen vectors, singular values, singular vectors.

Module-2	L2,L3	8 Hours

Bayes Decision Theory : Minimum-error-rate classification. Classifiers, Discriminant functions, Decision surfaces. Normal density and discriminant functions. Discrete features.
Parameter Estimation Methods : Maximum-Likelihood estimation :Gaussian case. Maximum a Posteriori estimation. Bayesian estimation: Gaussian case. Unsupervised learning and clustering - Criterion functions for clustering. Algorithms for clustering: K-Means, Hierarchical and other methods.

Module-3	L3,L4	8 Hours

Cluster validation. Gaussian mixture models, Expectation-Maximization method for parameter estimation. Maximum entropy estimation. Sequential Pattern Recognition. Hidden Markov Models (HMMs). Discrete HMMs. Continuous HMMs. Nonparametric techniques for density estimation. Parzen-window method. K-Nearest Neighbour method.
Dimensionality reduction: Principal component analysis - it relationship to eigen analysis. Fisher discriminant analysis - Generalised eigen analysis.

Module-4	L3,L4,L5	8 Hours

Eigen vectors/Singular vectors as dictionaries. Factor Analysis, Total variability space -

a dictionary learning methods. Non negative matrix factorisation - a dictionary learning method.Linear discriminant functions : Gradient descent procedures, Perceptron, Support vector machines - a brief introduction.

Artificial neural networks: Multilayer perceptron - feedforwark neural network. A brief introduction to deep neural networks,

Module-5	L3,L4,L5	8 Hours
convolutional neural networks, recurrent neural networks.Non-metric methods for pattern classification : Non-numeric data or nominal data. Decision trees: Classification and Regression Trees (CART).		

Course outcomes:	
CO1	Understand the major concepts and techniques in pattern recognition
CO2	Acquire abilities to solve problems in specialized application areas such as speech recognition, signal classification
CO3	Capable of designing pattern recognition systems and QAM
CO4	Explain Linear Discriminant functions
CO5	Explore Unsupervised Learning and Clustering

Text/Reference Books:	
1.	J R.O.Duda, P.E.Hart and D.G.Stork , " Pattern Classification", John Wiley,2001
2.	S S.Theodoridis and K.Koutroumbas," Pattern Recognition"Academic Press,4th Ed -2009
3.	C.M.Bishop,"Pattern Recognition and Machine Learning" ,Springer,2006

CIE Assessment:
CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests   Quizzes/mini tests (4 marks)   Mini Project / Case Studies (8 Marks)   Activities/Experimentations related to courses (8 Marks)
SEE Assessment:

- Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
- Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.
- One question must be set from each unit. The duration of examination is 3 hours.

CO-PO Mapping											
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	0	0	0	0	0	0	0	
CO2	3	3	2	2	0	0	0	0	0	0	0	
CO3	3	3	3	2	0	0	0	0	0	0	0	
CO4	3	3	2	2	0	0	0	0	0	0	0	
CO5	3	3	3	2	0	0	0	0	0	0	0	

High-3, Medium-2, Low-1

Course Title	Web Technology	Semester	V
Course Code	MVJ20CD553	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to:

- Teach students HTML and CSS for designing web pages.
- Introduce students to the basics of JavaScript as a programming language.
- Familiarize students with the Document Object Model and enable them to create dynamic web pages that react to user input.
- Teach students about installing and configuring Apache Server and incorporating backend support for their web pages.
- Introduce students to the newer features available as part of the HTML standard

Module -1	L1,L2,L3	8 Hours

Introduction, UI Design and UX : Internet, WWW, Web Servers and Browsers, URLs, MIME, HTTP, Basic Markup, Images, Hyperlinks, Lists, Tables, Forms, DataList, Canvas, Audio and Video, Geo-Location, Local Storage, Web Workers, Offline Web Applications, Drag and Drop.HTML Tables and Forms, Introducing Tables, Styling Tables, Introducing Forms, Form Control Elements, Table and Form Accessibility, Microformats

Application: To deliver data (HTML files, image files, query results) on the World Wide Web.

Video Link:

https://www.freecodecamp.org/

https://developer.mozilla.org/en-US/docs/Web/CSS

Module -2	L1,L2,L3	8 Hours

Style Sheets: CSS Introduction to Cascading Style Sheets-Features-Core Syntax-Style Sheets and HTML Style Cascading and Inheritance-Text Properties-Box Model Normal Flow Box Layout-Beyond the Normal Flow-Other Properties-Case Study. Client- Side Programming:

Application: Describing the presentation of Web pages, including colors, layout, and fonts

Video Link:

https://www.vogella.com/tutorials/CSS/article.html

https://nptel.ac.in/courses/106/105/106105084/

Module - 3	L1,L2,L3	8 Hours

JavaScript: Introduction to Client-Side Scripting, JavaScript Basics, Screen Input and Keyboard Output, Functions, Objects, Inheritance, Hoisting, Arrays, JavaScript Objects, Accessing and Modifying DOM, Events and Event Handlers - Load, Mouse, Synthetic Events, Key and Form Related Events, Event Bubbling, Cookies.
Application: Web Sites, Web Server Applications, Mobile Apps, Games Platform
Video Link:
https://www.udemy.com/courses/development/web-development/

https://javascript.info/hello-world#modern-markup

Module-4	L1,L2,L3	8 Hours

PHP Arrays and Superglobals, Arrays, $_GET and $_POST Superglobal Arrays, $_SERVERArray, $_Files Array, Reading/Writing Files, PHP Classes and Objects, Object-Oriented Overview, Classes and Objects in PHP, Object Oriented Design, Error Handling and Validation, What are Errors and Exceptions, PHP Error Reporting, PHP Error and Exception Handling
Application: e-Commerce Applications. Web Pages and Web-Based Applications
Video Link:
http://www.nptelvideos.com/video.php?id=2142&c=27

http://www.nptelvideos.com/video.php?id=2131&c=27

http://www.nptelvideos.com/video.php?id=2116&c=27

Module-5	L1,L2,L3	8 Hours

Bootstrap: Grid Systems, Layout, Tables and Forms, Buttons and Images, Progress Bar, Navigations. jQuery: Usage, Selecting DOM Elements, Getting and Setting Attributes, Changing Styles, File Handling and System Calls, Arrays, Cookies, Sessions, Database Access.
Application: Bootstrap is a front-end framework used to create modern websites and web apps
Video Link:
https://getbootstrap.com/docs/4.5/examples/

https://www.w3schools.com/bootstrap/bootstrap_buttons.asp

Practical Experiments:	
Create a web page with the following. a. Cascading style sheets. b. Embedded style sheets. c. Inline style sheets. Use our college information for the web pages. JavaScript to design a simple calculator Java script to Validate the Registration, user login, user profile and payment by credit card pages PHP program to display a digital clock which displays the current time of the server.. PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors	
Course outcomes:	
CO1	Outline the basic concepts of information and web architecture.
CO2	Design solutions for programming questions using JavaScript
CO3	Study Hyper Text markup language and create websites using HTML, CSS Codes.
CO4	Setup a web server and host a website with back end support.
CO5	Incorporate the latest HTML features in the web pages designed by them with fallback options wherever required.

Text/Reference Books:	
1.	Jeffrey C.Jackson, "Web Technologies--A Computer Science Perspective", Pearson Education,2006.
2.	Robert. W. Sebesta, "Programming the World Wide Web", Fourth Edition, Pearson Education
3.	Deitel, Deitel, Goldberg, "Internet & World Wide Web How To Program", Third Edition, Pearson Education, 2006.
4.	Marty Hall and Larry Brown,"Core Web Programming" Second Edition, Volume I and II, Pearson Education, 2001.
5.	Bates, "Developing Web Applications", Wiley, 2006.
CIE Assessment:	
CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests Quizzes/mini tests (4 marks)	

Mini Project / Case Studies (8 Marks)												
Activities/Experimentations related to courses (8 Marks)												

SEE Assessment:

Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.

Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3					2		2
CO2	3	3	3	2	3					2		2
CO3	3	3	2	2	3					2		2
CO4	3	3	2	2	3					2		3
CO5	3	3	3	2	3					2		2

High-3, Medium-2, Low-1

Course Title	Data Compression	Semester	V
Course Code	MVJ20CD554	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3: 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to:
- This course viz., aims to prepare the students:
- Gain a fundamental understanding of data compression methods for text, images, and video, and related issues in the storage, access, and use of large data sets
- Select, giving reasons that are sensitive to the specific application and particular circumstance, most appropriate compression techniques for text, audio, image and video information
- Illustrate the concept of various algorithms for compressing text, audio, image and video information.

Module-1	L1,L2	8Hrs.

Loss less compression, Lossy Compression, Measures of performance, Modeling and coding, Mathematical Preliminaries for Loss-less compression: A brief introduction to information theory, Models: Physical models, Probability models, Markov models, composite source model, Coding: uniquely decodable codes, Prefix codes.

Module-2	L2,L3	8 Hrs.

Minimum variance Huffman codes, Adaptive Huffman coding: Update procedure, Encoding procedure, Decoding procedure. Golomb codes, Rice codes, Tunstall codes, Applications of Hoffman coding: Loss less image compression, Text compression, Audio Compression.

Module-3	L3,L4	8Hrs.

Coding a sequence, Generating a binary code, Comparison of Binary and Huffman coding, Applications: Bi-level image compression- The JBIG standard, JBIG2, Image compression. Dictionary Techniques: Introduction, Static Dictionary: Diagram Coding, Adaptive Dictionary.

Module-4	L3,L4,L5	8 Hrs.

Scalar quantization, adaptive quantization, non uniform quantization Vector quantization, structured vector quantizers Differential encoding, adaptive DPCM Delta modulation, speech coding, image coding Preliminaries for losses compression.

Module-5	L3,L4,L5	8 Hrs.
Digital Video and video compression. MPEG, MPEG-4 Digital Audio, Human auditory systems ADPCM audio compression , Symbol ranking, Sparse strings. Word based text compression. Textual, image compression. Dynamic Markov coding. FHM curve compression.		

Course outcomes:	
CO1	program, analyze Hoffman coding: Loss less image compression, Text compression, Audio Compression.
CO2	program and analyze various Image compression and dictionary based techniques like static Dictionary, Diagram Coding, Adaptive Dictionary.
CO3	understand the statistical basis and performance metrics for lossless compression.
CO4	understand the conceptual basis for commonly used lossless compression techniques, and understand how to use and evaluate several readily available implementations of those techniques.
CO5	understand the structural basis for and performance metrics for commonly used lossy compression techniques and conceptual basis for commonly used lossy compression techniques.

Text Books:	
1.	"Data Compression, The Complete Reference",David Salomon,Springer International Edition, 2007, ISBN-10: 1846286026, ISBN-13: 978-1846286025 3rd Edition,2007
2.	"The Data Compression Book",Mark Nelson,BPB publications, ISBN-10: 1558514341, ISBN-13: 978-1558514348,2ndEdition,1995

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	0	2	0	0	0	0	0	0	1	1
CO2	3	3	0	2	0	0	0	0	0	0	1	1
CO3	3	3	0	3	0	0	0	0	0	0	0	1
CO4	2	2	0	3	0	0	0	0	0	0	1	1
CO5	2	2	0	2	0	0	0	0	0	0	0	1

High-3, Medium-2, Low-1

Course Title	Database System Lab	Semester	V
Course Code	MVJ20CDL56	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 0 : 0 :4)	Total	100
Credits	2	Exam. Duration	3 Hours

Course objective is to:

- To understand the functions of database system.
- Query processing and execution to retrieve data.
- Get the idea about complex query execution.
- get the knowledge about database and programming connection.
- Get the knowledge about data mining algorithms.

Sl No	Experiment Name	RBT Level	Hours
1	a. Study of User privileges b. Experiments on All Data Definition Language (create, modify, drop table etc.,)	L3	3
2	Experiments on All Data Manipulation Language (Insert, Delete, Update)	L3	3
3	Experiments on Nested Sub-queries and Inner Queries	L3	3
4	Experiments on All types of Joins	L3	3
5	Experiment on Cursor, Assertion and Triggers	L3	3
6	Experiments on PL\SQL and Procedure and Function	L3	3
7	Implementation of Normal forms – (The faculty should give some set of attributes and students should solve by different normal forms)	L3	3
8	Front-end & Back-end application 1 (Front end – any programming language, Back-end – any database software)	L3	3
9	Front-end & Back-end application 2 (GUI Based)	L3	3
10	Front-end & Back-end application 3 (GUI based application for shops, etc.,)	L3	3
11	Implementation of Data mining Algorithms 1 – using Weka or Orange.	L3	3
12	Implementation of Data mining Algorithms 2 – using Weka or Orange	L3	3

13	Implementation of Data mining Algorithms 3 – using Weka or Orange.	L3	3

Course outcomes:	
CO1	Create table, insert data using sql commands
CO2	Execute queries for acquire data from database
CO3	Develop a program for commercial shop bill maintenance
CO4	Develop a web application to remote data processing
CO5	Implement data mining algorithms for derive patterns in data

CIE Assessment:
Regular Lab work :20 Record writing :5 Lab Tests(Minimum 2 tests shall be conducted for 15 marks and average of two will be taken) Viva 10 marks
SEE Assessment:
Examinations will be conducted for 100 marks and scaled-down to 50. The weightage shall be, Write-up : 20 marks Conduction : 40 marks Analysis of results : 20 marks Viva : 20 marks

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	3	3	2	2	2	3	2
CO2	3	3	3	2	2	3	2	2	2	2	2	1
CO3	2	3	3	2	2	3	2	2	1	1	2	2
CO4	2	3	3	2	2	2	2	1	1	1	2	2
CO5	2	3	2	3	1	1	2	2	1	2	2	1

High-3, Medium-2, Low-1

Course Title	R Programming Lab	Semester	V
Course Code	MVJ20CDL57	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 0 : 0 : 4)	Total	100
Credits	2	Exam. Duration	3 Hours

Course objective is to:
- Install and use R for simple programming tasks.
- Extend the functionality of R by using add-on packages
- Extract data from files and other sources and perform various data manipulation tasks on them.

Sl No	Experiment Name	RBT Level	Hours
1	To perform the basic mathematical operations in r programming	L3	3
2	Implementation of vector and List data objects operations.	L3	3
3	Implementation of various operations on matrix, array and factors in R	L3	3
4	Implementation and perform the various operations on data frames in R.	L3	3
5	Study and implementation of various control structures in R.	L3	3
6	Data Manipulation	L3	3
7	Simulating a Linear Model	L3	3
8	Random Sampling in R	L3	3
9	Data visualization with R and ggplot2	L3	3
10	Working with CSV files in R	L3	3

Course outcomes:

CO1	Install and use R for simple programming tasks.
CO2	Extend the functionality of R by using add-on packages

CO3	Extract data from files and other sources and perform various data manipulation tasks on them.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	0	0	0	0	0	0	0	0
CO2	3	3	2	2	0	0	0	0	0	0	0	0
CO3	3	3	3	2	0	0	0	0	0	0	0	0
CO4	3	3	2	2	0	0	0	0	0	0	0	0
CO5	3	3	3	2	0	0	0	0	0	0	0	0

High-3, Medium-2, Low-1

Course Title	Data Communication Lab	Semester	V
Course Code	MVJ20CDL58	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 0 : 0 : 4)	Total	100
Credits	2	Exam. Duration	3 Hours

Course objective is to:
- To understand the working principle of various communication protocols.
- To analyse the various routing algorithms.
- To know the concept of data transfer between nodes.

Sl No	Experiment Name	RBT Level	Hours
1	a) Establish a Peer-to-Peer network of two computers using Cisco packet tracer b) Simulate a LAN using Hub in Cisco Packet tracer.	L3	3
2	a) Create a LAN using Switch in Cisco Packet Tracer b) Create a connection between two different LAN using router practically in Cisco packet tracer	L3	3
3	a) There are 20PC's in your network. Five PC's are connected to one Ethernet hub, and five PC's are connected to another hub. Each hub is connected to separate switch and both the switches are connected to a separate router. The routers are connected via an Ethernet bridge. The remaining 10 PC's are connected directly to one of the two switches. How many Ethernet segments are there? Implement this scenario using cisco packet tracer. b) To analyse the performance of various configurations and protocols in LAN	L3	3
4	Construct a VLAN and make the PC's communicate among a VLAN	L3	3
5	Construct a Wireless LAN and make the PC's communicate	L3	3

	wirelessly		
6	To understand the concept and operation of Routing Information Protocol (RIP)	L3	3
7	To construct simple LAN and understand the concept and operation of Address Resolution Protocol (ARP)	L3	3
8	To construct multiple router networks and understand the operation of EIGRP Protocol.	L3	3
9	To understand the operation of TELNET by accessing the router in server room from a PC in IT office.	L3	3

Course outcomes:

CO1	Understand fundamental underlying principles of communication
CO2	Understand details and functionality of layered network architecture.
CO3	Apply mathematical foundations to solve computational problems in communication
CO4	Analyze performance of various communication protocols.
CO5	Practice packet /file transmission between nodes.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	0	0	0	0	0	0	0	0
CO2	3	3	2	2	0	0	0	0	0	0	0	0
CO3	3	3	3	2	0	0	0	0	0	0	0	0
CO4	3	3	2	2	0	0	0	0	0	0	0	0
CO5	3	3	3	2	0	0	0	0	0	0	0	0

High-3, Medium-2, Low-1

Course Title	ENVIRONMENTAL STUDIES	Semester	V
Course Code	MVJ20ENV59	CIE	50
Total No. of Contact Hours	20	SEE	50
No. of Contact Hours/week	1(L : T : P :: 1 : 0 : 0)	Total	100
Credits	1	Exam. Duration	3 Hrs.

course objective is to:

This course will enable the students to Relate to interdisciplinary approach to complex environmental problems using basic tools of the natural and social sciences including geo-systems, biology, chemistry, economics, political science, and international processes; Study drinking water quality standards and to illustrate qualitative analysis of water. Critically evaluate the science and policy ramifications of diverse energy portfolios on air and water quality, climate, weapons proliferation, and societal stability.

Prerequisites: Basic Science

Module-1		L1, L2	4 Hrs.

Introduction to environmental studies, Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development.
Ecosystems (Structure and Function): Forest, Desert, Rivers, Ocean
Biodiversity: Types, Hot spots; Threats and Conservation of biodiversity, Deforestation.
Video link:
https://nptel.ac.in/courses/127/106/127106004/

Module-2		L1,L2	4 Hrs.

AdvancesinEnergySystems(Merits,Demerits,GlobalStatusandApplications):
Hydrogen,Solar,OTEC, Tidal andWind.
Natural Resource Management (Concept and case-study): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading.
Video link:
https://nptel.ac.in/courses/121/106/121106014/

Module-3		L1	4 Hrs.

Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant EnvironmentalActs,Case-studies):SurfaceandGroundWaterPollution;Noisepollution;SoilPollutionand Air Pollution.
Waste Management & Public Health Aspects: Bio-medical Waste; Solid waste; Hazardous waste; E-waste.
Video link:
https://nptel.ac.in/courses/122/106/122106030/
https://nptel.ac.in/courses/105/103/105103205/
https://nptel.ac.in/courses/120/108/120108005/
https://nptel.ac.in/courses/105/105/105105160/

Module-4	L1,	4 Hrs.

Global Environmental Concerns (Concept, policies, and case-studies): Global Warming ClimateChange;AcidRain;OzoneDepletion;Fluorideproblemindrinkingwater.
Video link:
https://nptel.ac.in/courses/122/106/122106030/
https://nptel.ac.in/courses/120108004/
https://onlinecourses.nptel.ac.in/noc19_ge23/preview

Module-5	L1,L2	4 Hrs.

Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO 14001.
Video link:
https://nptel.ac.in/courses/105/102/105102015/
https://nptel.ac.in/courses/120/108/120108004/

Course outcomes: On completion of the course, students would be able to	
CO1	Describe the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
CO2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C03	Demonstrate ecology knowledge of a complex relationship between biotic and Abiotic components.
CO4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities .
Scheme of Evaluation	

Details		Marks
Average of three Internal Assessment (IA) Tests of 30 Marks each i.e. (Marks Obtained in each test) / 3	CIE(50)	40
Quizzes		10
Semester End Examination	SEE(50)	50
Total		100

Text/Reference Books:	
1.	Principals of Environmental Science and Engineering, Raman Siva kumar, Cengage learning, Singapur, 2ndEdition, 2005
2.	Environmental Science – working with the Earth G.Tyler Miller Jr. Thomson Brooks /Cole,11thEdition, 2006
3.	Textbook of Environmental and Ecology, Pratiba Singh, Anoop Singh & Piyush Malaviya ,ACME Learning Pvt. Ltd. New Delhi, 1st Edition.

CO-POMapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	–	2	2	1	1	–	2	1
CO2	3	3	2	1	–	1	2	–	1	1	2	1
CO3	3	3	2	1	–	2	2	–	1	1	2	1
CO4	3	3	2	2	–	2	2	–	1	1	2	1

High-3, Medium-2, Low-1

Course Title	Universal Human Values II -understanding harmony and ethical human conduct	Semester	V
Course Code	MVJ20UHV510	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	2 (L : T : P :: 2 : 0 : 0)	Total	100
Credits	2	Exam. Duration	3 Hrs.

Course objective is to: This course will enable the students to
Appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings. Facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way. 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.

| Prerequisites: Universal Human Values I |

Module-1		L1,L2	6 Hrs
Review on Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education), Self-exploration as the Process for Value Education, Happiness and Prosperity – Current Scenario, Value Education: Understanding Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, , Method to Fulfill the Basic Human Aspirations, Practical Sessions: Sharing about Oneself (Tutorial 1), Exploring Human Consciousness (Tutorial 2), Exploring Natural Acceptance (Tutorial 3) Video link: https://www.youtube.com/watch?v=85XCw8SU084 https://www.youtube.com/watch?v=E1STJoXCXUU&list=PLWDeKF97v9SP_Kt6jqzA3p Z3yA7g_OAQz https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw			

Module-2		L1,L2	6 Hrs
Review on Understanding Human being as the Co-existence of the Self and the Body, The Body as an Instrument of the Self, Harmony of the Self with the Body.			

Harmony in the Human Being: Distinguishing between the Needs of the Self and the Body, Understanding Harmony in the Self, Programme to ensure self-regulation and Health.
Practical Sessions:
Exploring the difference of Needs of Self and Body (Tutorial 4), Exploring Sources of Imagination in the Self (Tutorial 5), Exploring Harmony of Self with the Body (Tutorial 6).

Video link:
https://www.youtube.com/watch?v=GpuZo495F24
https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-3	L1,L2	6 Hrs

Review on Harmony in the Family – the Basic Unit of Human Interaction, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society.
Harmony in the Family and Society: Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Vision for the Universal Human Order,
Practical Sessions: Exploring the Feeling of Trust (Tutorial 7), Exploring the Feeling of Respect (Tutorial 8), Exploring Systems to fulfill Human Goal (Tutorial 9).
Video link:
https://www.youtube.com/watch?v=F2KVW4WNnS8
https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-4	L1,L2	6 Hrs

Harmony in the Nature/Existence: Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfillment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence.
Practical Sessions: Exploring the Four Orders of Nature (Tutorial 10), Exploring Co-existence in Existence (Tutorial 11).

Video link:
https://www.youtube.com/watch?v=1HR-QB2mCF0
https://www.youtube.com/watch?v=lfN8q0xUSpw
https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-5	L1,L2	6 Hrs

Review on Natural Acceptance of Human Values,Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Holistic Technologies, Production Systems and Management Models-Typical Case Studies.
Implications of the Holistic Understanding – a Look at Professional Ethics: Definitiveness of (Ethical) Human Conduct, Competence in Professional Ethics, Strategies for Transition

towards Value-based Life and Profession

Practical Sessions: Exploring Ethical Human Conduct (Tutorial 12), Exploring Humanistic Models in Education (Tutorial 13), Exploring Steps of Transition towards Universal Human Order (Tutorial 14).

Video link:
https://www.youtube.com/watch?v=BikdYub6RY0
https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Course outcomes: On completion of the course, students would be able to

CO1	Explore themselves, get comfortable with each other and with the teacher
CO2	Enlist their desires and the desires are not vague.
CO3	Restate that the natural acceptance (intention) is always for living in harmony, only competence is lacking
CO4	Differentiate between the characteristics and activities of different orders and study the mutual fulfillment among them.
CO5	Present sustainable solutions to the problems in society and nature

Scheme of Evaluation

Details		Marks	
Assessment by Faculty mentor (Class Room Evaluation)	CIE(50)	10	
Self-Assessment + Assessment by peers		20	
Activities / Experimentations related to courses/Assignment		10	
Mini Projects / Case Studies		10	
Semester End Examination	SEE (50)	50	
Total		100	

Text Books:

1.	AICTE SIP UHV-I Teaching Material, https://fdp-si.aicte india.org/ AicteSipUHV_download.php
2.	A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1

3.	Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2

Reference Books:

1.	Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010
2.	Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
3.	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
4.	The Story of Stuff (Book).
5.	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		1				2	2	3	2	1	2	1
CO2		1				2	2	3	2	1	2	1
CO3		1				2	2	3	2	1	2	1
CO4		1				2	2	3	2	1	2	1
CO5		1				2	2	3	2	1	2	1

High-3, Medium-2, Low-1