Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: ROE074	**Subject Name: Understanding the Human Being Comprehensively – Human Aspirations and its Fulfillment**	
Course Outcomes	Understand about human aspirations, goal, activities and purpose of life.	
	Understand Human being (the knower, the experiencer, the doer) and its expansion, its interconnectedness & co-existence.	
	Develop the competence of realization about co-existence through self-exploration, self-awareness & self-evaluation.	
	Analyze that the process of inner evolution is particularly awakening to activities of self-realization, understanding & contemplation in the self.	
	Appreciate comprehensive knowledge about the co-existence & participate in the larger order through realization, thought, behavior & work.	
Syllabus: As per AKTU		
Unit-I	Introduction: The basic human aspirations and their fulfillment through Right understanding and Resolution; All-encompassing Resolution for a Human Being, its details and solution of problems in the light of Resolution	
Unit-II	Understanding Human being and its expansion: The domain of right understanding starts from understanding the human being (the knower, the experiencer and the doer); and extends up to understanding nature/existence – its interconnectedness and co-existence; and finally understanding the role of human being in existence (human conduct).	
Unit-III	Activities of the Self: Understanding the human being comprehensively is 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; Reasons for harmony/contradiction in the self.	
Unit-IV	Understanding Co-existence with other orders: The need and the process of inner evolution (through self-exploration, selfawareness 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).	
Unit-V	Expansion of harmony from self to entire existence: Understanding 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 endeavour viz., realization, thought, behavior and work (participation	

| | in the larger order) leading to harmony at all levels from self to Nature and entire Existence. |

Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RCS071	Subject Name: Application of Soft Computing	
Course Outcomes	Explain the concepts and architecture of Neural Networks.	
	Explain and apply Back Propagation Neural Network Architectures and Algorithms.	
	Explain and apply the concepts of fuzzy sets theory operations and properties.	
	Explain and apply Fuzzy Membership and fuzzy rules.	
	Demonstrate fuzzy controllers and its industrial applications.	
Syllabus: As per AKTU		
Unit-I	Neural Networks-I (Introduction & Architecture): Neuron, Nerve structure and synapse, Artificial Neuron and its model, activation functions, Neural network architecture: single layer and multilayer feed forward networks, recurrent networks. Various learning techniques; perception and convergence rule, Auto-associative and hetro-associative memory.	
Unit-II	Neural Networks-II (Back propagation networks): Architecture: perceptron model, solution, single layer artificial neural network, multilayer perception model; back propagation learning methods, effect of learning rule co-efficient; back propagation algorithm, factors affecting backpropagation training, applications.	
Unit-III	Fuzzy Logic-I (Introduction): Basic concepts of fuzzy logic, Fuzzy sets and Crisp sets, Fuzzy set theory and operations, Properties of fuzzy sets, Fuzzy and Crisp relations, Fuzzy to Crisp conversion.	
Unit-IV	Fuzzy Logic –II (Fuzzy Membership, Rules) : Membership functions, interference in fuzzy logic, fuzzy if-then rules, Fuzzy implications and Fuzzy algorithms, Fuzzifications & Defuzzifications, Fuzzy Controller, Industrial applications	
Unit-V	Genetic Algorithm (GA): Basic concepts, working principle, procedures of GA, flow chart of GA, Genetic representations, (encoding) Initialization and selection, Genetic operators, Mutation, Generational Cycle, applications.	

Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RIT070	**Subject Name: Computer Graphics**	
Course Outcomes	Introduce the basics of computer graphics.	
	Understand the transformation methods.	
	Familiarization with clipping methods.	
	Analyze the projection methods.	
	Contrast the line, curve and surfaces.	
	Evaluate the algorithms and models.	
Syllabus: As per AKTU		
Unit-I	Introduction and Line Generation: Types of computer graphics, Graphic Displays- Random scan displays, Raster scan displays, Frame buffer and video controller, Points and lines, Line drawing algorithms, Circle generating algorithms, Mid-point circle generating algorithm, and parallel version of these algorithms.	
Unit-II	Transformations: Basic transformation, Matrix representations and homogenous coordinates, Composite transformations, Reflections and shearing. Windowing and Clipping: Viewing pipeline, Viewing transformations, 2-D Clipping algorithms Line clipping algorithms such as Cohen Sutherland line clipping algorithm, Liang Barsky algorithm, Line clipping against non rectangular clip windows; Polygon clipping – Sutherland Hodgeman polygon clipping, Weiler and Atherton polygon clipping, Curve clipping, Text clipping	
Unit-III	Three Dimensional: 3-D Geometric Primitives, 3-D Object representation, 3-D Transformation, 3- D viewing, projections, 3-D Clipping.	
Unit-IV	Curves and Surfaces: Quadric surfaces, Spheres, Ellipsoid, Blobby objects, Introductory concepts of Spline, Bspline and Bezier curves and surfaces.	
Unit-V	Hidden Lines and Surfaces: Back Face Detection algorithm, Depth buffer method, A- buffer method, Scan line method, basic illumination models– Ambient light, Diffuse reflection, Specular reflection and Phong model, Combined approach, Warn model, Intensity Attenuation, Color consideration, Transparency and Shadows.	

Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RCS075	Subject Name: Cloud Computing	
Course Outcomes	Explain the fundamentals of cloud and their computation over parallel and distributed computing	
	Understanding the concept of virtualization and their mechanism with service-oriented architecture.	
	Organize the cloud data in Public, Private and Hybrid Clouds on cloud storage.	
	Examine the cloud data by Resource provisioning methods and implement global security on it.	
	Analyse the virtual box and programming environment can be applied over Google app engine.	
Syllabus: As per AKTU		
Unit-I	Introduction: Introduction to Cloud Computing – Definition of Cloud – Evolution of Cloud Computing – Underlying Principles of Parallel and Distributed Computing – Cloud Characteristics – Elasticity in Cloud – On-demand Provisioning.	
Unit-II	Cloud Enabling Technologies: Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish Subscribe Model – Basics of Virtualization – Types of Virtualization – Implementation Levels of Virtualization – Virtualization Structures – Tools and Mechanisms – Virtualization of CPU – Memory – I/O Devices – Virtualization Support and Disaster Recovery.	
Unit-III	Cloud Architecture, Services and Storage: Layered Cloud Architecture Design – NIST Cloud Computing Reference Architecture – Public, Private and Hybrid Clouds – laaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage – Storage-as-a-Service – Advantages of Cloud Storage – Cloud Storage Providers – S3.	
Unit-IV	Resource Management and Security In Cloud: Inter Cloud Resource Management – Resource Provisioning and Resource Provisioning Methods – Global Exchange of Cloud Resources – Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Virtual Machine Security – IAM – Security Standards.	
Unit-V	Cloud Technologies and Advancements: Hadoop – MapReduce – Virtual Box — Google App Engine – Programming Environment for Google App Engine — Open Stack – Federation in the Cloud – Four Levels of Federation – Federated Services and Applications – Future of Federation.	

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Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RIT701	**Subject Name: Cryptography & Network Security**	
Course Outcomes	List classical encryption techniques and modern block ciphers.	
	Illustrate encryption algorithms based on mathematical terminology associated with it.	
	Write and implement message authentication codes, digital signatures for enhancing the security.	
	Apply the key management and distribution schemes for authentication applications.	
	Demonstrate IP security features for secure transmission.	
Syllabus: As per AKTU		
Unit-I	Introduction to security attacks, services and mechanism, Classical encryption techniques substitution ciphers and transposition ciphers, cryptanalysis, steganography, Stream and block ciphers. Modern Block Ciphers: Block ciphers principles, Shannon's theory of confusion and diffusion, fiestal structure, Data encryption standard(DES), Strength of DES, Idea of differential cryptanalysis, block cipher modes of operations, Triple DES	
Unit-II	Introduction to group, field, finite field of the form GF(p), modular arithmetic, prime and relative prime numbers, Extended Euclidean Algorithm, Advanced Encryption Standard (AES) encryption and decryption Fermat's and Euler's theorem, Primarily testing, Chinese Remainder theorem, Discrete Logarithmic Problem, Principals of public key crypto systems, RSA algorithm, security of RSA.	
Unit-III	Message Authentication Codes: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions, Secure hash algorithm (SHA) Digital Signatures: Digital Signatures, Elgamal Digital Signature Techniques, Digital signature standards (DSS), proof of digital signature algorithm.	
Unit-IV	Key Management and distribution: Symmetric key distribution, Diffie-Hellman Key Exchange, Public key distribution, X.509 Certificates, Public key Infrastructure. Authentication Applications: Kerberos, Electronic mail security: pretty good privacy (PGP), S/MIME.	
Unit-V	IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management. Introduction to Secure Socket Layer, Secure electronic, transaction (SET) System Security: Introductory idea of Intrusion, Intrusion detection, Viruses and related threats, firewalls	

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Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RCS702	Subject Name: Artificial Intelligence	
Course Outcomes	Remember or awareness about the difference between normal and Artificial Intelligence	
	Understand what are intelligent drives and where to use AI concept	
	Apply the working methodology of intelligent agents and their applications	
	Analyze the concept of reasoning and machine learning of AI in real world and analyze their impacts	
	Evaluate AI impacts on Pattern Recognition and perform statistical analysis for measuring outcome of the system	
Syllabus: As per AKTU		
Unit-I	Introduction to security attacks, services and mechanism, Classical encryption techniques, substitution ciphers and transposition ciphers, cryptanalysis, Steganography, Stream and block ciphers. Modern Block Ciphers: Block ciphers principles, Shannon's theory of confusion and diffusion, Fiestal structure, Data encryption standard (DES), Strength of DES, Idea of differential cryptanalysis, block cipher modes of operations, Triple DES.	
Unit-II	Introduction to group, field, finite field of the form GF(p), modular arithmetic, prime and relative prime numbers, Extended Euclidean Algorithm, Advanced Encryption Standard (AES) encryption and decryption Fermat's and Euler's theorem, Primarily testing, Chinese Remainder theorem, Discrete Logarithmic Problem, Principals of public key crypto systems, RSA algorithm, security of RSA.	
Unit-III	Message Authentication Codes: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, Security of hash functions, Secure hash algorithm (SHA) Digital Signatures: Digital Signatures, Elgamal Digital Signature Techniques, Digital signature standards (DSS), proof of digital signature algorithm.	
Unit-IV	Key Management and distribution: Symmetric key distribution, Diffie-Hellman Key Exchange, Public key distribution, X.509 Certificates, Public key Infrastructure. Authentication Applications: Kerberos, Electronic mail security: pretty good privacy (PGP), S/MIME.	
Unit-V	IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management. Introduction to Secure Socket Layer, Secure electronic, transaction (SET) System Security: Introductory idea of Intrusion, Intrusion detection, Viruses and related threats, firewalls.	

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Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RIT751	**Subject Name: Cryptography & Network Security Lab**	
Course Outcomes	Implement the concepts of classical encryption techniques in C/Java Language.	
	Understand and Implement the concepts of different key encryption and key distribution techniques in C/Java programming.	
	Implement the message authentication code SHA algorithm in Java Programming.	
Syllabus: As per AKTU		
1	Write a C program that contains a string (char pointer) with a value \ Hello World'. The program should XOR each character in this string with 0 and displays the result.	
2	Write a C program that contains a string (char pointer) with a value \ Hello World'. The program should AND or and XOR each character in this string with 127 and display the result	

3	Write a Java program to perform encryption and decryption using the following algorithms:
	    A. Ceaser Cipher
	    B. Substitution Cipher
	    C. Hill Cipher	

4	Write a Java program to implement the DES algorithm logic	
5	Write a C/ JAVA program to implement the BlowFish algorithm logic.	
6	Write a C/ JAVA program to implement the Rijndael algorithm logic.	
7	Using Java Cryptography, encrypt the text "Hello world" using BlowFish. Create your own key using Java keytool.	
8	Write a Java program to implement RSA Algorithm.	
9	Implement the Diffie -Hellman Key Exchange mechanism using HTML and JavaScript. Consider the end user as one of the parties (Alice) and the JavaScript application as other party (bob).	
10	Calculate the message digest of a text using the SHA-1 algorithm in JAVA.	

Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RCS752	**Subject Name: Artificial Intelligence Lab**	
Course Outcomes	Implementation of basic AI programs in tools like PROLOG	
	Understand and relate basics of Artificial Intelligence problems with mathematical foundation for Machine Learning	
	Understand and apply supervised and unsupervised learning in real word AI problems	
Syllabus: As per AKTU		
1	Study of Prolog	
2	Write simple fact for the statements using PROLOG.	
3	Write predicates One converts centigrade temperatures to Fahrenheit, the other checks if a temperature is below freezing.	
4	Write a program to solve the Monkey Banana problem	
5	WAP in turbo prolog for medical diagnosis and show the advantage and disadvantage of green and red cuts	
6	WAP to implement factorial, fibonacci of a given number	
7	Write a program to solve 4-Queen problem	
8	Write a program to solve traveling salesman problem.	
9	Write a program to solve water jug problem using LISP	

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Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RIT753	Subject Name: Industrial Training	
Course Outcomes	Enhance students' knowledge in one particular technology and to work experience under the guidance of in practice professionals.	
	Provide comprehensive learning platform to students where they can enhance their employ ability skills and become job ready along with real corporate exposure.	
	Cultivate student's leadership ability and responsibility to perform or execute the given task and to increase self-confidence of students and helps in finding their own proficiency.	

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Branch: Information Technology	Year: IV	Semester: ODD 2020-21
Subject Code: RIT754	Subject Name: Project	
Course Outcomes	Plan, analyze, design and implement a software project or gather knowledge over the field of research and design or plan about the proposed project work.	
	Identify and Implement the software development cycle with emphasis on different processes -requirements, design, and implementation phases and learn details about different artifacts produced during software development.	
	Develop skill in working as a team and timely completion of working project and engage in lifelong learning	

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Branch: Information Technology	Year: IV	Semester: EVEN 2020-21
Subject Code: ROE088	Subject Name: Values Relationships and Ethical Human Conduct for A Happy and Harmonious Society	
Course Outcomes Branch: Information Technology	Learn about different type of relations with expression & human conduct to attain comprehensive human goals.	
	Understand about the conceptual frame work of undivided society as well as undivided human order.	
	Develop the exposure for transition from current state to the undivided society & universal human order.	
	Appreciate universal human order as continuity & expanse of order in living from family order to world family order.	
	Analyze current state & possibilities of participation in this direction to undivided society as well as universal human order.	
Syllabus: As per AKTU		
Unit-I	Introduction to the course: Basic aspiration of a Human Being and program for its fulfillment, Need for family and relationship for a Human Being, Humanhuman relationship and role of behavior in its fulfillment, Human-rest of Nature relationship and role of work in its fulfillment, Comprehensive Human Goal, Need for Undivided Society, Need for Universal Human Order, an appraisal of the Current State, Appraisal of Efforts in this Direction in Human History.	
Unit-II	Understanding Human-Human Relationship & its fulfillment: Recognition of Human-Human Relationship, Recognition of feelings in relationship, Established Values and Expressed Values in Relationship, interrelatedness of feelings and their fulfillment, Expression of feelings, Types of relationship and their purpose, mutual evaluation in relationship, Meaning of justice in relationship, Justice leading to culture, civilization and Human Conduct.	
Unit-III	Justice from family to world family order: Undivided Society as continuity and expanse of Justice in behavior – family to world family order, continuity of culture and civilization, Universal Order on the basis of Undivided Society, Conceptual Framework for Universal human order, Universal Human Order as continuity and expanse of order in living: from family order to world family order, a conceptual framework for universal human order.	
Unit-IV	Program for Ensuring Undivided Society and Universal Human Order: Education – Sanskar, Health – Sanyam, Production-work, Exchange –	

	storage, Justice-preservation.
Unit-V	Human Tradition: Scope and Steps of Universal Human Order, Human Tradition (Ex. Family order to world family order), Steps for transition from the current state, Possibilities of participation of students in this direction, Present efforts in this direction, Sum up.

Galgotias College of Engineering and Technology
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Branch: Information Technology	Year: IV	Semester: EVEN 2020-21
Subject Code: RCS080	**Subject Name: Machine Learning***	
Course Outcomes	Differentiate various learning approaches, and to interpret the concepts of supervised learning.	
	Compare the different dimensionality reduction techniques.	
	Apply theoretical foundations of decision trees to identify best split and Bayesian classifier to label data points.	
	Illustrate the working of classifier models like SVM, Neural Networks and identify classifier model for typical machine learning applications.	
	Identify the state sequence and evaluate a sequence emission probability from a given HMM.	
	Illustrate and apply clustering algorithms and identify its applicability in real life problems.	

*MOOC Course

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Branch: Information Technology	Year: IV	Semester: EVEN 2020-21
Subject Code: RCS086	Subject Name: Deep Learning*	
Course Outcomes	Define and explain Machine Learning, Linear Models and Training a network	
	Illustrate different operations Deep Network and also explain architectures of Deep Network	
	Apply Dimensionality Reduction in Deep Networks	
	Explain and apply Optimization in Deep Networks	
	Explain and apply Generalization in Deep Networks	
	Analyse and determine different case studies of Deep Learning applications	

*MOOC Course

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Branch: Information Technology	Year: IV	Semester: EVEN 2020-21
Subject Code: RIT851	Subject Name: Seminar	
Course Outcomes	Identify and explore latest technological trends, research fields and get acquainted with the real working environment.	
	Promote and develop communication skills, individual and teamwork skill, diligence, and commitment to excellence needed to engage in lifelong learning.	
	Demonstrate oral presentation, write and asses the technical document, for potential employees.	

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Branch: Information Technology	Year: IV	Semester: EVEN 2020-21
Subject Code: RIT852	Subject Name: Project	
Course Outcomes	Plan, analyze, design and implement a software project or gather knowledge over the field of research and design or plan about the proposed project work.	
	Identify and Implement the software development cycle with emphasis on different processes -requirements, design, and implementation phases and learn details about different artifacts produced during software development.	
	Develop skill in working as a team and timely completion of working project and engage in lifelong learning	