IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

Sr. No.	Course Type	Course Code	Course Title	Scheme			Credits
				L	T	P	
1	PCC	IO15	Data Science	2	1	–	3
2	PEC	IO02	Professional Elective -II	2	1	–	3
3	PEC	IO03	Professional Elective -III	2	1	–	3
4	IOC	-	Interdisciplinary Open Course-II	3	–	–	3
5	LC	IO15(P)	Data Science Lab	–	–	2	1
6	LC-PEC	IO02(P)	Professional Elective-II Lab	–	–	2	1
7	PROJ	IO04	Project-II	–	–	8	4
8	PROJ	IO05	Evaluation of Internship-II	–	–	6	3
						Total Credits	21

Professional Elective Course (PEC)–II, IO02(Any One Course)	Professional Elective Course (PEC)–III, IO03 (Any One Course)	Interdisciplinary Open Course IOC-II, (Any One Course)
(A)Mobile Application Development	(A) Information Theory and Coding	CS01 Digital Marketing & SEO
(B) Soft Computing	(B)Pattern Recognition	FT (B) Occupation Health and First Aid
(C)Cloud Computing	(C) Industrial and Medical IoT	3-D Printing & Application
(D) Multimedia design for IoT	(D) Deep & Reinforcement Learning	Industrial Electronics

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PCC-IO-15	Data Science	2L:1T:0P (3hrs.)	3 Credits

Course Objective:
The objective of this course is to familiarize students with the roles of a data scientist and enable them to analyze data to derive meaningful information from it.

Course Contents: (40 hrs.)

Module 1: (06 hrs.)
Introduction: Definition of Data Science, Big Data and Data Science hype and getting past the hype, Datafication, Current landscape of perspectives, Statistical Inference, Populations and samples, Statistical modeling, probability distributions, fitting a model, Over fitting. Basics of R: Introduction, Environment Setup, Programming with R, Basic Data Types.

Module 2: (12 hrs.)
Data Collection and Data Pre-Processing Overview of Vectors, Matrices, Factors, Data Frames, Lists and Data Collection Strategies, Data Pre-Processing Overview, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization.

Module 3: (10 hrs.)
Exploratory Data Analytics Descriptive Statistics – Mean Standard Deviation, Skewness and Kurtosis, Box Plots, Pivot Table, Heat Map, Correlation Statistics, ANOVA. Exploratory Data Analysis - Basic tools (plots, graphs, and summary statistics) of EDA, Philosophy of EDA - The Data Science Process.

Module 4: (08 hrs.)
Data Reduction: Overview of Data Reduction Strategies, Wavelet Transforms Principal Components Analysis, Attribute Subset Selection, Regression and Log-Linear Models: Parametric Data Reduction, Histograms, Clustering, Sampling, Data Cube Aggregation.

Module 5: (04 hrs.)
Data Visualization Basics, Simple and Multiple Regression, Model Evaluation using Visualization, Residual Plot, Distribution Plot, Polynomial Regression and Pipelines, Measures for In-sample Evaluation, Prediction and Decision Making.

Course Outcomes:
1. Understanding data and its types for analysis.
2. Describe the data using various statistical measures with understanding of data collection and pre-processing.

3. Use appropriate exploratory data analysis techniques for data science problems.
4. Perform data reduction to solve problems effectively.
5. Apply data science visualization techniques in real-world contexts to communicate these solutions effectively.

List of Text / Reference Books:

1. Cathy O'Neil and Rachel Schutt, "Doing Data Science", O'Reilly, 2015.
2. David Dietrich, Barry Heller, Beibei Yang, "Data Science and Big data Analytics", EMC 2013.
3. Hadley Wickham and Garrett Grolemund, "R for Data Science", O'Reilly, 2017.
4. Machine Learning – Tom M. Mitchell, - MGH.
5. Crawley, M. J. (2006), "Statistics - An introduction using R", John Wiley, London 32.
6. K G Srinivas, G M Siddesh, "Statistical programming in R", Oxford Publications.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (A)	**Mobile Application Development**	**2L:1T:0P (3hrs.)**	**3 Credits**

Pre-requisite: JAVA Programming

Course Objective: The main objectives of this course are: The objective of this course is to help students to gain a basic understanding of Android application development and tools.

Course Contents: (40 hrs.)

Module1: (08hrs.)

Introduction to Android: The Android Platform, Android SDK, Eclipse Installation, Android Installation build- ing you First Android application, Understanding Anatomy of Android Application, Android Manifest file.

Module2: (8hrs.)

Android Application Design Essentials: Anatomy of an Android applications, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.

Module3: (6hrs.)

Android User Interface Design Essentials: User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation

Module4: (08hrs.)

Testing Android applications: Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources**.**

Module5: (10hrs.)

Using Common Android APIs: Using Android Data and Storage APIs, Managing data using SQLite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs, Deploying Android Application to the World.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

Course Outcome: Students should be able to:

1. Identify various concepts of mobile programming that make it unique from programming for other platforms.
2. Critique mobile applications on their design pros and cons.
3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces.
4. Program mobile applications for the Android operating system that use basic and advanced phone features.
5. Deploy applications to the Android marketplace for distribution.

List of Text/ Reference Books:

1. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nded. (2011)
2. Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd.
3. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd3.R3. Android Application Development All in one for Dummies by Barry Burd, Edition: I

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (B)	Soft Computing	2L:1T:0P (3hrs.)	3 Credits

Pre-requisite: Analysis and Design of Algorithm

Course Objective: The main objective of this course is: The objective of this course is to familiarize the students with different soft computing tools to use them to be able to solve complex problems

Course Contents: (40 hrs.)

Module1: (08hrs.)
Introduction to Neural Network: Concept, biological neural network, comparison of ANN with biological NN, evolution of artificial neural network, Basic models, Types of learning, Linear separability, XOR problem, McCulloch-Pitts neuron model, Hebb rule.

Module2: (08hrs.)
Supervised Learning: Perceptron learning, Single layer/multilayer, Adaline, Madaline, Back propagation net- work, RBFN, Application of Neural network in forecasting, data compression and image compression.

Module3: (08hrs.)
Unsupervised learning: Introduction, Fixed weight competitive nets, Kohonen SOM, Counter Propagation networks, (Theory, Architecture, Flow Chart, Training Algorithm and applications). Introduction to Convolutional neural networks (CNN) and Recurrent neural networks (RNN).

Module4: (08hrs.)
Fuzzy Set: Introduction, Basic Definition and Terminology, Properties and Set-theoretic Operations, Fuzzy Relations , Membership Functions and their assignment, Fuzzy rules and fuzzy Reasoning, Fuzzy if-then Rules, Fuzzy Inference Systems. Application of Fuzzy logic in solving engineering problems.

Module5: (08hrs.)
Genetic Algorithm: Introduction to GA, Simple Genetic Algorithm, terminology and operators of GA (individual, gene, fitness, population, data structure, encoding, selection, crossover, mutation, convergence criteria). Reasons for working of GA and Schema theorem, GA

optimization problems like TSP (Travelling salesman problem), Network design routing. Introduction to Ant Colony optimization (ACO) and Particle swarm optimization (PSO).

Course Outcome: Students should be able to:

1. State basic concept of Neural Network
2. Illustrate various concepts supervised learning, data and image compression
3. Describe the concept of unsupervised learning.
4. Apply fuzzy logic concepts to solve real world problem.
5. Design and implement the real world problem through Genetic algorithm.

Text/Reference Books:

1. S.N. Shivnandam, "Principle of soft computing", Wiley.
2. S. Rajshekaran and G.A.V. Pai, Neural Network , Fuzzy logic And Genetic Algorithm", PHI.
3. Jack M. Zurada, Introduction to Artificial Neural Network System" JAico Publication.
4. Simon Haykins, "Neural Network- A Comprehensive Foundation"
5. Timothy J.Ross, "Fuzzy logic with Engineering Applications", McGraw-Hills 1.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (C)	Cloud Computing	2L:1T:0P (3hrs.)	3 Credits

Prerequisite: NA

Course Objective:

The objective of this course is to provide students with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture and applications.

Course Contents: (40 hrs)

Module 1: (08 hrs)

Introduction of Grid and Cloud computing, characteristics, components, business and It perspective cloud services requirements, cloud models, Security in public model, public verses private clouds, Cloud computing platforms: Amazon EC2,Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing.

Module 2: (08 hrs)

Cloud services- SAAS, PAAS, IAAS, cloud design and implementation using SOA, conceptual cloud model, cloud stack, computing on demand, Information life cycle management, cloud analytics, information security, virtual desktop infrastructure, storage cloud.

Module 3: (08 hrs)

Virtualization technology: Definition, benefits, sensor virtualization, HVM, study of hypervisor, logical partitioning-LPAR, Storage virtualization, SAN, NAS, cloud server virtualization, virtualized data center.

Module 4: (08 hrs)

Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud, Cloud computing security architecture: Architectural Considerations- General Issues, Trusted Cloud computing, Secure Execution Environments and Communications, Micro architectures; Identity Management and Access control-Identity management, Access control, Autonomic Security, Cloud computing security challenges: Virtualization security management-virtual threats, VM Security Recommendations, VM-Specific Security techniques, Secure Execution Environments and Communications in cloud.

Module 5: (08 hrs)

SOA and cloud, SOA and IAAS, cloud infrastructure benchmarks, OLAP, business intelligence, e-Business, ISV, Cloud performance monitoring commands, issues in cloud computing. QOS

issues in cloud, mobile cloud computing, Inter cloud issues, Sky computing, Cloud Computing Platform, Xen Cloud Platform, Eucalyptus, Open Nebula, Nimbus, T Platform, Apache Virtual Computing Lab (VCL), Anomaly Elastic Computing Platform.

Course Outcome:

1. Explain the core concepts of the cloud computing paradigm
2. Demonstrate knowledge of virtualization
3. Explain the core issues of cloud computing such as security, privacy, and interoperability.
4. Choose the appropriate technologies, algorithms, and approaches for the related issues.
5. Identify problems, and explain, analyze, and evaluate various cloud computing solutions.

List of Text / Reference Books:

1. Dr.Kumar Saurabh,"Cloud Computing", WileyIndia.
2. RonaldKrutz and Russell DeanVines,"Cloud Security", Wiley-India.
3. JudithHurwitz, R.Bloor, M.Kanfman, F.Halper, "Computing for Dummies", Wiley India Edition.
4. Anthony T.Velte Toby J.Velte, "Cloud Computing – A Practical Approach", TMH. 5. BarrieSosinsky,' Cloud Computing Bible", WileyIndia.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (D)	Multimedia design for IoT	2L:1T:0P (3hrs.)	3 Credits

Prerequisite: NA

Course Objective:

This course aims to introduce the fundamental elements of multimedia. It will provide an understanding of the fundamental elements in multimedia. The emphasis will be on learning the representations, perceptions and applications of multimedia. Software skills and hands on work on digital media will also be emphasized.

Module 1: (08hrs.)

Introduction to Multimedia and IoT: Overview of Multimedia Systems: Text, Audio, Image, Video, Evolution of IoT and Smart Devices, Importance of Multimedia in IoT Applications, Real-time vs Non-real-time Multimedia Content.

Module 2: (08 hrs.)

Two & Three dimensional geometric transformations: Translation, Rotation, Scaling, Composite, Windowing & Clipping: World Coordinate System, Screen Coordinate System, Viewing Transformation, Parallel & Perspective Projection, Types of Parallel & Perspective Projection, Clipping operations — point, line, and polygon clipping algorithms.

Module 3: (08 hrs.)

What is Multimedia, Components of Multimedia, Multimedia System Architecture, Multimedia I/O technologies, Data & File Format standards: RTF, TIFF, MIDI, JPEG, DIB. Audio: Digital Audio, MIDI, Processing Sound, Sampling, Compression, Video: Avi, 3GP, MOV, MPEG, MP4, Compression Standards, Compression through Spatial and Temporal Redundancy, Multimedia Authoring.

Module 4: (08hrs.)

Definition of Animation, History of Animation, Application of Animation in Graphics, Benefits of Animation, Application of Animation in Multimedia, Basic principle, Animation Techniques: Cell Animation, Computerized Animation, Basic Types of Animation: Real time and non-real time animation, 2D Graphics, 3D Graphics, Concept of 2D computer animation – Sprite Animation: Process, Advantages & Disadvantages of Sprite animation – Rendered animation: Rendering-Process and examples of rendered animation.

Module 5: (08hrs.)

Introduction of JavaScript in Graphics, use of different graphic libraries: Plotly.js, Chart.js,

Google Chart, JavaScript HTML Animation, use of different elements: Fireworks, fade effects, roll-in and roll-out, page-in and page-out, object movements

Course Outcome:

1. Understand the basic concepts of Multimedia.
2. Demonstrate various algorithms for two and three dimensional transformation
3. Explore various file formats of multimedia.
4. Apply different animations on 2D and 3D.
5. Understand various javascript libraries for chart and HTML Animation

List of Text / Reference Books:

1. Donald Hearn and M.Pauline Baker, "Computer Graphics C Version", Pearson Education, 2003.
2. Foley, Van Dam,Feiner, Hughes, " Computer Graphics : Principles and Practice " Pearson Education India, Third Edition,2013
3. Rogers, "Procedural Elements of Computer Graphics", Tata McGraw Hill
4. Ranjan Parekh "Principles of Multimedia", Tata McGraw-Hill Education, 2006
5. Rajesh K Maurya, "Computer Graphics with Virtual Reality System ", Wiley India, 2009
6. Pakhira,"Computer Graphics, Multimedia & Animation", PHI learning
7. Khalid Sayood , "Introduction to Data Compression", Morgan Kaufmann, Fourth Edition,2012
8. Prabat K Andleigh and Kiran Thakrar, "Multimedia Systems and Design", PHI Learning, 1996.
9. Tay Vaughan, "Multimedia making it work", Tata McGraw Hill edition,8th edition 2010.
10. Amarendra N Sinha & Arun D Udai, "Computer Graphics", McGraw Hill publication,1st edition,2008.
11. Mukherjee, "Fundamental of Computer Graphics and Multimedia", PHI Learning.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO03 (A)	Information Theory and Coding	2L:1T:0P (3hrs.)	3 Credit

Pre-requisite: Nil

Course Objective: The main objective of this course is: The objective of this course is to study how Information is measured in terms of probability and entropy, and the relationships among conditional and jointentropies.

Module 1: (04hrs.)
Introduction: Information Theory, Information and entropy, joint and conditional entropy, differential entropy, relative entropy, mutual information, relationship between entropy and mutual information.

Module 2: (8 hrs.)
Source coding: Shannon's source coding theorem, Huffman coding, Shannon Fano coding. Channel Coding Channel capacity, binary symmetric channel, binary erasure channel, Shannon's channel coding theorem.

Module 3: (8 hrs.)
Linear Block Codes: Definition, properties, matrix description of linear block codes, generator and parity check matrix, encoding of linear block codes, decoding of linear block codes, syndrome decoding, standard array, cosets, perfect codes, systematic block code, Hamming code.

Module 4: (10 hrs.)
Cyclic Codes: Introduction, properties of cyclic codes, polynomials and division algorithm, and decoding of cyclic codes, matrix description of cyclic codes, burst error correction, cyclic redundancy check. Circuit implementation of cyclic codes

Module 5: (8 hrs.)
Convolution Codes: Introduction, tree codes and trellis codes, polynomial description of convolution codes, distance notation, generating function, matrix description, viterbi decoding.

Course Outcome: Students should be able to:

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

1. Understand information, entropy, mutual information and relationship.
2. Compare various source coding techniques and channel capacity.
3. Inspect error detection and correction in linear block codes
4. Illustrate various concept of encoding circuits for cyclic codes
5. Understand the concept of convolution codes

Text/Reference Books:

1. Das, Mullick and Chatterjee: Principles of Digital Communication, New Age International Publishers.Cover and Thomas: Elements of Information Theory.
2. Ranjan Bose: Information Theory, Coding and Cryptography, TMH.
3. Lin and Costello: Error Control Coding, Pearson Education.
4. Moon: Error Correction Coding, Wiley India.
5. Wells: Applied Coding and Information Theory for Engineers, Pearson Education

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO03 (B)	Pattern Recognition	2L:1T:0P (3hrs.)	3 Credit

Pre-requisite: Nil

Course Objective: The main objective of this course are: The objective of this course is to learn the fundamental of pattern recognition and its relevance to classical and modern problems.

Module 1: (8 hrs.)

Introduction â Definitions, data sets for Pattern, Application Areas and Examples of pattern recognition, De- sign principles of pattern recognition system, Classification and clustering, supervised Learning, unsupervised learning and adaptation, Pattern recognition approaches, Decision Boundaries, Decision region , Metric spaces, distances.

Module 2: (8 hrs.)

Classification: introduction, application of classification, types of classification, decision tree, naive Bayes, logistic regression , support vector machine, random forest, K Nearest Neighbor Classifier and variants, Efficient algorithms for nearest neighbor classification, Different Approaches to Prototype Selection, Combination of Classifiers, Training set, test set, standardization and normalization.

Module 3: (8 hrs.)

Different Paradigms of Pattern Recognition, Representations of Patterns and Classes, Unsupervised Learning Clustering: Criterion functions for clustering, Clustering Techniques: Iterative square -error partitional cluster ing K means, hierarchical clustering, Cluster validation.

Module 4: (8 hrs.)

Introduction of feature extraction and feature selection, types of feature extraction , Problem statement and Uses, Algorithms - Branch and bound algorithm, sequential forward / backward selection algorithms, (l, r) algorithm.

Module 5: (8 hrs.)

Recent advances in Pattern Recognition, Structural PR, SVMs, FCM, Soft computing and Neuro fuzzy techniques, and real-life examples, Histograms rules, Density Estimation, Nearest Neighbor Rule, Fuzzy classification.

Course Outcome: Students should be able to:

1. Understand the concept of a pattern and the basic approach to the development of pattern recognition.

2. Acquire the knowledge of classification, its types and normalization.
3. Understand unsupervised learning clustering in pattern recognition
4. Understand the basic methods of feature extraction, feature evaluation, and data mining.
5. Understand soft computing and fuzzy classification for recent advancements in pattern recognition

Text/Reference Books:

1. Richard O. Duda, Peter E. Hart and David G. Stork, Pattern Classification", 2nd Edition, John Wiley,2006.
2. C.M. Bishop, "Pattern Recognition and Machine Learning", Springer,2009.
3. S. Theodoridis and. Koutroumbas, "Pattern Recognition", 4th Edition, academic Press,2009.
4. Robert Schalk off, "pattern Recognition: statistical, structural and neural approaches", John Wiley sons, Inc, 2007.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (C)	**Industrial and Medical IoT**	**2L:1T:0P (3hrs.)**	**3 Credits**

Prerequisite: Fundamentals of Electronics and Electrical Engineering

Course Objective:

1. Understand the basics of Industrial IOT and Medical IOT
2. Understanding the system architecture of IIoT.
3. To gain conceptual understanding of sensor, actuators and protocols used in IoT.
4. Analyze privacy and security measures for industry and medical standard solutions.
5. Understanding the system architecture and application in the field of health care.

Module 1: (06hrs.)

Introduction of Industrial IOT Introduction to IOT, IOT Vs. IIOT, History of IIOT, Components of IIOT - Sensors Interface, clouds, Data Management Analytics, Mining Manipulation, Role of IIOT in Manufacturing Processes, Use of IIOT in plant maintenance practices, Sustainability through Business excellence tools Challenges Benefits in implementing IIOT.

Module 2: (08hrs.)

IIoT Architecture IOT components; Various Architectures of IOT and IIOT, Advantages disadvantages, Industrial Internet - Reference Architecture, IIOT System components: Sensors, Gateways, Routers, Modem, Cloud brokers, servers, and its integration, WSN, WSN network design for IOT

Module 3: (10hrs.)

Sensors and Protocols Introduction to sensors, Roles of sensors in IIOT, Various types of sensors, special requirements for IIOT sensors, Role of actuators, types of actuators. Need of protocols; Types of Protocols, Wi- Fi, Wi-Fi direct, Zigbee, Z wave, BLE, Modbus, SPI, I2C, IIOT protocols âCOAP, MQTT, 6lowpan, lwm2m, AMPQ.

Module 4: (10hrs.)

Privacy and Security Introduction to web security, Conventional web technology and relationship with IIOT, Vulnerabilities of IoT, Privacy, Security requirements, Threat analysis, Trust, IoT security tomography and layered attacker model, Identity establishment, Access control, Message integrity

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

Module 5: (06hrs.)

IoMT Introduction, IoMT working, Tracking assets and resources, Internet of things in hospitals, collection and integration of clinical data, Major benefits of IoT in healthcare, Disadvantages of IoT in healthcare. Healthcare Technologies Home Monitoring System for Aged Care, Smart Medicinal Packages for Medication Adherence, Smart Drug Delivery System for Automated Drug Dispensation, Connected Rural Healthcare Consultation, Population and Environment Monitoring of Infectious Diseases

Course Outcome: On successful completion of the course, the student will be able to:

1. Develop conceptual design of Medical and Industrial IoT architecture.
2. Apply sensors and various protocols for industry standard solutions
3. Articulate privacy and security measures for industry standard solutions.
4. Study about Internet of Medical Things (IoMT) and its applications in Healthcare industry.
5. Design various applications using IoT in Healthcare Technologies.

List of Text/Reference Books:

1. Veneri, Giacomo, and Antonio Capasso. Hands-on Industrial Internet of Things
2. Reis, Catarina I., and Marisa da Silva Maximiano, eds. healthcare, 1st edition, IGI
3. Alasdair Gilchrist, Industry 4.0: The Industrial Internet of Things, 1st Edition, Apress,
4. Aboul Ella Hassanien, Nilanjan Dey and Sureaka Boara, Medical Big Data and Internet Things: Advances, Challenges and Applications, 1 st edition, CRC Press, 2019.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO03 (D)	Deep & Reinforcement Learning	2L:1T:0P (3hrs.)	3 Credit

Pre-requisite: Machine Learning

Course Objective: The objective of this course is to learn designing and implementation of deep and reinforcement learning approaches using machine learning for solving real-life problems.

Module 1: (8 hrs.)
History of Deep Learning, McCulloch Pitts Neuron, Thresholding Logic, Activation functions, Gradient De- scent(GD), Momentum Based GD, Nesterov Accelerated GD, Stochastic GD, Ada Grad, RMS Prop, Adam, Eigen value Decomposition. Recurrent Neural Networks, Back propagation through time (BPTT), Vanishing and Exploding Gradients, Truncated BPTT, GRU, LSTMs, Encoder Decoder Models, Attention Mechanism, Attention over images.

Module 2: (10 hrs.)
Auto encoders and relation to PCA, Regularization in auto encoders, Denoising auto encoders, Sparse auto encoders, Contractive auto encoders, Regularization: Bias Variance Tradeoff, L2 regularization, Early stopping, Dataset augmentation, Parameter sharing and tying, Injecting noise at input, Ensemble methods, Dropout, Batch Normalization, Instance Normalization, Group Normalization.

Module 3: (10 hrs.)
Greedy Layer wise Pre-training, Better activation functions, Better weight initialization methods, Learning Vectorial Representations Of Words, Convolutional Neural Networks, LeNet, AlexNet, ZF-Net, VGGNet, GoogLeNet, ResNet, Visualizing Convolutional Neural Networks, Guided Back propagation, Deep Dream, Deep Art, Recent Trends in Deep Learning Architectures.

Module 4: (12 hrs.)
Introduction to reinforcement learning(RL), Bandit algorithms â UCB, PAC, Median Elimination, Policy Gradient,Full RL MDPs, Bellman Optimality, Dynamic Programming - Value iteration, Policy iteration, and Q learning Temporal Difference Methods, Temporal Difference Learning, Eligibility Traces, Function Approximation,Least Squares Methods

Module 5: (10 hrs.)
Fitted Q, Deep Q-Learning , Advanced Q-learning algorithms , Learning policies by imitating optimal controllers , DQN Policy Gradient, Policy Gradient Algorithms for Full RL, Hierarchical

RL,POMDPs, Actor- Critic Method, Inverse reinforcement learning, Maximum Entropy Deep Inverse Reinforcement Learning, Generative Adversarial Imitation Learning, Recent Trends in RL Architectures.

Course Outcome: Students should be able to:

1. Describe in-depth about theories, models and algorithms in machine learning.
2. Compare and contrast different learning algorithms with parameters.
3. Examine the nature of a problem at hand and find the appropriate learning algorithms and it's parameters that can solve it efficiently enough.
4. Design and implement of deep and reinforcement learning approaches for solving real life problems

Text/Reference Books:

1. Deep Learning, An MIT Press book, Ian Good fellow and Yoshua Bengio and Aaron Courville.
2. Pattern Classification- Richard O. Duda, Peter E. Hart, David G. Stork, John Wiley Sons Inc.
3. Reinforcement Learning: An Introduction, Sutton and Barto, 2nd Edition.
4. Reinforcement Learning: State-of-the-Art, Marco Wiering and Martijn van Otterlo, Eds.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

IOC II-CS01	Digital Marketing & SEO	3L:0T:0P (3hrs.)	3 Credit

Pre-requisite: nil

Course Objective: The objective of subject is to facilitate students to understand digital marketing and its importance.

Module 1: (04hrs.)
Digital Marketing: Introduction, Moving from Traditional to Digital Marketing, Integrating Traditional and Digital Marketing, Reasons for Growth. Need for a comprehensive Digital Marketing Strategy. Concepts: Search Engine Optimization (SEO); Concept of Pay Per Click

Module 2: (04hrs.)
Social Media Marketing: Introduction, Process - Goals, Channels, Implementation, Analyze. Tools: Google and the Search Engine, Facebook, Twitter, YouTube and LinkedIn. Issues: Credibility, Fake News, Paid Influencers; Social Media and Hate/ Phobic campaigns. Analytics and linkage with Social Media, Social Community.

Module 3: (04hrs.)
Email Marketing: Introduction, email marketing process, design and content, delivery, discovery. Mobile Marketing: Introduction and concept, Process of mobile marketing: goals, setup, monitor, analyze; Enhancing Digital Experiences with Mobile Apps. Pros and Cons; Targeted advertising. Issues: Data Collection, Privacy, Data Mining, Money and Apps, Security, Spam. Growth Areas.

Module 4:(04hrs.)
Managing Digital Marketing: Content Production; Video based marketing; Credibility and Digital Marketing; IoT; User Experience; Future of Digital Marketing.

Module 5: (06hrs.)
SEO Analytics, Monitoring & Reporting : Google Search Console (GSC),Key Sections & Features of GSC; How to monitor SEO progress with Key Features of GSC: Overview, Performance, URL Inspection, Coverage, Sitemaps, Speed, Mobile Usability, Backlinks, Referring Domains, Security& Manual Actions, How to do SEO Reporting.

Course Outcome:
1. Understand the concept of digital marketing and its real-world iterations.
2. Articulate innovative insights of digital marketing enabling a competitive edge.

3. Understand how to create and run digital media based campaigns.
4. Identify and utilize various tools such as social media etc.
5. Understand how to do SEO Audit.

Text/Reference Books:

1. Dodson, Ian, " The Art of Digital Marketing - The Definitive Guide to Creating Strategic", Targeted, and Measurable OnlineCampaigns. Wiley, 2016.
2. Ryan, Damien, " Understanding Digital Marketing - Marketing Strategies for Engaging the Digital Generation", Kogan Page Limited, 2008.
3. Gupta, Sunil, "Driving Digital Strategy" Harvard Business Review Press, 2018.
4. Tuten, Tracy L. and Solomon, Michael R. "Social Media Marketing", Sage, 3rd edition 2017.
5. Bhatia, Puneet S." Fundamentals of Digital Marketing", Pearson, 2nd edition, 2019.
6. Kotler, Philip "Marketing 4.0: Moving from Traditional to Digital", Wiley, 1st edition,

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PCC-IO15(P)	Data Science Lab	0L:0T:2P (2hrs.)	1-Credits

Course Objectives:

1. Provide hands-on experience in applying data science techniques using tools such as Python/R.
2. Enable students to preprocess data and perform exploratory data analysis.
3. Teach students how to implement data visualization techniques.
4. Help students understand and apply machine learning algorithms.
5. Develop problem-solving and analytical skills through real-world data sets

Module 1:

Introduction to Data Science – Overview of Data Science Life Cycle, Introduction to Python/R for Data Science, Data types, Libraries (NumPy, Pandas, Matplotlib).

Module 2:

Data Collection and Data Pre-Processing: Data Collection Strategies – Data Pre-Processing Overview – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization.

Module 3:

Exploratory Data Analytics**:** Descriptive Statistics – Mean, Standard Deviation, Skewness and Kurtosis – Box Plots – Pivot Table – Heat Map – Correlation Statistics – ANOVA.

Module 4:

Data Visualization techniques: Line Plots, Bar Plots, Histograms, Density Plots and Scatter Plots.

Module 5:

Model Development: Simple and Multiple Regression; Model Evaluation: Generalization Error – Out-of-Sample Evaluation Metrics – Cross Validation – Overfitting – Under Fitting and Model Selection – Prediction by using Ridge Regression – Testing Multiple Parameters by using Grid Search.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

Course Outcomes:

1. Preprocess and analyze datasets using programming tools.
2. Apply statistical and visual techniques for data exploration.
3. Implement machine learning algorithms for classification and regression.
4. Interpret model results and evaluate performance metrics.
5. Work with real-time datasets and build mini-projects using end-to-end data science pipelines.

List of Experiments:

1. Introduction to R tool for data analytics science
2. Basic Statistics and Visualization in R
3. To clean a raw dataset by handling missing data, dealing with duplicates, and correcting errors in the dataset.
4. To integrate and transform multiple datasets to form a unified, consistent dataset ready for analysis or modeling.
5. Perform EDA on Credit Card Fraud Detection Dataset (open source dataset) for analyzing the data
6. Perform EDA on a sales dataset to identify trends, patterns, outliers, and relationships between variables like `Customer Age`, `Annual Income`, `Purchase Amount`, and `Product Category`
7. Visualize data using Line Plots, Bar Plots, Histograms, Density Plots and Scatter Plots.
8. Linear Regression
9. Logistic Regression
10. Plotting Accuracy and Error Metrics against number of iterations for evaluation of model performance.

List of Text / Reference Books:

1. Jake VanderPlas, Python Data Science Handbook, O'Reilly Media.
2. Aurélien Géron, Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, O'Reilly.
3. Anil Maheshwari, Data Science and Big Data Analytics, Wiley.
4. Wes McKinney, Python for Data Analysis, O'Reilly Media.
5. Rafael A. Irizarry, Introduction to Data Science, CRC Press.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (A) (P)	**Mobile Application Development Lab**	**0L: 0T: 2P (2hrs.)**	**1 Credits**

Pre-requisite: JAVA Programming

Course Objective: The main objectives of this course are: The objective of this course is to help students to gain a basic understanding of Android application development and tools.

Course Contents:

Module 1:
Introduction to Android: The Android Platform, Android SDK, Eclipse Installation, Android Installation, building you First Android application, Understanding Anatomy of Android Application, Android Manifest file.

Module 2:
Android Application Design Essentials: Anatomy of an Android applications, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings,.

Module 3:
Android User Interface Design Essentials: User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation

Module 4:
Testing Android applications: Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.

Module 5:
Using Android Data and Storage APIs, Managing data using SQLite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs, Deploying Android Application to the World.

Course Outcome: Students should be able to:
1. Identify various concepts of mobile programming that make it unique from programming for other platforms.
2. Critique mobile applications on their design pros and cons.

3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces.
4. Program mobile applications for the Android operating system that use basic and advanced phone fea- tures.
5. Deploy applications to the Android marketplace for distribution.

List of Text/ Reference Books:

1. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nded. (2011)
2. Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd
3. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd3.R3. Android Application Development All inone for Dummies by Barry Burd, Edition: I

List of Experiments:

1. Compare various operating Systems with Android OS
2. Install / Configure JDK, Android studio and android SDK, ADT plug-in and create android Virtual device.
3. To display "Hello world" on screen.
4. To implement linear layout, absolute layout.
5. To implement Frame layout, table layout and relative layout
6. To implement text view, edit view, auto complete text view.
7. To implement login window using above UI controls.
8. To implement Checkbox, Radio Button, and Radio group and progress bar.
9. To implement list view, Grid view, and Image view and scroll view.
10. To implement Date, time picker and activity 11 To implement Custom Toast Alert.
11. To build camera.
12. For providing Bluetooth connectivity.
13. For providing Bluetooth connectivity.
14. For animation. . To a) Send SMS b) Receiver SMS c) Send and receive E-mail.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

LC-PEC-IO02(B) (P)	Soft Computing Lab	0L:0T:2P (2hrs.)	1 Credit

Pre-requisite: Analysis and Design of Algorithm

Course Objective: The main objectives of this lab course are: The objective of this course is to familiarize the Students with different soft computing tools to use them to be able to solve complex problems

Course Contents:

Module1:
Introduction to Neural Network: Concept, biological neural network, comparison of ANN with biological NN, Evolution of artificial neural network, Basic models,

Module2:
Supervised Learning: Perceptron learning, Single layer/multilayer, Adaline, Madaline, Back propagation net- work, RBFN, Application of Neural network in forecasting.

Module3:
Unsupervised learning: Introduction, Fixed weight competitive nets, Kohonen SOM, Counter Propagation networks, Introduction to Convolutional neural networks (CNN) and Recurrent neural networks (RNN).

Module4:
Fuzzy rules and fuzzy Reasoning, Fuzzy if-then Rules, Fuzzy Inference Systems, Application of Fuzzy logic in solving engineering problems.

Module5:
Working of GA and Schema theorem, GA optimization problems like TSP (Travelling salesman problem), Network design routing. Introduction to Ant Colony optimization (ACO) and Particle swarm optimization (PSO).

Course Outcome: Students should be able to:
1. State basic concept of Neural Network

2. Illustrate various concepts supervised learning, data and image compression
3. Describe the concept of unsupervised learning.
4. Apply fuzzy logic concepts to solve real world problem.
5. Design and implement the real world problem through Genetic algorithm.

Text/Reference Books:

1. S.N. Shivnandam, "Principle of soft computing", Wiley.
2. S. Rajshekaran and G.A.V. Pai, Neural Network , Fuzzy logic And Genetic Algorithm", PHI.
3. Jack M. Zurada, Introduction to Artificial Neural Network System" JAico Publication Simon Haykins, "Neural Network- A Comprehensive Foundation"
4. Timothy J.Ross, "Fuzzy logic with Engineering Applications", McGraw-Hills 1.

List of Experiments:

1. Form a perceptron net for basic logic gates with binary input and output.
2. Using Adaline net, generate XOR function with bipolar inputs and targets.
3. Calculation of new weights for a Back propagation network, given the values of input. pattern, output pattern, target output, learning rate and activation function.
4. Design fuzzy inference system for a given problem.
5. Maximize the function y =3x2 + 2 for some given values of x using Genetic algorithm.
6. Implement Travelling salesman problem using Genetic Algorithm.
7. Optimization of problem like Job shop scheduling using Genetic algorithm.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PEC-IO02 (C)(P)	**Cloud Computing Lab**	**0L:0T: 2P (2hrs.)**	**1 Credit**

Prerequisite: Computer Networking.

Course Objective:

The objective of this course is to Gain a solid understanding of fundamental concepts in virtualization, cloud computing models (IaaS, PaaS, SaaS), and their respective benefits and trade-offs.

Module 1:
Foundations of Virtualization and Local Deployment, Introduction to Virtualization Concepts (Hypervisors, Virtual Machines, Containers) , Setting up a Virtualization Environment using VirtualBox, Setting up a Virtualization Environment using VMware Workstation/Player, Creating and Managing Virtual Machines, Basic Networking Concepts in Virtualized Environments.

Module 2:
Introduction to Cloud Platforms and Application Deployment, Overview of Major Cloud Providers Deploying a Simple Application on Google App Engine, Deploying a Simple Application on Microsoft Azure App Service, Understanding Cloud Deployment Models (Public, Private, Hybrid).

Module 3:
Exploring Software as a Service (SaaS) and Business Applications , Understanding the SaaS Model and its Benefits, Introduction to Salesforce Platform and its Core Features, Exploring Basic Application Development Concepts within Salesforce (e.g., Objects, Fields, Apps).

Module 4:
Installation and Basic Configuration of a Hypervisor (Conceptual Overview and Simulated Exercises), Fundamentals of Storage Virtualization, Connecting Virtual Machines to Virtualized Storage.

Module 5:
Concepts and Basic Administration, Fundamentals of OLAP (Online Analytical Processing) Databases, Introduction to Platforms for Hybrid Cloud (OpenStack, Kubernetes).

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

Course Outcomes:

1. Demonstrate a foundational understanding of [1] virtualization
2. Deploy and manage simple applications.
3. Navigate and understand the basic features and development concepts.
4. Describe the fundamental principles of storage virtualization.
5. Articulate the importance of access control and identity management.

List of Text Books/ Reference Books:

1. Dr.Kumar Saurabh, "Cloud Computing", Wiley India.
2. Ronald Krutz and Russell Dean Vines, "Cloud Security", Wiley-India.
3. Judith Hurwitz, R.Bloor, M.Kanfman, F.Halper, "Computing for Dummies", Wiley India**,** Edition.
4. Anthony T.Velte Toby J.Velte, "Cloud Computing – A Practical Approach", TMH.
5. Barrie Sosinsky, 'Cloud Computing Bible", Wiley India.

List of Experiments

1. Setting up a basic virtualization environment using VirtualBox or VMware.
2. Deploying a simple application on Google App Engine or Microsoft Azure.
3. Implementing simple Software as a Service (SaaS) application using a platform like Salesforce or Office 365.
4. Installing and configuring a hypervisor such as VMware ESXi or Microsoft Hyper-V.
5. Configuring storage virtualization using Storage Area Networks (SAN) or Network Attached Storage (NAS).
6. Implementing access control and identity management solutions using tools like Active Directory or Keycloak.
7. Setting up OLAP (Online Analytical Processing) databases for business intelligence analysis.
8. Investigating inter-cloud issues and experimenting with hybrid cloud deployments using platforms like OpenStack or Kubernetes.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

LC-PEC-IO02(D) (P)	**Multimedia Design for IoT Lab**	**0L:0T: 2P (2hrs.)**	**1 Credit**

Prerequisite: Basic knowledge of IoT, and Multimedia Technologies.

Module 1:

Fundamentals of Multimedia in IoT Systems: Overview of multimedia data types, Introduction to basic integration of audio, video, and sensors with IoT hardware platforms.

Module 2:

Audio & Video Integration in Embedded Devices**:** Audio Recording and Playback using Raspberry Pi or Adriano, Capturing and Streaming Live Video

Module 3:

Multimedia Processing & Smart Detection: Introduction to Image Processing using OpenCV for IoT, Real-time Object Detection or Motion Detection in Surveillance

Module 4:

User Interface & Visualization for IoT Multimedia Systems**:** Designing a Web-Based UI for Multimedia IoT System, build a simple UI for viewing video feeds or triggering audio

Module 5:

Project and Case Studies: Design a Smart Home/Surveillance/Health Monitoring System integrating multimedia capture, processing, and user interface design.

Course Outcomes:

1. Identify multimedia formats suitable for IoT systems.
2. Interface and operate multimedia input/output devices on IoT platforms.
3. Apply basic mage/audio processing for smart applications.
4. Develop and deploy real-time multimedia data visualization and alert systems
5. Design user-friendly multimedia dashboards using web technologies.

List of Experiments:

1. Introduction to Multimedia Formats and IoT Integration.
2. Setup of Arduino/Raspberry Pi with Basic Multimedia Components.
3. Audio Recording and Playback using Raspberry Pi or Arduino.
4. Capturing and Streaming Live Video from IoT Camera Module.
5. Introduction to Image Processing using OpenCV for IoT.

6. Real-time Object Detection or Motion Detection in Surveillance
7. Designing a Web-Based UI for Multimedia IoT System

List of Text / Reference Books:

1. **Multimedia Systems** by Ralf Steinmetz and Klara Nahrstedt – Pearson Education
2. **Internet of Things (A Hands-on-Approach)"** by Arshdeep Bahga and Vijay Madisetti – Universities Press
3. **Learning OpenCV 4** by Adrian Kaehler and Gary Bradski – O'Reilly Media.
4. **Internet of Things with Python** by Gastón C. Hillar – Packt Publishing
5. Official Arduino and Raspberry Pi Documentation.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PROJ- IO04	Project-II	0L: 0T: 8P (8hrs.)	4 credits

Course Objectives:

To carry out a medium/large-scale project to develop hands-on experience of working in a project. During the course, the student will also develop knowledge of application development platforms and tools (Java /C# dotnet / Visual C++/PHP/arduino /Python or any platform of current trend). The students will learn working as a team and basic collaboration and project management skills. The student will also learn about formulating project documentations.

1. Project ideas and proposal guidance (4 hours)

2. Application development (10 hours)
1. Visual programming (object oriented)
1. Language basics
2. Frameworks and APIs
2. Programming basics and design patterns

3. Project management, team work and collaboration (6 hours)
1. Project management techniques
2. Collaborative development environment

4. Project guidance & Project work (20 hours)

5. Project documentation guidance (3 hours)

Course Outcome:
1. Understanding the problem identification process and design a proposal for particular problem handling.
2. Design a solution model using any programming language.
3. Learn about different types of project management techniques.
4. Develop a complete project with deployment.
5. Learn about team work and documentation process.

IPS Academy, Institute of Engineering & Science
(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum
Department of Computer Science & Engineering (IoT)
Bachelor of Technology (B.Tech)
VII Semester

PROJ- IO05	**Evaluation of Internship-II**	**0L: 0T: 6P (6hrs.)**	**3 credits**

Course Outcomes:

1. Explore career alternatives prior to graduation.
2. Develop communication, interpersonal and other critical skills in the job interview process.
3. Assess interests and abilities in their field of study.
4. Identify, write down, and carry out performance objectives related to their job assignment.
5. Integrate theory and practice.