Department of Computer Science and Engineering

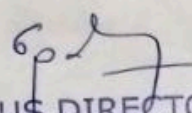**Subject: Data Ware Housing and Data Mining**
Subject Code: CSE 401
Class: BE

Course Outcomes (COs)

- Students got the idea of basic principles, concepts and applications of data warehousing.

- Students understood the basic concept of Data Mining & preprocessing.

- Students got the idea of the different models of data and their role in data analysis.

- Students understood the wide range of Association, classification, clustering, classification algorithms.

- Students understood the basic concept of Business Intelligence.

- Students got the idea of the different business intelligence tools.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

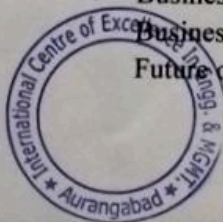## Department of Computer Science and Engineering

Subject: Data Ware Housing and Data Mining

Subject Code: CSE401

Class: BE

Program specific Outcomes (PSOs)

- Students understood Introduction to Data Warehouse: Basic Concepts, A Multitiered Architecture, Enterprise Warehouse.
- Students got knowledge about data Mart, Extraction, Transformation, and Loading, Metadata Repository. Students got knowledge about Data Warehouse Modeling and Implementation
- Students understood to Data Cube: A Multidimensional Data Model, Stars, Snowflakes.
- Students understood to Fact Constellations: Schemas for Multidimensional Data Models, Students understood Introduction to Dimensions: The Role of Concept Hierarchies .
- Students understood Introduction to Measures their Categorization and Computation, Typical OLAP Operations,
- Students understood to a Starnet Query Model for Querying Multidimensional Databases.
- Students understood to Indexing OLAP Data: Bitmap Index and Join Index, OLAP Server Students understood Introduction to Architectures: ROLAP versus MOLAP versus HOLAP.
- Students understood to Data, Types of Data, Data Mining Functionalities, Interestingness of Patterns.
- Students understood to Classification of Data Mining Systems, Data Mining Task Primitives. Students understood Introduction to Integration of a Data Mining System with a Data Warehouse, Issues,. Students understood Introduction to Association Rule Mining and Classification.
- Students understood Introduction to Mining Frequent Patterns, Associations and Correlations, Mining Methods.
- Students understood various Kinds of Association Rules, Correlation Analysis.
- Students understood Introduction to Constraint Based Association Mining, Classification and Prediction, Basic Concepts, Decision Tree Induction, Bayesian Classification, Rule Based Classification, Support Vector Machines, Regression Models.
- Students understood Introduction to Introduction, Clustering, Cluster Analysis, Clustering Methods- K means
- Students got knowledge about Hierarchical clustering, Agglomerative clustering, Divisive clustering Introduction to Web Mining: Web Content Mining,
- Students got knowledge about Web Structure Mining, Web Usage Mining.
- Students got knowledge about Business Intelligence: Business Intelligence, Business Intelligence tools, Business Intelligence Infrastructure
- Business Intelligence, Business Intelligence tools, Business Intelligence Infrastructure Business Intelligence Applications, BI versus Data Warehouse, BI versus Data Mining, Future of BI.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

Department of Computer Science and Engineering

Subject: Big Data Computing
Subject Code: CSE 451
Class: BE

Course Outcomes (COs)

- Students understood the fundamental concepts of big data and analytics.

- Students understood the technical and business professionals who need to understand the different types of big data components and the underlying technology concepts that support big data.

- Students understood the concepts of Hadoop, Map Reduce, Hadoop file systems (HDFS).

- Students understood the explore tools and practices for working with big data.

- Students got the idea of research that requires the integration of large amounts of data

- Students understood the algorithms to solve data insentive problem using map reduce paradigm.

CAMPUS DIRECTOR
International Centre
Excellence In Engg. & MGMT.
Aurangabad

IIRW'S

ICEEM

Research to reality....

**INTERNATIONAL CENTRE OF EXCELLENCE IN
ENGINEERING AND MANAGEMENT (ICEEM)**
NAAC ACCREDITED

Department of Computer Science and Engineering

Subject : Big Data Computing
Subject Code: : CSE451
Class: BE

Program specific Outcomes (PSOs)

- Students understood to What is Data? Types of Data: Quantitative & Qualitative Data, What is a Variable? Sampling Methods.
- Students understood to Point Estimation, Hypothesis Testing, Parametric Testing, Non-Parametric Testing, Experimental.
- Students understood to designing, Data Analysis Pipeline, What is Data Extraction, Raw and Processed Data, Data Wrangling.
- Students got knowledge about What is Big data? Characteristics of big data and its role in current world, Types of Big Data: DefiningUnstructured.
- Students got knowledge about Semi-Structure and Structured Data, Technologies being Used to handle and process Big data.
- Students got knowledge about handling and processing Big data, Some Real-world Examples to adopt in major industries, NoSQL
- Students got knowledge about Databases, CAP Theorem Categories of NoSQL: Key Value Stores, Document Stores, Column Oriented Stores, Graph Databases.
- Students understood to Median, Mode. Measures of Spread: Range, Inter-quartile Range, Standard Deviation, Variance,
- Students understood to Skewness & Kurtosis. Probability: Introduction to Probability, Probability Distributions, Conditional
- Students understood to Probability, Bayesian Inference, Normal Distribution, Poisson distribution.Students understood to What is Hadoop? Hadoop Key Characteristics, Differences between RDBMS & Hadoop, Brief History of
- Students understood to Components of Hadoop (Version2.x): HDFS & MapReduce, Architecture of HDFS & Map Reduce, Basic Operations to store and accessfrom HDFS via Command Line, Phases in MapReduce Algorithm, YARN architecture, YARNadvantages.
- Students got knowledge about Apache Pig: Pig Architecture, Modes of Pig Execution, Operations in Pig: Intro to Pig Latin, Pig LatinData types, Basic Pig Latin Statements: Loading and Storing Data, Relational and Arithmetic Operators,Debugging Techniques (Dump, Describe, Explain etc.),
- Students got knowledge about Apache Hive: Hive architecture, Modes of Hive Execution,.
- Students got knowledge about Operations in Hive: Intro to HiveQL, BasicHiveQL commands: DDL Operations (creating, browsing, updating and deleting tables), DML Operations(Load, Update, Insert and delete data into Hive tables).
- Students understood to Apache HBase: HBase Architecture, HBase Vs RDBMS, HBase Shell Commands.
- Students understood to Apache Sqoop: Sqoop Architecture, importing data, Transferring an entire table,
- Students understood to specifying a target directory, importing only a subset of data Incremental Uploads: Importing only new data.

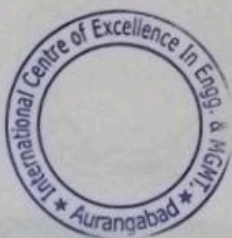## Department of Computer Science and Engineering

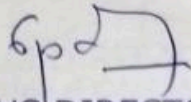**Subject: Soft Computing**
Subject Code: CSE 452
Class: BE

Course Outcomes (COs)

- Students understood the scope of soft computing and pattern recognition tasks that can be performed by some of the basic structures of artificial neural networks.

- Students understood the Analyze feed forward networks and understand the significance of nonlinear output functions of processing unit in feedback network for pattern storage.

- Students understood the basics of deep learning

- Students understood the describe and explain Core concepts and techniques of fuzzy logic.

- Students understood the working of Genetic Algorithm and synthesize applications of soft computing using Genetic Algorithm

- Students understood the perceptron learning using proper algorithm

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

INTERNATIONAL CENTRE OF EXCELLENCE IN ENGINEERING AND MANAGEMENT (ICEEM)

Research to reality.... **NAAC ACCREDITED**

Department of Computer Science and Engineering
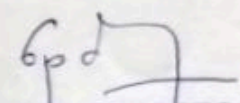
Subject : Soft Computing
Subject Code: : CSE452
Class: BE

Program specific Outcomes (PSOs)

- Students understood to Introduction of soft computing, soft computing vs. hard computing, various types of soft computing
- Students understood to techniques, applications of soft computing. Characteristics of Neural Networks, Structure and Working of a biological neural network.
- Students understood to Artificial Neural Network Terminology, models of neurons: MP model.
- Students understood to Perceptron model, Adaline model, Topology, Basic Learning laws, what is learning.
- Students understood to unsupervised learning, Functional Units of ANN for pattern recognition task: Pattern Recognition Problem, Basic functional units
- Students got knowledge about Single layer and multilayer perceptron, linear and non-linear separability problems, supervised learning algorithms.
- Students got knowledge about algorithms, Error correction and Gradient Decent Rules, FFNN, Architecture of FFNN, Backpropagation learning algorithm, pattern classification, pattern association by FFNN.
- Students got knowledge about Auto association and hetero association, feedback NN, architecture of FBNN, energy function.
- Students understood to associative associative memory, bidirectional associative memory, Hopfield network.
- Students understood to Introduction to deep learning, why deep learning? Building blocks of deep neural network.
- Students understood to RNN, CNN with an example.
- Students got knowledge about Classical sets, Fuzzy sets, Crisp relations, Fuzzy relations, Examples, Properties of membership function.
- Students got knowledge about function fuzzification and Defuzzification to crisp sets, Application of fuzzy control.
- Students got knowledge about Fundamentals, basic concepts, working principle, Inheritance Operators, Cross over types, inversion and
- Students got knowledge about Deletion, Mutation Operator, Bit-wise Operators, Convergence of GA, Applications of GA.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
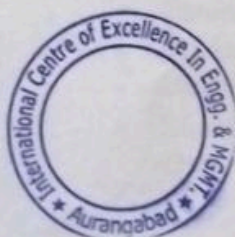Aurangabad

Department of Computer Science and Engineering

Subject: Cloud Computing
Subject Code: CSE 404
Class: BE

Course Outcomes (COs)

- Students understood and learn the basic concepts of Cloud Computing & its Models.

- Students understood theCloud Technologies

- Students understood the design, develop and deploy Cloud applications

- Students got the idea of acquainted with the challenges and security aspects of Cloud Computing.

- Students understood the study Mobile Cloud Applications

- Students understood the Mobile computing technologies and evaluate mobility management technique.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

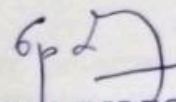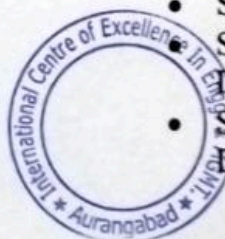## Department of Computer Science and Engineering

Subject : Cloud Computing

Subject Code: CSE404

Class: BE

Program specific Outcomes (PSOs)

- Students understood to Introduction to Mainframe architecture & Client-server architecture,
- Students got knowledge about Parallel & Distributed Computing, Cluster & Grid Computing .
- Students got knowledge about Definition and Evolution of Cloud Computing, the Vision of Cloud Computing,
- Students got knowledge about Cloud Deployment Models, Cloud Service Models, Key Characteristics, Benefits, Risks & Challenges in Cloud Computing,Service oriented architecture (SOA) and Cloud Computing Reference Architecture by IBM.
- Students understood to Infrastructure-as-a-Service (IaaS).
- Students got knowledge about Platform-as-a-Service (PaaS),Software-as-a-Service (SaaS),Identity-as-a-service (IDaaS).
- Students understood to Storage-as-a-service. Case Study: Platform as a Service: Google App Engine.
- Students got knowledge about XML, SOAP, REST Virtualization: Introduction to virtualization, Hypervisor: Type-I & Type II, Types of Virtualization, Pros and cons of virtualization,
- Students got knowledge about Virtualization applications in enterprises: Server virtualization, Desktop.
- Students understood to Application Virtualization, Storage and Network Virtualization. Case Study: Amazon EC2
- Students got knowledge about Big Data, Concept of Big Data, Challenges in Big Data, Hadoop: Definition, Architecture.
- Introduction to Storage Systems: Cloud Storage Concepts Distributed File Systems (GFS, HDFS), Cloud Databases (Hbase, Big Table),
- Students got knowledge about Cloud Object Storage (Amazon S3), Map Reduce and extensions: Parallel computing, The MapReduce model: Parallel efficiency of MapReduce .
- Students got knowledge about Projects in Hadoop: Hive, Spark, Pig, Oozie, Flume.
- Students understood to Cloud Security, cloud Security Challenges,
- Students understood to Infrastructure security: Network, Host and Application,
- Students understood to VM Security Issues, Data security and storage,
- Students understood to Security Management in the cloud, Secure Software Development Life Cycle (SecSDLC), Security Monitoring and Incident Response.
- Students understood to Security Architecture Design, Data Privacy, Life cycle of Data, Key Privacy Concerns in cloud and Disaster Recovery.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

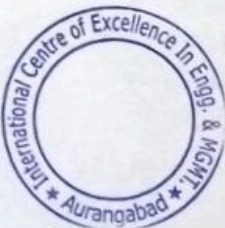## Department of Computer Science and Engineering

Subject: PCD
Subject Code: CSE 402
Class: BE

Course Outcomes (COs)

- Students understood the Fluency in describing the theory and practice of compilation, in particular, the lexical analysis, syntax, and semantic analysis, code generation and optimization phases of compilation.

- Students understood the Create lexical rules and grammars for a programming language.

- Students got the idea of Use Flex or similar tools to create a lexical analyzer and Yacc/Bison tools to create a parser.

- Students understood the Implement a lexer without using Flex or any other lexer generation tools.

- Students understood the Intermediate Code Generation, Symbol Table, Error detection and Recovery.

- Students got the idea of Code Optimization

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

Department of Computer Science and Engineering

Subject :Principals of Compiler Design

Subject Code: CSE402

Class: BE

Program specific Outcomes (PSOs)

- Students understood to Compilers & translators, structure of compilers,
- Students understood to bootstrapping, compiler construction tools.
- Students understood to Programming language basics.
- Students understood to Role of LA, Input buffering, Specification of tokens,
- Students understood to Recognition of tokens, Finite automata, Design of a lexical analyzer generator.
- Students understood to Role of Parser, shift reduce parsing, top down parsing.
- Students understood to Predictive parsing – Computation of FIRST & FOLLOW functions and construction of parsing table.
- Students understood to LR parsers, the canonical collection of LR (0) items, LALR parser.
- Students understood to Automatic parser Generator YACC, YACC programs, Error detection and correction with YACC.
- Students understood to Syntax-Directed Definitions, Construction of Syntax Trees.
- Students understood to Bottom-Up Evaluation of S-Attributed Definitions, L-Attributed Definitions, Top Down Translation.
- Students understood to Bottom-Up Evaluation of Inherited Attributes.
- Students understood to Type Checking: Type Systems, Specification of a Simple Type Checker, Equivalence of Type Expressions, Type conversions.
- Students got knowledge about Intermediate Code: Postfix notation, parser trees and syntax trees.
- Students got knowledge about three address codes – Quadruples and triples, indirect triples, Contents of Symbol table, data structures for symbol tables.
- Students got knowledge about representation scope information, Errors, Lexical-phase errors, syntactic-phase errors, semantic errors.
- Students got knowledge about Principal sources of optimization.
- Students got knowledge about loop optimization - Basic blocks, flow graphs, loops, code motion, induction variables, DAG representation of basic blocks, Application of DAGs,.
- Students got knowledge about Global Data Flow Analysis, Data Flow equations. Loop unrolling, loop jamming, constant folding.
- Students got knowledge about Object programs: the environment of code, generator, run-time addresses for names, Problems in code generation, A machine model.
- Students got knowledge about working of a simple code generator in brief, Register allocation and assignments, Peephole optimization.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

Add.: Gut No.4, Opp. Bajaj Auto Ltd. Main Gate, Aurangabad- Pune National Highway, Aurangabad - 431136 (MS) India.

Telephone : 0240 - 2558101 to 10 | **Telefax** 0240 - 2558111

Website : www.iceemabad.com | **E-mail** : director@iceemabad.com

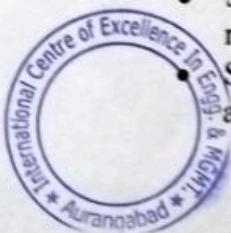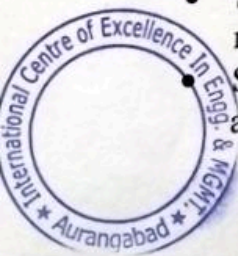## Department of Computer Science and Engineering

Subject : Principals of Compiler Design
Subject Code: CSE402
Class: BE

Program specific Outcomes (PSOs)

- Students understood to Compilers & translators, structure of compilers,
- Students understood to bootstrapping, compiler construction tools.
- Students understood to Programming language basics.
- Students understood to Role of LA, Input buffering, Specification of tokens,
- Students understood to Recognition of tokens, Finite automata, Design of a lexical analyzer generator.
- Students understood to Role of Parser, shift reduce parsing, top down parsing.
- Students understood to Predictive parsing – Computation of FIRST & FOLLOW functions and construction of parsing table.
- Students understood to LR parsers, the canonical collection of LR (0) items, LALR parser.
- Students understood to Automatic parser Generator YACC, YACC programs, Error detection and correction with YACC.
- Students understood to Syntax-Directed Definitions, Construction of Syntax Trees.
- Students understood to Bottom-Up Evaluation of S-Attributed Definitions, L-Attributed Definitions, Top Down Translation.
- Students understood to Bottom-Up Evaluation of Inherited Attributes.
- Students understood to Type Checking: Type Systems, Specification of a Simple Type Checker, Equivalence of Type Expressions, Type conversions.
- Students got knowledge about Intermediate Code: Postfix notation, parser trees and syntax trees.
- Students got knowledge about three address codes – Quadruples and triples, indirect triples, Contents of Symbol table, data structures for symbol tables.
- Students got knowledge about representation scope information, Errors, Lexical-phase errors, syntactic-phase errors, semantic errors.
- Students got knowledge about Principal sources of optimization.
- Students got knowledge about loop optimization - Basic blocks, flow graphs, loops, code motion, induction variables, DAG representation of basic blocks, Application of DAGs,.
- Students got knowledge about Global Data Flow Analysis, Data Flow equations. Loop unrolling, loop jamming, constant folding.
- Students got knowledge about Object programs: the environment of code, generator, run-time addresses for names, Problems in code generation, A machine model.
- Students got knowledge about working of a simple code generator in brief, Register allocation and assignments, Peephole optimization.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGM
Aurangabad

Department of Computer Science and Engineering

Subject: Information & Cyber Security
Subject Code: CSE 491
Class: BE

Course Outcomes (COs)

- Students understood the information and network security.

- Students understood the implementation of Information Security and its maintenance.

- Students understood the assessment types for information security

- Students got the idea of cyber security fundamentals.

- Students understood the different cybercrimes.

- Students understood the forensics and investigation tools and techniques.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

Department of Computer Science and Engineering

Subject : Information & Cyber Security
Subject Code: : CSE491
Class: BE

Program specific Outcomes (PSOs)

- Students got knowledge about What Is Security, CNSS Security Model, Components of an Information System, Balancing Information.
- Students got knowledge about Security and Access, Approaches to Information Security Implementation, The Systems Development Life Cycle.
- Students got knowledge about The Security Systems Development Life Cycle, Security Professionals and the Organization Communities of Interest.
- Students got knowledge about Communities of Interest The Need for Security: Business Needs First, Threats, Attacks, Secure Software Development.
- Students got knowledge about Information Security Project Management, Technical Aspects of Implementation.
- Students got knowledge about Nontechnical Aspects of Implementation, Information Systems Security Certification and Accreditation.
- Students understood to Security Management Maintenance Models: The Security Maintenance Model, Monitoring the External Environment.
- Students understood to Monitoring the Internal Environment, Planning and Risk Assessment, Vulnerability.
- Students understood to Assessment and Remediation, Readiness and Review.
- Students got knowledge about Digital Forensics: The Digital Forensics Team, Affidavits and Search Warrants, Digital Forensics Methodology, Evidentiary Procedures.
- Students got knowledge about Introduction, Definition and origin, Cybercrime and Students got knowledge about Information security, Classification of cybercrimes.
- Students got knowledge about The legal perspectives- Indian perspective, Global perspective, Categories of Cybercrime, Types of Attacks.
- Students got knowledge about a Social Engineering, Cyber stalking, Cloud Computing and Cybercrime.
- Students got knowledge about Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit Card frauds.
- Students got knowledge about Security Challenges posed by Mobile Devices.
- Students got knowledge about Registry Students got knowledge about Setting for Mobile Devices, Authentication Security Services.
- Students got knowledge about Attacks on Mobile Phones, Organizational Measures for handling Mobiles.
- Students got knowledge about introduction, Proxy servers and Anonymizers, Phishing, Password Cracking, Key-loggers and Spywares,
- Indian context, The Indian IT Act-Challenges, Amendments, Challenges to Indian Law and cybercrime.
- Students got knowledge about Scenario in India, Indian IT Act and Digital Signatures Study network security scanners: Nmap and Wireshark.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MG
Aurangabad
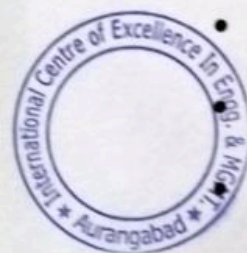
Department of Computer Science and Engineering

Subject: Machine Learning
Subject Code: CSE 453
Class: BE

Course Outcomes (COs)

- Students understood the possibilities and limitations of ML, and know how to formulate your own ML problem.

- Students understood the main ideas behind the most widely used machine learning algorithms

- Students got the idea of how to build predictive models from data and analyze their performance.

- Students understood the Supervised and Unsupervised learning methods.

- Students understood the the Decision tree concept

- Students got the idea of Clustering methodology and its application.

CAMPUS DIRECTOR
International Centre
Excellence In Engg. & MGMT.
Aurangabad

Department of Computer Science and Engineering
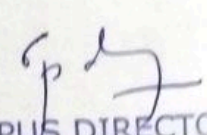
Subject : Machine Learning
Subject Code: : CSE453
Class: BE

Program specific Outcomes (PSOs)

- Students understood to What Is Machine Learning? Examples of Machine Learning Applications, Learning Associations.
- Students understood to Classification, Regression, Unsupervised Learning, Reinforcement Learning.
- Students understood to Learning a Class from Examples, Vapnik-Chervonenkis (VC) Dimension, Probably Approximately Correct (PAC) Learning
- Students understood to,Noise, Learning Multiple Classes, Regression
- Students understood to Correct (PAC) Learning Model Selection and Generalization, Students understood to Dimensions of a Supervised Machine Learning Algorithm.
- Students understood to Introduction, Subset Selection, Principal Components Analysis, Factor Analysis, Multidimensional
- Students understood to Scaling, Linear Discriminant Analysis, Isomap, Locally Linear Embedding.
- Students got knowledge about Introduction, Decision tree presentation.
- Students got knowledge about Appropriate problems for Decision tree learning.
- Students got knowledge about The Basic decision tree learning algorithm, Which attribute is the best classifier?, An Illustrative example.
- Students understood to Introduction, mixture Densities, k-Means Clustering, Expectation- Students understood to Maximization Algorithm, Mixtures of Latent Variable Models.
- Students understood to Supervised Learning after Clustering, Hierarchical Clustering, Choosing theNumber of Clusters.
- Students got knowledge about Introduction, Classification.
- Students got knowledge about Losses and Risks.
- Students got knowledge about Discriminant Functions, Utility Theory, Association Rules.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

Department of Computer Science and Engineering

Subject: Internet of Things
Subject Code: CSE 443
Class: BE

Course Outcomes (COs)

- Students got the idea of IOT value chain structure (device, cloud, data), application area and technologies involved

- Students understood the IOT applications and example overview

- Students got the idea of various sensor technologies

- Students understood the system of data transfer in IOT devices.

- Students understood the IOT protocols.

- Students understood the method of Data Acquisition

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

INTERNATIONAL CENTRE OF EXCELLENCE IN ENGINEERING AND MANAGEMENT (ICEEM)

ICEEM
Research to reality.... *NAAC ACCREDITED*

Department of Computer Science and Engineering

Subject : Internet of Things
Subject Code: CSE443
Class: BE

Program specific Outcomes (PSOs)

- Students understood to Internet of Things Definitions, Uses and Applications of IoT,
- Students understood to IoT Architectures: one M2M, IoT World Forum (IoTWF) and Alternative IoT models
- Students understood to Simplified IoT Functional blocks of an IoT, IoT implementation, platforms and integration tools.
- Students understood to Light weight Machine to Machine communication protocols.
- Students got knowledge about JSON format, Optimizing IP for IoT: From 6LoWPAN to 6Lo.
- Students got knowledge about Application Layer Protocols: CoAP and MQTT, XMPP, SOAP and Web Socket.
- Students got knowledge about IoT Sensors: Temperature sensors, Humidity sensors, light sensors, Proximity sensors.
- Students got knowledge about Pressure sensors, Water quality sensors, pH sensors, Gas sensors, Smoke sensors, IR sensors, Level sensors, Image sensors.
- Students got knowledge about Motion detector sensors, Accelerometer sensors, Gyroscope sensors.
- Students understood to Design Methodology - Embedded computing logic – Microcontroller.
- Students understood to IoT system building blocks - Arduino - Board details, IDE programming
- Students understood to Raspberry Pi - Interfaces and Raspberry Pi with Python Programming.
- Students got knowledge about Criteria for sensors selection, designing of sampling time of data acquisition,.
- Students got knowledge about selection criteria for actuators, exchanging messages using TCP and UDP.
- Students got knowledge about serving web pages with dynamic data, Serving Web pages that respond to user input.
- Students got knowledge about Introduction to cloud storage models and communication API's,
- Students got knowledge about WAMP-AutoBahn for IoT, Python web application framework. Students got knowledge about
- AMAZON web services for IoT, SkyNet IoT messaging platform.

CAMPUS DIRECTOR
International Centre
Excellence In Engg. & MGMT
Aurangabad

INTERNATIONAL CENTRE OF EXCELLENCE IN ENGINEERING AND MANAGEMENT (ICEEM)

Department of Computer Science and Engineering

Subject: Object Oriented Software Modeling and Design
Subject Code: CSE 403
Class: BE

Course Outcomes (COs)

- Students understood the software project using Object Oriented Modeling

- Students got the idea of the software project using Design Patterns

- Students understood the Object Oriented Software

- Students got the idea of UML modeling

- Students understood the Behavioral Modeling

- Students got the idea of user interface design.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

Department of Computer Science and Engineering

Subject: Object Oriented Software Modeling and Design

Subject Code: CSE403

Class: BE

Program specific Outcomes (PSOs)

- Students got knowledge about Complexity of Software, Algorithmic and Object-Oriented Decomposition
- Students got knowledge about Software Modeling : Object-Oriented Methods and the Unified Modeling Language.
- Students got knowledge about Software Architectural Design : Method and Notation .
- Students got knowledge about UML as a Standard , Multiple Views of Software Architecture .
- Students got knowledge about Evolution of Software Modeling and Design Methods , Evolution of Object-Oriented Analysis and Design Methods , Survey of Concurrent, Distributed, and Real-Time Design Methods.
- Students got knowledge about Functional Modeling: Basics of Use Cases System.
- Actors: Finding actors, actors in UML, Relationship between actors Use case: Finding use cases, use cases in UML, Relationship between use cases.
- Students got knowledge about Use Case Description: Types of use cases, elements of use case Description, Guidelines for Creating Use cases descriptions, organizing use cases, describing use cases, realizing use cases and Use case Diagrams.
- Students got knowledge about Structural Modeling: Structural Models: Classes, attributes, operations, Relationship Class Responsibility Collaboration (CRC Cards), Class Diagram: Elements of Class Diagram.
- Students got knowledge about The Golden Rules , User Interface Design.
- Students got knowledge about Task Analysis and Modeling ,Interface Design Activities
- Students got knowledge about Implementation Tools , Design Evaluation
- Students understood to Intent, applicability, structure, collaborations, consequence, implementations .
- Students understood to Structural Patterns: Adapter, Bridge, Composite.
- Students understood to Behavioral Patterns: Chain of responsibility, Command, Iterator.
- Students got knowledge about What is a Design Pattern.
- Students got knowledge about The Catalog of Design Patterns.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.
Aurangabad

POs, PEOs & PSOs

Program Outcomes (POs):

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
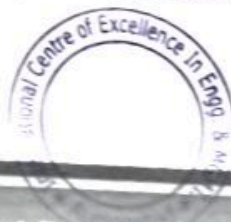
CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGMT.

IIRW'S

ICEEM **INTERNATIONAL CENTRE OF EXCELLENCE**
Research to reality.... **IN ENGINEERING AND MANAGEMENT**
(ICEEM)
NAAC ACCREDITED

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CAMPUS DIRECTOR
International Centre of
Excellence In Engg. & MGM
Aurangabad