TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS INSTITUTION
Accredited by NBA and NAAC with 'A+' Grade.
(Sponsored by TKR Educational Society, Approved by AICTE, Affiliated to JNTU H)
Medbowli, Meerpet, Balapur, Hyderabad, Telangana – 500 097

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE
ON

Basics of Cloud Computing

B.Tech: **II** Semester: **I** Academic Year: **2024–25**

Course Objectives

1. To understand the fundamentals, characteristics, deployment models, and service models of cloud computing.
2. To learn virtualization, cloud storage, networking, scalability, elasticity, and serverless computing concepts.
3. To gain knowledge of cloud security, identity and access management, backup, disaster recovery, and cloud monitoring.
4. To explore major cloud platforms such as Amazon Web Services, Microsoft Azure, and Google Cloud and their applications.
5. To understand cloud computing trends, career opportunities, certifications, and real-world case studies.

SYLLABUS

Unit – I: Fundamentals of Cloud Computing
Introduction to Cloud Computing, Characteristics of Cloud Computing, Advantages & Challenges of Cloud, Cloud Deployment Models, Service Models Overview (IaaS, PaaS, SaaS), Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

Unit – II: Cloud Infrastructure and Core Technologies
Virtualization Basics, Cloud Storage Fundamentals, Cloud Networking Basics, Cloud Scalability & Elasticity, Cloud Pricing Models, Serverless Computing, and Edge Computing & Cloud.

Unit – III: Cloud Security and Management
Cloud Security Basics, Identity & Access Management (IAM), Data Backup & Disaster Recovery, Cloud Monitoring & Management, and Security Best Practices in Cloud Environments.

Unit – IV: Cloud Platforms and Providers
Popular Cloud Providers Overview, Introduction to AWS, Introduction to Microsoft Azure, Introduction to Google Cloud, Cloud Application Examples, and Comparison of Major Cloud Platforms.

Unit – V: Applications, Careers, and Future Trends
Cloud in Everyday Life, Future Trends in Cloud Computing, Cloud Career Paths, Cloud Certifications, Case Studies in Cloud Computing, and Recap & Q/A Session.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE
ON
Introduction to Generative AI

B.Tech: **II** Semester: **II** Academic Year: **2024–25**

Course Objectives

1. 1. To understand the fundamentals of Artificial Intelligence and the core concepts of Generative AI.
2. 2. To learn the underlying technologies of Generative AI, including neural networks, transformers, LLMs, and GANs.
3. 3. To explore various Generative AI tools, prompt engineering techniques, and hands-on applications in text, image, and code generation.
4. 4. To analyze the applications, benefits, challenges, and ethical considerations of Generative AI across different industries.
5. 5. To develop awareness of future trends, career opportunities, certifications, and practical use cases in Generative AI.

SYLLABUS

Unit – I: Foundations of Artificial Intelligence and Generative AI
Introduction to Artificial Intelligence, What is Generative AI?, The Science Behind Generative AI, Neural Networks Basics, Introduction to Transformers, Large Language Models (LLMs), Generative Adversarial Networks (GANs), and Types of Generative AI Models.

Unit – II: Generative AI Tools and Technologies
Tools for Generative AI, Data for Generative AI, Prompt Engineering Basics, Hands-on with ChatGPT, Hands-on with Image AI, and Hands-on with Code AI.

Unit – III: Applications of Generative AI
Applications in Text Generation, Applications in Image Generation, Applications in Audio/Music, Applications in Video, Applications in Coding, and Generative AI in Education.

Unit – IV: Industry Applications and Impact
Generative AI in Business, Generative AI in Healthcare, Generative AI in Entertainment, Generative AI for Social Good, Risks & Challenges, and Ethics in Generative AI.

Unit – V: Future Trends and Career Opportunities
Future of Generative AI, Careers in Generative AI, Generative AI Certifications & Learning Paths, Recap & Project Showcase, Emerging Trends in Generative AI, and Real-World Case Studies.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE
ON

Django

B.Tech: **III** Semester: **I** Academic Year: **2024–25**

Course Objectives

1. To understand the fundamentals of Django and develop web applications using its core components.
2. To learn database modeling, ORM operations, forms, and template management in Django.
3. To implement user authentication, session management, and advanced view techniques for dynamic web applications.
4. To explore advanced Django features such as REST APIs, middleware, signals, and security mechanisms.
5. To design, develop, deploy, and present a complete Django-based web application project.

SYLLABUS

Unit – I: Django Fundamentals
Introduction to Django, Project Setup, Django Apps, Django Development Server, Django Views (Function-based Views), URL Routing, Templates (Basics), and Static Files & Media.

Unit – II: Database Management and Forms
Django Models (ORM Basics), Admin Interface, Django QuerySets, Template Filters & Tags, Forms in Django (Basics), and ModelForms.

Unit – III: Authentication and Advanced Views
User Authentication (Login/Logout), User Registration & Profiles, Sessions & Cookies, Class-based Views (CBVs), Advanced CBVs, and Pagination & Messages Framework.

Unit – IV: Advanced Django Features
Working with Media Files, Django REST Framework (Intro), Serializers & Views in DRF, Django Signals, Middleware, and Security in Django.

Unit – V: Deployment and Project Development
Deployment Basics, Project Work – Part 1, Project Work – Part 2, Project Presentation & Wrap-up, Django Project Best Practices, and Real-World Django Applications.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE
ON
Web development using PHP

B.Tech: **III** Semester: **II** Academic Year: **2024–25**

Course Objectives

1. To understand the fundamentals of web development using HTML, CSS, PHP, and MySQL.
2. To develop dynamic web applications using PHP programming concepts, forms, arrays, functions, and file handling.
3. To learn database design and perform CRUD operations by integrating PHP with MySQL.
4. To implement validation, authentication, session management, and security mechanisms in web applications.
5. To design, develop, test, and deploy a complete PHP-based web application project.

SYLLABUS

Unit – I: Web Development Fundamentals
Introduction to Web Development & PHP, HTML Structure & Common Tags, HTML Forms, CSS Basics, CSS Layouts, PHP Basics, PHP Operators & Expressions, Control Structures – If, Else, Switch, and Loops – For, While, Foreach.

Unit – II: PHP Programming Concepts
Functions in PHP, Working with Forms – GET Method, Working with Forms – POST Method, Arrays in PHP – Indexed & Associative, Multidimensional Arrays & Array Functions, String Functions & String Manipulation, and File Handling – Reading & Writing Files.

Unit – III: Database Connectivity with PHP
Introduction to MySQL & phpMyAdmin, Connecting PHP to MySQL (MySQLi), INSERT Data into Database, SELECT Data from Database, UPDATE & DELETE Data in Database, Sessions in PHP, and Cookies in PHP.

Unit – IV: Security and Validation
Form Validation & Sanitization, Password Hashing & Login Security, Secure Session Management, Error Handling, Debugging Techniques, and PHP Security Best Practices.

Unit – V: Project Development and Deployment
Project Setup – Planning & Database Design, User Registration & Login System, CRUD Operations in Project, Testing & Debugging Project, Deploying PHP Project to Live Server, and Project Presentation & Review.