New Prince Shri Bhavani College of Engineering and Technology

(An Autonomous Institution)

CURRICULUM & SYLLABUS

(REGULATION 2023)

FOR

MCA – MASTER OF COMPUTER APPLICATIONS

(CHOICE BASED CREDIT SYSTEM)

(Applicable to the students admitted from the Academic Year 2023 – 24)

DEPARTMENT OF COMPUTER APPLICATIONS

Curriculum and Syllabus for Minor Degree Programme

Name of the Minor Degree	INTELLIGENT APPS DEVELOPMENT
Minor Degree Offering Department	MCA
Eligible Departments	All Branches except MCA

Sl. No.	Course Code	Course Title	L	T	P	Total Contact Periods	Credits
1	U23MDMC101	Fundamentals of Internet and Web Technology	3	0	0	3	3
2	U23MDMC102	CSS3 for Web Design and Development	3	0	0	3	3
3	U23MDMC103	JavaScript Essentials: Advanced App Development	3	0	0	3	3
4	U23MDMC104	XML and Web Services: Foundations, Architecture, and Applications	3	0	0	3	3
5	U23MDMC105	Mobile Technology and App Design	3	0	0	3	3
6	U23MDMC106	AI for App Developers	3	0	0	3	3
		TOTAL CREDITS					18

Approved

Dr. G. DURGADEVI, M.E., Ph.D.,
DEAN - ACADEMICS,
NEW PRINCE SHRI BHAVANI COLLEGE OF
ENGINEERING AND TECHNOLOGY
(AN AUTONOMOUS INSTITUTION)
GOWRIVAKKAM, CHENNAI - 600 073.

U23MDMC101   FUNDAMENTALS OF INTERNET AND WEB TECHNOLOGY
                                       L T P C

                                       3 0 0 3

COURSE OBJECTIVES:

- To provide a comprehensive understanding of the history, evolution, and foundational concepts of the Internet and networking
- To learn basic HTML, CSS and multimedia elements for creating simple web pages.
- To equip students with the skills required for website development, hosting, and optimization.

UNIT I   INTERNET & NETWORK   9

History and Evolution of the Internet – Basic Internet Concepts - Internet vs. Intranet vs. Extranet - Network Topologies and Their Role in Internet Connectivity - Internet Infrastructure - Components: Routers, Switches, Modems - Introduction To Network - Network Types: LAN, WAN, MAN, PAN.

UNIT II   INTERNET SERVICES   9

Internet Services: WWW, Email, FTP, Telnet – Overview of Protocols: HTTP, HTTPS, FTP, SMTP, IMAP, POP3 - Concept of IP Addressing: IPv4 vs. IPv6 - Introduction to Packet Switching and Routing - Domain Names and DNS (Domain Name System) - Websites - Web Browsers and Search Engines - Components of WWW: HTML, URLs, - Social Media Platforms and Their Impact.

UNIT III   WEB TECHNOLOGIES   9

Basic HTML– Web Terminology – Structure of a HTML Document – HTML, Head and Body tags –Heading, Font, Image and Anchor Tags –Different types of Lists using tags – Table Tags, Image formats – Multimedia Elements: Images, Audio, and Video Embedding - Creation of simple HTML Documents.

UNIT IV   CSS (CASCADING STYLE SHEETS)   9

Introduction to CSS and Its Types - Selectors, Properties, and Values - CSS Syntax and Structure - CSS in HTML Documents - Linking External Stylesheets - Box Model and Layouts - Styling Text, Colors, and Backgrounds - Responsive Web Design: Media Queries and Flexbox - Debugging CSS.

UNIT V   WEBSITE DEVELOPMENT   9

Website Development : Webpage anatomy – Web Development – Website Publishing – URL Registration – Website Hosting – Search Engine Optimization.

                                   TOTAL: 45 PERIODS

TEXT BOOKS:

1. Santosh Choubey, "Introduction to Internet & Web Technology", All India Society for Electronics and Computer Technology (AISECT) Publications, 2024.

2. Ayush Mauryavamshi, "A Complete Overview On: Web-Development", Notion Press, 2024.

REFERENCES:

1 Prem kumar, "Web Design With HTML & CSS", Notion Press, 2021.

2 David Gordon, "Universal Design for Learning: Principles, framework and Practice", 2nd Edition, Cast Professional Publishing, 2024.

3 Julie C. Meloni, Jennifer Kyrnin, "HTML, CSS, and JavaScript All in One, Sams Teach Yourself", 3rd Edition, Pearson Education, 2020.

ONLINE RESOURCES

1 https://www.coursera.org/projects/images-and-links-in-html?

2 https://www.mygreatlearning.com/academy/learn-for-free/courses/introduction-to-web-designing

3 https://www.coursera.org/learn/web-development

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

CO1 Explain the fundamentals of Internet and its Technology.

CO2 Describe various network types, topologies, components and their role in Internet connectivity

CO3 Create basic HTML documents, incorporating multimedia elements for enhanced web pages.

CO4 Apply CSS and its features for styling web pages.

CO5 Design user-friendly and interactive websites by integrating web technology concepts.

CO – PO MAPPING:

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

Approved

U23MDMC102	CSS3 FOR WEB DESIGN AND DEVELOPMENT	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

- To provide a comprehensive understanding of CSS3, its evolution, and its role in modern web development.
- To explore advanced CSS3 Box model and layout techniques for creating user interactive web pages.
- To enable students to design and build responsive web pages optimized for different devices using CSS3.

UNIT I INTRODUCTION TO CSS3 9

CSS3 and its Evolution - Features of CSS3 - CSS Syntax: Selectors, Properties, and Values - Types of CSS: Inline, Internal, and External - Linking CSS to HTML Documents - Importance of CSS in Modern Web Development.

UNIT II CSS3 SELECTORS AND PROPERTIES 9

CSS Selectors: Universal, Type, Class, ID, Descendant, Child, and Sibling - Attribute Selectors - Pseudo-classes and Pseudo-elements - Styling Text: Font Properties, Text Alignment, Line Height, and Text Decoration - Working with Colors: RGB, HEX, HSL, and Opacity - Background Properties: Images, Gradients, and Transparency.

UNIT III CSS3 BOX MODEL 9

Box Model (Introduction, Border properties, Padding Properties, Margin properties) - CSS Positioning: Static, Relative, Absolute, and Fixed -CSS Advanced (Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector) - CSS3 Animations and Transitions.

UNIT IV STYLING WITH CSS3 LAYOUTS 9

Understanding CSS layout techniques-Creating page Layout and Site Designs Working with CSS box model-Creating responsive layouts using CSS media queries-Exploring CSS frameworks for layout and design-Applying advanced CSS techniques for layout customization.

UNIT V BUILDING RESPONSIVE WEB PAGES 9

Understanding the principles of responsive web design- Creating responsive web pages using HTML and CSS - Testing and optimizing web pages for different devices and screen sizes- Introduction to CSS preprocessors for enhanced styling capabilities - Designing Interactive Forms with CSS3 - Case Studies: Building a Complete Web Page Using CSS3.

TOTAL: 45 PERIODS

TEXT BOOKS:

1 Patrick Carey, "New Perspectives on HTML 5 and CSS: Comprehensive", 8th Edition, Cengage Learning, 2020
2 Ben Frain, "Responsive Web Design with HTML5 and CSS", 4th Edition, Packt Publishing, 2022.

REFERENCES:

1. David DuRocher, "HTML and CSS Quick Start Guide", Clydebank Media, 2021.
2. Keith J. Grant, "Css in Depth", 2nd Edition, Manning Publications, 2024.
3. Paul McFedries, "Web Design Playground", 2nd Edition, Manning Publications, 2024.

ONLINE RESOURCES:

1. https://unacademy.com/course/learn-web-designing-with-css3/YA5FEOJP
2. https://css-tricks.com/snippets/css/complete-guide-grid/
3. https://www.classcentral.com/course/responsive-web-design-4200

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

CO1 Explain the evolution of CSS3, its features, and its importance in modern web development.

CO2 Apply CSS3 selectors and properties to style web pages effectively.

CO3 Apply CSS Box Model and positioning techniques for structured layouts.

CO4 Design complex page layouts using CSS3 frameworks, media queries, and advanced layout customization techniques.

CO5 Create responsive web pages with CSS3 to enhance user experience and interface design.

CO – PO MAPPING:

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

U23MDMC103 JAVASCRIPT ESSENTIALS: ADVANCED APP DEVELOPMENT

	L	T	P	C
	3	0	0	3

COURSE OBJECTIVES:

- To provide a comprehensive understanding of JavaScript fundamentals.
- To explore advanced JavaScript techniques to create interactive web applications
- To learn modern JavaScript frameworks for building front-end and server-side applications.

UNIT I   JAVASCRIPT FUNDAMENTALS   9

Introduction to JavaScript - History and Evolution of JavaScript - JavaScript in Web Development- Understanding ECMAScript Versions- Basics of Document Object Model (DOM)- JavaScript Functions-Understanding Functions: Declarations, Expressions, Arrow Functions - Scope and Closure: Managing Data Privacy and Function State - Variable Declarations- Using var, let, and const: Differences and Use Cases.

UNIT II   BROWSER SCRIPTING AND EVENTS   9

Client-Side Scripting - Scripting for Web Pages- Interacting with the DOM- Managing Browser Windows and Frames- Cookies and Web Storage Management- Dynamic Content Creation.

UNIT III   ADVANCED JAVASCRIPT TECHNIQUES   9

Object-Oriented JavaScript- Introduction to Objects and Classes- Creating and Using JavaScript Classes- Object Prototypes- Inheritance Patterns- Encapsulation Techniques- Polymorphism and Code Reusability. Advanced Function Handling- Asynchronous Functions: Async/Await, Promises.

UNIT IV   JAVASCRIPT FRAMEWORKS AND LIBRARIES   9

Frontend Frameworks - Introduction to Angular, React, and Vue- Component-Based Architecture- Single Page Application (SPA) Development- Building and Managing Front-End Routing- Introduction to TypeScript

UNIT V   SERVER-SIDE JAVASCRIPT   9

Introduction to Node.js and npm- Creating and Managing Modules - Understanding the Event Loop- Building a Simple Web Server- Using Databases with Node.js (MongoDB, SQL).

TOTAL: 45 PERIODS

TEXT BOOKS:

1. David Flanagan, "JavaScript: The Definitive Guide", 7th Edition, O'Reilly Media, 2020
2. Nicolas Cloud, Sufyan bin Uzayr, Tim Ambler, "JavaScript Frameworks for Modern Web Development: The Essential Frameworks, Libraries, and Tools to Learn Right Now", Apress, 2019.

REFERENCES:

1. Matt Frisbie, "Professional JavaScript for Web Developers", 5th Edition, John Wiley & Sons, 2023.
2. Keith J Grant; "CSS in Depth", Manning Publications, 1st Edition, 2018
3. Bethany Griggs, Manuel Spigolon, "Node.js Cookbook", 5th Edition, Packt Publishing, 2024.

ONLINE RESOURCES

1   https://onlinecourses.swayam2.ac.in/nou24_cs09/preview

2   https://www.coursera.org/learn/programming-with-javascript

3   https://www.javascriptinstitute.org/javascript-tutorial/server-side-javascript/

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

CO1   Describe the evolution and significance of JavaScript in App development.

CO2   Explain Document Object Model (DOM) to manipulate web page elements and create dynamic content.

CO3   Analyze advanced JavaScript techniques such as closures, object-oriented programming, and asynchronous programming.

CO4   Apply modern front-end frameworks to develop component-based single-page applications (SPAs).

CO5   Create server-side applications using Node.js and integrating databases for data persistence.

CO – PO MAPPING:

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

Approved
@

Dr. G. DURGADEVI, M.E., Ph.D.,
DEAN - ACADEMICS,
NEW PRINCE SHRI BHAVANI COLLEGE OF
ENGINEERING AND TECHNOLOGY
(AN AUTONOMOUS INSTITUTION)
GOWRIVAKKAM, CHENNAI - 600 073.

U23MDMC104 XML AND WEB SERVICES: FOUNDATIONS, ARCHITECTURE,   L   T   P   C
AND APPLICATIONS

                                                                              3   0   0   3

COURSE OBJECTIVES:

- To understand the fundamental knowledge of xml and schema
- To learn the XML transformation and querying
- To explore different web service technologies

UNIT I   **INTRODUCTION TO XML**   **9**

XML –Introduction –Document Type Definition or DTD – uses of DTD – Tags – Elements – Attributes – PCDATA – CDATA – Basics of entities – XML Elements – Elements Declaration – usage of #REQUIRED – usage of #IMPLIED – usage of #FIXED – Internal Entities – External Entities – Defining, Accessing XML Document.

UNIT II   **XML SCHEMA AND VALIDATION**   **9**

XML Schema - XML Schema Definition (XSD) - Elements, attributes, and data types in XSD – Namespace in XML and XSD - Validation of XML documents using XSD - Advanced schema concepts - complex types, groups.

UNIT III   **XML TRANSFORMATION AND QUERYING**   **9**

XSLT (Extensible Stylesheet Language Transformations) - XSLT syntax and patterns - Transforming XML documents using XSLT - XPath (XML Path Language) expressions - Introduction to XQuery.

UNIT IV   **WEB SERVICES**   **9**

Web Services Overview - Web Service Architecture – Web service and APIs – Types of Web Services –Web Service protocols – Web Service Standards- Web Services Technologies.

UNIT V   **WSDL, SOAP and UDDI**   **9**

WSDL - Overview Of SOAP – HTTP – XML-RPC – SOAP: Protocol – Message Structure – Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments – UDDI.

                                                                    TOTAL: 45 PERIODS

TEXT BOOKS:

1 S. Banzal, "XML Basics", 1st Edition, Mercury Learning & Information, 2020.

2 Priscilla Walmsley, "XQuery: Search Across a Variety of XML Data", 2nd Edition, O'Reilly Media, 2023.

REFERENCES:

1 Clifford B. Anderson, "XQuery for Humanists", 1st Edition, Texas Agricultural & Mechanical University Press, 2020.

2 Mark Richards, Neal Ford, "Fundamentals of Software Architecture: A Modern Engineering Approach", 2nd Edition, O'Reilly Media, 2025.

3 Mike Amundsen, "Restful Web API Patterns and Practices Cookbook", 1st Edition, O'Reilly Media, 2022.

Approved @

Dr. G. DURGADEVI, M.E., Ph.D.,
DEAN - ACADEMICS,
NEW PRINCE SHRI BHAVANI COLLEGE OF
ENGINEERING AND TECHNOLOGY
(AN AUTONOMOUS INSTITUTION)
GOWRIVAKKAM, CHENNAI - 600 073,

ONLINE RESOURCES

1 https://www.youtube.com/watch?v=itRkLa2kq6w

2 https://www.coursera.org/learn/juniper-automation-xml

3 https://www.udemy.com/course/xml-and-xml-schema-definition-in-easy-steps/?couponCode=ST19MT121224

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

CO1 Explain the concepts of XML.

CO2 Describe the concepts of xml schema and its validation

CO3 Apply xml technologies like XSLT, XPATH and XQUERY to perform XML transformations.

CO4 Explain web services architecture and its types

CO5 Apply SOAP, HTTP and UDDI services in the web applications.

CO – PO MAPPING:

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

U23MDMC105	MOBILE TECHNOLOGY AND APP DESIGN	L T	P C
		3 0	0 3

COURSE OBJECTIVES:

- To learn the fundamental differences between various mobile operating systems.
- To understand the principles of user-centered design to create intuitive and engaging user interfaces (UI) for mobile applications.
- To deploy cross-platform mobile applications using Flutter.

UNIT I   **INTRODUCTION TO ANDROID**   **9**

Android: An Open Platform for Mobile Development - Native Android Applications - Android SDK features - Understanding the Android Software Stack - The Dalvik Virtual Machine - Android Application Architecture - Android Libraries - Creating the Android Application - Types of Android Applications – Android Development Tools - Externalizing the Resources - The Android Application Lifecycle.

UNIT II   **BUILDING USER INTERFACE**   **9**

Fundamental Android UI design - Android User Interface fundamentals - Layouts - Linear - Relative - Grid Layouts - Fragments - Creating new fragments - The Fragments Lifecycle - Introducing the Fragment Manager - Adding Fragments to Activities - Interfacing between Fragments and Activities.

UNIT III   **INTRODUCTION TO FLUTTER**   **9**

Features of Flutter- Advantages of Flutter- Disadvantages of Flutter. Flutter Installation- Installation in Windows- Installation in Mac OS- Creating Simple Application in Android Studio - Architecture of Flutter Applications.

UNIT IV   **FLUTTER BASICS**   **9**

Widgets- Gestures- Concept of State- Layers- Introduction to Dart Programming-Variables and Data types- Decision Making and Loops. Functions- Object Oriented Programming. Introduction to Widgets- Widget Build Visualization.

UNIT V   **ANIMATION ON FLUTTER**   **9**

Introduction to Animation Based Classes-Work flow of the Flutter Animation- Working Application- Android Specific Code on Flutter- Introduction to Package- Types of Packages Using a Dart Package- Develop a Flutter Plugin Package- Accessing Rest API- Basic Concepts- Accessing Product service API.

                                                   TOTAL: 45 PERIODS

TEXT BOOKS:

1. Rap Payne, "Flutter App Development: How to Write for IOS and Android at Once", 2nd Edition, Apress, 2024.
2. Simone Alessandria, "Flutter Cookbook: 100+ Step-by-Step Recipes for Building Cross-Platform, Professional-G", 2nd Edition, Packt Publishing, 2023.

REFERENCES:

1. Dawn Griffiths, David Griffiths, "Head First Android Development: A Learner's Guide to Building Android Apps with Kotlin", 3rd Edition, O'Reilly Media, 2022.

2   Zigurd Mednieks, Laird Dornin, G. Blake Meike, Masumi Nakamura, "Programming Android", 2nd Edition, O'Reilly Media, 2021.
3   Barry Burd, John Paul Mueller, "Android Application Development All-in-One For Dummies", 3rd Edition, John Wiley & Sons, 2020.

ONLINE RESOURCES

1   https://onlinecourses.nptel.ac.in/noc20_cs52/preview
2   https://www.udemy.com/course/learn-flutter-dart-to-build-ios-android-apps/?couponCode=BFCPSALE24
3   https://docs.flutter.dev/resources/courses

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

CO1   Explain the working principles of sensors using various measurement methods.

CO2   Analyze the actuation of sensors using their fundamental principles.

CO3   Describe the velocity and acceleration of accelerometers and gyroscopes.

CO4   Apply various measurement methods of physical and electrical parameters.

CO5   Apply the calibration methods for sensors attached with real time systems.

CO – PO MAPPING:

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

U23MDMC106	AI FOR APP DEVELOPERS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

- To provide foundational knowledge of Artificial Intelligence (AI) and its significance in modern industries and applications.
- To explain core concepts of supervised, unsupervised and advanced learning techniques with practical implementation
- To explore various AI tools, libraries, and platforms for developing and deploying AI applications.

UNIT I   INTRODUCTION TO ARTIFICIAL INTELLIGENCE   9

Foundations for AI – Types of AI – Role of AI in Modern Applications and Industries - AI in Mobile App Development: Opportunities and Challenges - AI Techniques: Machine Learning, NLP, and Computer Vision – Data Collection and Preprocessing for AI Systems – AI Tools, Frameworks, and Libraries – Ethical AI and Responsible Use of AI in Apps.

UNIT II   BASICS OF MACHINE LEARNING   9

Machine Learning - Importance of Machine Learning – Types of Machine Learning – Approaches of Machine Learning - Applications Languages/Tools - Issues - Machine Learning Algorithm – Programming Languages.

UNIT III   SUPERVISED AND UNSUPERVISED LEARNING ALGORITHMS   9

Linear Regression: Concept, Equation, and Implementation – Logistic Regression – Decision Tree – Support Vector Machines (SVM) – K-Nearest Neighbors (KNN) – Clustering Algorithms: K-Means Clustering, Hierarchical Clustering – PCA (Principal Component Analysis).

UNIT IV   ADVANCED LEARNING TECHNIQUES   9

Fundamentals of Reinforcement Learning – State and action space – Reward function – Discounting – Action selection – Policy – Markov decision process – Q-learning Algorithm - Applications of RL: Robotics, Gaming, and Autonomous Systems.

UNIT V   AI TOOLS AND PLATFORMS   9

AI Tools: Google AI, AWS AI, and Microsoft Azure - Importance of AI Libraries: TensorFlow, PyTorch, scikit-learn - AI in Mobile Apps: ML Kit - AI Models - Developing AI Applications - Deploying AI Models - Real-Life Applications of AI Problem-Solving.
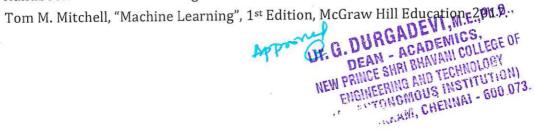
TOTAL: 45 PERIODS

TEXT BOOKS:

1. Russell, Norwig "Artificial Intelligence: A Modern Approach", 4th Edition, Pearson Education, 2022.
2. Ethem Alpaydin, "Introduction to Machine Learning", 4th Edition, Massachusetts Institute of Technology Press, 2020.

REFERENCES:

1. Saptarsi Goswami, Amit Kumar Das, Amlan Chakrabarti, "AI for Everyone: A Beginner's Handbook for Artificial Intelligence", Pearson Education, 2024.
2. Tom M. Mitchell, "Machine Learning", 1st Edition, McGraw Hill Education, 2019.

Approved
Dr. G. DURGADEVI, M.E.,Ph.D.,
DEAN - ACADEMICS,
NEW PRINCE SHRI BHAVANI COLLEGE OF
ENGINEERING AND TECHNOLOGY
(AUTONOMOUS INSTITUTION)
...AM, CHENNAI - 600 073.

3   Sebastian Raschka, "Machine Learning with PyTorch and Scikit-Learn: Develop machine learning and deep learning models with Python", Packt Publishing, 2022.

ONLINE RESOURCES

1   https://www.coursera.org/learn/foundations-of-ai-and-machine-learning#modules

2   https://nptel.ac.in/courses/106102220

3   https://onlinecourses.nptel.ac.in/noc23_ge40/preview

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

CO1   Describe the fundamental principles of AI and identify its applications in industries and modern systems

CO2   Explain the importance of Machine Learning and differentiate its types, approaches, and tools.

CO3   Apply supervised and unsupervised learning algorithms in different fields.

CO4   Apply advanced learning techniques to solve real-world problems.

CO5   Apply modern AI tools and libraries to develop and deploy AI applications.

CO – PO MAPPING:

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