



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05CIIT51	Title of the Course	Web Programming using ASP
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	To learn the basics of 1. the ASP.NET web application execution model. 2. development of Web Applications using ASP .NET. 3. session management and validation controls in ASP .NET. 4. ADO .NET architecture. 5. development of database applications using ADO .NET.
--------------------	---

Course Content		
Unit	Description	Weightage (%)
1.	Introduction <ul style="list-style-type: none">– ASP.NET – Introduction, overview of ASP.NET framework– The ASP.NET Life cycle, Understanding ASP.NET controls– ASP.NET 4.0 coding Models : Single-File Page Model, Code-Behind Page Model– The Global.asax Application file– Introduction to Web.Config– Internet Information Server (IIS)– Using Visual C# in ASP. NET: Introduction, Variables, Data Types, Value Types, Scope of Variables, Operators	25
2.	ASP.NET Standard Controls and Validation Controls <ul style="list-style-type: none">– Using standard controls : [Control Properties]– Label, TextBox, Button, CheckBox, CheckBoxList, RadioButton, RadioButtonList, Linkbutton, ImageButton, Hyperlink, DropDownList, ListBox– Overview of the validation controls : RequiredFieldValidator, RangeValidator, CompareValidator, RegularExpressionValidator, CustomValidator, ValidationSummary– Grouping Controls : Panel, Placeholder– Master Page and Themes	25
3.	Advance Controls and State Management <ul style="list-style-type: none">– Overview of various rich controls : AdRotator, FileUpload, Calendar– Login Controls– State Management using View State, QueryString, Cookies, Session State, Application State, Global.asax– TreeView, Menu, SiteMapPath	25



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

4.	Accessing Data in ASP.NET <ul style="list-style-type: none">– ADO.NET Architecture-Connected and disconnected– ADO.NET basics: DataProvider, Connection, Command, DataReader, Dataset, DataAdapter– ADO.NET Basic Control : GridView, DataList, DetailsView, FormView, ListView, Repeater	25
----	--	----

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
-------------------------------	---

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Describe the ASP.NET web application execution model.
2.	Develop ASP .NET Web Forms applications.
3.	Use session management and validation controls in ASP .NET.
4.	Understand ADO .NET architecture.
5.	Develop database applications using ADO .NET.

Suggested References:	
Sr. No.	References
1.	ASP.NET 4.0 Covers C# 2010 & VB 2010 codes BLACK BOOK, Dreamtech Press
2.	Programming in C#, E Balagurusamy, Tata McGraw-Hill



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

- | | |
|----|---|
| 3. | The Complete Reference C# 4.0, Herbert Schildt, Tata McGraw Hill, Edition 2010 (Third Reprint 2011) |
|----|---|



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05CIIT52	Title of the Course	Python Programming
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	<ol style="list-style-type: none">1. To learn the fundamentals of the Python programming language.2. To study the concepts of object-oriented programming in Python.3. To learn exception handling and file handling in Python.4. To understand how to access files and databases from Python
--------------------	--

Course Content		
Unit	Description	Weightage (%)
1.	Python Basics - I <ul style="list-style-type: none">– Python Overview and History, Features of Python, Difference Between C, JAVA & Python,– Applications of Python, Programming Structure of Python,– Introduction to Python Libraries (NumPy, Pandas, Matplotlib, etc.)– Python Environment Setup, Basic Syntax of Python, Python Data types, Python variables, Casting, Operators, Comments,– User Input, Decision making and Branching,	25
2.	Python Basics - II <ul style="list-style-type: none">– Looping, Range– List and Tuple– Set and Dictionary– Strings and basic operations– RegEx Module (Regular Expressions), Python JSON	25
3.	Object Orientated Concepts and Exception Handling <ul style="list-style-type: none">– Concept of Class, Object and Instances, Constructor, class attributes and destructors, Functions, Scope, Iterators– Inheritance, method overloading and overriding in python, Modules, Lamda function,– Debugging, Python Error with its Types, Exception handling in Python, Try-finally, raising exceptions, user-defined exceptions.	25
4.	File IO Management and Databases <ul style="list-style-type: none">– File Handling (Introduction, Create, Read, Write and Delete File)Database connection using MYSQL, Creating, Searching and Drop Tables, Record Manipulation (Select, Insert, Update, Delete, Searching, Sorting, Join)	25



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

Teaching-Learning Methodology	Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices.
-------------------------------	--

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to develop	
1.	Ability to develop computer programs using the Python programming language.
2.	Knowledge of manipulating different Python data types.
3.	Ability to develop object-oriented programs using Python.
4.	Basic knowledge of exception handling, file handling and database access in Python.

Suggested References:	
Sr. No.	References
1.	John V Guttag. "Introduction to Computation and Programming Using Python", Prentice Hall of India
2.	Wesley J. Chun. "Core Python Programming -Second Edition", Prentice Hall
3.	Learning Python: By Mark Lutz, David Ascher
4.	Exploring Python Book by Timothy Budd
5.	Head First Python: A Brain-Friendly Guide by Aaul Barry



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

6	Introducing Python-Modern Computing in Simple Packages –Bill Lubanovic, O'Reilly Publication
7	Introduction to Computer Science Using Python-Charles Dierbach, Wiley Publication Learning with Python “, Green Tea Press, 2002
8	Beginning Programming with Python for DummiesPaperback–2015 byJohn Paul Mueller

On-line resources to be used if available as reference material

On-line Resources

<https://www.w3schools.com/python>
<https://www.tutorialspoint.com/python>



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05CIIT53	Title of the Course	Computer Graphics
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	<ol style="list-style-type: none">1. To introduce the students to devices used for computer graphics.2. To provide knowledge of graphics primitives.3. To teach common 2D graphics algorithms.4. To familiarize students with 3D graphics, rendering of 3D objects and animation.5. To train students on using the Blender software for developing computer graphics applications.
--------------------	--

Course Content		
Unit	Description	Weightage (%)
1.	Introduction of Computer Graphics <ul style="list-style-type: none">– A survey of major applications of Computer Graphics Overview of different video display Devices: CRT, Raster scan, Color Monitors, DVST, Flat Panels, Graphics Software & coordinate representation, Graphics functions, Software Standards– Output primitives: Points, Lines, Circle, Line Drawing Algorithms (without program): Digital Differential Analyzer (DDA) and Bresenham. Circle generating algorithm (without program): Midpoint Circle	25
2.	Area Filled Algorithms and 2D Concept <ul style="list-style-type: none">– Circles Algorithm Filled area primitives– Inside – Outside tests: Odd even rule & Non-zero winding number rule– Boundary-fill algorithm (with procedure) Flood-Fill Algorithm (with procedure)– Character generation, Attributes of output primitives– 2-D geometric Transformations: Translation, Rotation, Scaling, Reflection & Shear (with example) Viewing Pipeline, Window-to-Viewport transformation Point Clipping Line clipping (without program) Cohen Sutherland line clipping algorithm Polygon Clipping (without program) Text clipping	25



3.	3D concepts and Basics of Blender – Introduction, Rendering and animation basic concepts, Basic Key Commands, The Blender Interface, Viewports, Creating and Editing Objects, Materials and Textures, Lighting and Cameras, Render settings, Ray tracing, Adding 3D Text, NURBS and Meta Shape Basics, Modifiers	25
4.	Advanced Concept of Blender – Particle Systems and Interactions, Child-Parent Relationships, Working With Constraints, Armatures (bones and skeletons), Object Physics, Working With Nodes, Creating Springs, Screws, Gears and other Add-On Shapes, Game Engine Basics (real-time animation), Textures in the Game Engine, Video Sequence Editor.	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
-------------------------------	---

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to develop	
1.	Knowledge of the devices used for computer graphics.
2.	Understanding of graphics primitives.
3.	Knowledge of common 2D graphics algorithms.
4.	Understanding of the concepts of 3D graphics, rendering of 3D objects and animation.
5.	Ability of using the Blender software for developing computer graphics applications.



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

Suggested References:

Sr. No.	References
1.	Computer Graphics by Donald Hearn & M. Pauline Baker, PHI, 1995
2.	Computer Graphics, Foley and van Dam - Person Education
3.	Computer Graphics, Sinha & Udai, - TMH
4.	Blender Basics Classroom Tutorial Book – 4 th Edition – e-book by James Chronister



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05CIIT54	Title of the Course	Practical Based on US05CIIT51 & US05CIIT52
Total Credits of the Course	6	Hours per Week	12

Course Objectives:	<ol style="list-style-type: none">1. To study the concepts of web programming using ASP.NET.2. To learn the Python Programming concepts.
--------------------	---

Course Content		
	Description	Weightage (%)
	Part-1 : Practical based on US05CIIT51	50
	Part-2 : Practical based on US05CIIT52	50

Teaching-Learning Methodology	Project work in small groups, Hands on Training ICT tools.
-------------------------------	--

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	gain the knowledge of ASP.NET Programming.
2.	gain the knowledge of Python Programming



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05CIIT55	Title of the Course	Project-I
Total Credits of the Course	2	Hours per Week	4
Course Objectives:	To give students a practical experience of using the technologies and methodologies they have learnt in the programme.		

Course Content		
Unit	Description	Weightage (%)
	Project Development	100

Teaching-Learning Methodology	Project work in small groups, Hands on Training ICT tools.
-------------------------------	--

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Use of technologies and methodologies in developing software projects.
2.	Solving Industrial problems using computational technology



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05DIIT56	Title of the Course	E-Commerce
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	To learn 1. Fundamental concepts of e-commerce. 2. e-commerce business models. 3. Electronic market places. 4. Electronic payments and protocols and security.
--------------------	--

Course Content		
Unit	Description	Weightage (%)
1.	Introduction To E-Commerce <ul style="list-style-type: none">– Definition, communication perspective, business process perspective, service perspective– Classification by nature of transaction : B2B, B2C, C2C, C2B, Non business EC, Intra-business EC– Classification of EC Applications: electronic market, inter organizational system, customer services– Benefits to organizations, consumers, and society– Limitations of EC, framework of EC, future of EC	25
2.	E-Commerce Business Models and Intranet and Extranet <ul style="list-style-type: none">– Architecture of Internet, Intranet and Extranet– Application of Intranet– Application of Extranet– Introduction, eight key ingredients of a business model, major B2C and B2B business models, Introduction to M-Commerce.	25
3.	Electronic Marketplaces <ul style="list-style-type: none">– Marketplace components, types of electronic markets (electronic storefronts, electronic malls, types of stores and malls)– Portals and their types, role of intermediaries in E-markets, E-market success factors, competitive factors, impact of E-Market on organizations (marketing, HR, manufacturing, finance and accounting)	25
4.	Electronic payments and protocols and security <ul style="list-style-type: none">– Electronic payment and protocols– Security schemes in EPS– Electronic credit card system on Internet– Electronic fund transfer and debit card on the internet	25



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

	<ul style="list-style-type: none">– Stored value card and Ecash– Internet security– CRM : meaning, types of CRM, benefits and limitations of CRM, issues in CRM implementation, classifications of CRM applications, one-to-one marketing (personalization, collaborative filtering, customer loyalty, trust)	
--	--	--

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
-------------------------------	---

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to understand	
1.	Fundamental concepts of e-commerce.
2.	e-commerce business models.
3.	Electronic market places.
4.	Electronic payments and protocols and security.

Suggested References:	
Sr. No.	References
1.	Electronic Commerce : A Managerial Perspective Efraim Turban, Jae Lee, David King, H Michael Chung (Pearson Education.)
2.	E-Commerce – Business, Technology, Society Kenneth C Laudon, Carol Guercio Traver (Pearson Education)



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester V

Course Code	US05DIIT57	Title of the Course	Enterprise Resource Planning
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	<ol style="list-style-type: none">1. To introduce the students to Enterprise Resource Planning (ERP).2. To familiarize the students with ERP and related technologies.3. To acquaint the students with the process of selection of an ERP package, its implementation and maintenance.4. To impart knowledge of different ERP modules.
--------------------	---

Course Content		
Unit	Description	Weightage (%)
1.	Introduction to ERP <ul style="list-style-type: none">– Enterprise: Introduction, Business Modeling, Integrated data model, Integrated management information– Enterprise Resource Planning (ERP) : Introduction, History– Basic concepts of ERP.– Risks (All types risks in brief)	25
2.	ERP and Related Technologies <ul style="list-style-type: none">– Benefits of ERP– Business Process Reengineering (BPR)– Data warehousing, data mining and Online Analytical Processing (OLAP)– Product Life Cycle Management (PLM), Supply Chain Management (SCM), Customer Relationship Management (CRM)	25
3.	ERP – Selection and Implementation <ul style="list-style-type: none">– ERP package selection– ERP Implementation Life Cycle, Introduction, Objective and Phases of implementation– Reasons for failure of ERP Implementation	25
4.	ERP – Operation, Maintenance and Evaluation <ul style="list-style-type: none">– Operation of the ERP system– ERP Maintenance Phase– Measuring performance of ERP– Functional modules of ERP software.	25



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
-------------------------------	---

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand Enterprise Resource Planning (ERP).
2.	get familiarity with ERP and related technologies.
3.	gain acquaintance with the process of selection of an ERP package, its implementation and maintenance.
4.	gain knowledge of different ERP modules.

Suggested References:	
Sr. No.	References
1.	Alexis Leon: Enterprise Resource Planning, Tata McGraw-Hill, New Delhi 2 nd editions.



Bachelor of Science (Computer Application & Information Technology)
B.Sc. (CA&IT) Semester VI

Course Code	US05DIIT58	Title of the Course	Artificial Intelligence
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	To understand 1. the fundamentals of artificial intelligence. 2. problems analyzing and formalizing, designing heuristics and selecting search or game based techniques to solve them. 3. the fundamentals of knowledge-based systems. 4. basics of Fuzzy logic. 5. fundamentals of Neural networks. 6. fundamental concepts of genetic algorithms.
--------------------	---

Course Content		
Unit	Description	Weightage (%)
1.	Artificial Intelligence and Knowledge-Based Systems – Natural and Artificial Intelligence – Characteristics and Definitions of AI AI based systems, Testing the Intelligence with Turing Test, and Chinese Room Experiment, Application Areas of Artificial Intelligence, Data Pyramid and Computer Based Systems Production Systems and AI based Searches like Hill Climbing and Heuristic Search – Introduction & Objectives of KBS, Components of KBS Categories of the KBS like Expert Systems, Database Management Systems in Conjunction with an Intelligent User Interface, Linked Systems, CASE Based Systems, Intelligent Tutoring Systems, etc. Issues and limitations of KBS General structure of KBS, Conflict Resolution Strategies for Rule Based Systems – Knowledge Base Shell Advantages, limitations and applications of Knowledge-Based Systems	25
2.	Development of Knowledge-Based Systems – Development of Knowledge-Based System, Difficulties in KBS Development Knowledge-Based Systems Development Model, Knowledge Acquisition – Process and Techniques, Knowledge Sharing, Dealing with Multiple Experts, Issues in Knowledge Acquisition, Knowledge Update Characteristics of Good Knowledge Representation Scheme Factual and Procedural Knowledge Representation Applications and Users of KBS	25



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2023

	– Tools for KBS development and Case Studies	
3.	Fuzzy Logic and Neural Network – Introduction to fuzzy logic Fuzzy logic and fuzzy sets, Membership Functions, Fuzzification and Defuzzification, Operations on Fuzzy Sets Fuzzy Functions and Linguistic Variables Fuzzy Relationships, Propositions and Connectives – Fuzzy Inference Fuzzy Rules, Fuzzy Control System and Fuzzy Rule Based Systems Neural Networks: Introduction, Advantages and Disadvantages of Neural Networks Biological Neuron and Artificial Neuron Neural Network Architectures Applications of Neural Network	25
4.	Genetic Algorithms – Introduction to Genetic Algorithms – Basic Terminology, Genetic Algorithms, GA Cycle – Basic Operators of Genetic Algorithms – Function Optimization, Edge Recombination – Schema	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools
-------------------------------	---

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%



Course Outcomes: Having completed this course, the learner will be able to understand

1.	The fundamentals of artificial intelligence.
2.	The techniques of analyzing and formalizing problems, designing heuristics and selecting search or game based techniques to solve them.
3.	Fundamentals of knowledge-based systems.
4.	The basics of fuzzy logic.
5.	Concepts and techniques of neural networks.
6.	Fundamental concepts of genetic algorithms.

Suggested References:

Sr. No.	References
1.	Elain Rich: "Artificial Intelligence", McGraw Hill, Third Edition, 2001.
2.	R. Akerkar: "Introduction to Artificial Intelligence", Prentice Hall of India, 2005.
3.	R. Akerker and P. S. Sajja: "Knowledge-Based Systems", Jones and Bartlett's, MIT, 2010.
