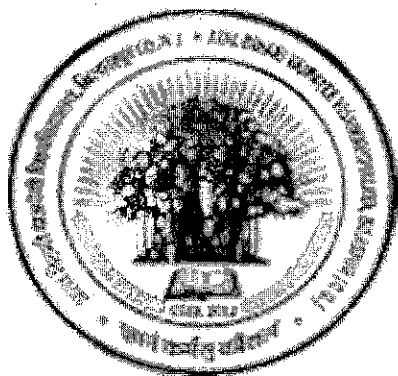


Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)



Scheme and Syllabus

Of

MSc-(Information Technology)(3rd and 4th sem.)

Program Code: MSCITR113

Semester system for affiliated college

(As per LOCF and credit system)

w.e.f. 2024-2025

As approved AC and EC meeting held on 16.08.2023 and 18.04.2023 respectively



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनीपुलिसथाना के सामने, बिलासपुर-रतनपुरमार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

①

Scheme of M.Sc. (Information Technology) under Semester System Program Code: MSCITR113

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
			L	T	P		ESE	IA	Total	
									Max	Min
Third	ITT301	Theory of Computation and Compiler Design	3	1	-	4	80	20	100	36
	ITT302	Python Programming	3	1	-	4	80	20	100	36
	ITT303	Advanced Web Technologies	3	1	-	4	80	20	100	36
	ITT304	Elective-II: Soft Computing								
	ITT305	Elective-II: Current Trends and Techniques	3	1	-	4	80	20	100	36
	ITT306	Elective-II: Internet of Things								
	IIT301	Lab 5: Python Programming	-	-	2	2	-	-	100	36
	IIT302	Lab 6: Web Technologies	-	-	2	2	-	-	100	36
		Subtotal	12	4	4	20	-	-	600	
Fourth	ITT401	Artificial Intelligence and Machine Learning	3	1	-	4	80	20	100	36
	ITT402	Data Mining and Data Warehousing	3	1	-	4	80	20	100	36
	ITT403	Elective- III: Dot Net Technology								
	ITT404	Elective- III: Mobile Application Development	3	1	-	4	80	20	100	36
	ITT405	Elective- III: Cloud Computing								
	IIT401	Major Project	-	-	8	8			300	108
		Subtotal	9	3	8	20	-	-	600	
		Total	45	15	20	80	-	-	2400	

Note: Students have to opt one paper from the pool of Elective-I of 2nd Semester, one paper from the pool of Elective-II of 3rd Semester and one paper from the pool of Elective-III of 4th Semester.

Abbreviations used:

ESE: End Semester Exam

IA: Internal Assessment



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

2

Part A: Introduction			
Program: M.Sc. (IT)	Semester: Third	Year: II	w.e.f.:2024-2025
1. Course Code	ITT301		
2. Course Title	Theory of Computation and Compiler Design		
3. Course Type	Theory		
4. Pre-requisite (if any)	No		
5. Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">• Define machine models formally.• Understand finite automata.• Develop understanding of regular languages.• Describe Turing machines.• Synthesizes finite automata with specific properties.• Applies transformation between multiple representations of finite automata.• Construct PDA and Turing machines for the given set of languages• Build the lexical and Syntax analyzer phases of compiler		
6. Credit Value	Theory: 4		
7. Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36	

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction and overview: Fundamentals: Formal Languages, Strings, Alphabets, Languages, Chomsky Hierarchy of Languages. Finite Automata: Introduction to Finite State machine, Acceptance of strings and languages, Deterministic finite automaton (DFA) and Non-deterministic finite automaton (NFA), Equivalence of NFA and DFA – Equivalence of NDFAs with and without ϵ -moves, Minimization of finite automata, Equivalence between two DFA's, Finite automata with output – Moore and Mealy machines, conversion of Moore to Mealy and Mealy to Moore	12
II.	Regular Languages: Regular expressions, Identity rules, Conversion of a given regular expression into a finite automaton, Conversion of finite automata into a regular expression, Pumping lemma for regular sets, Closure properties of regular sets (proofs not required). Context Free Grammars: Context free grammars and languages, Derivation trees, Leftmost and rightmost derivation of strings and Sentential forms, Ambiguity, left recursion and left factoring in context free grammars, Minimization of context free grammars, Normal forms for context free Grammars, Chomsky normal form, Greibach normal form, Pumping Lemma for Context free Languages, Closure and decision properties of context free languages.	12
III.	Pushdown Automata: Introduction to Pushdown automata, Acceptance of context free languages, Acceptance by final state and acceptance by empty state and its equivalence, Equivalence of context free grammars and pushdown automata, Inter-conversion (Proofs not required). Turing Machine: Introduction to Turing Machine, Design of Turing machines, Types of Turing Machines.	12
IV.	Introduction To Compiling: Overview of Compilers, Phases of a Compiler. Lexical Analysis: The Role of Lexical Analyzer, Input Buffering, Specification of Tokens, Recognition of Tokens, A language for specifying Lexical Analyzers(LEX). Syntax Analysis: The role of the Parser, First and Follow, Predictive	12



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

3

	Parsing, LR Parsers-SLR, Canonical LR, LALR, Parser Generator(YACC).	
V.	Syntax-Directed Translation: Syntax-Directed Definition, S-Attributed SDD, L-Attributed SDD, Translation Schemes. Intermediate Code Generation: Intermediate Languages- Graphical Representations, Three address code, Implementations.	12

Part C - Learning Resource

Text Books, Reference Books, E-Resources

Text Books:

1. Introduction to Automata Theory, Language and Computation J.E.Hopcroft, R.Motwani J.D.Ullman, Pearson Education.
2. Theory of Computer Science (Automata, Languages and Computation)", K.L.P. Mishra, N. Chandrasekaran, PHI.
3. Alfred Aho, Monica S Lam, Ravi Sethi, Jeffrey D. Ullman, Compilers- Principles
4. Techniques and Tool, 2nd Edition, Pearson Education India, 2013


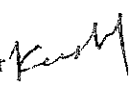



Reference Books:

1. Introduction to languages and Theory of Computation, John Martin, McGraw Hill.
2. Principles of Compiler Design, V.Raghavan, 1st Edition, Mc Graw Hill Education ,2017.
3. Elements of the Theory of Computation, H.R.Lewis & C.H. Papadimitriou, P.H.I.
4. Introduction to Computer Theory, D.A.Cohen (J.Wiley).

E-Resources:

1. <https://www.udacity.com/course/compilers-theory-and-practice--ud168>
2. https://swayam.gov.in/nd1_noc19_cs79/preview
3. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=fBYckQKJvP3a/8Vd3L08tQ==>

Members of BoS

1. **Dr. H.S. Hota**
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
-Chairman 
2. **Dr. Amit Kumar Saxena**
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
- Member
3. **Mr. Anil Rathore**
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.)
- Member present online
4. **Dr. Tarun Dhar Diwan**
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
- Member
5. **Mr. Kaushal Banjare**
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.)
-Member 
6. **Dr. Rashmi Gupta**
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
-Member 
7. **Mr. Vivek Tiwari**
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
- Member 
8. **Mrs. Gargee Shukla**
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.)
-Member 
9. **Dr. Manu Sood**
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh)
- Member
(Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

4

Part A: Introduction			
Program: M.Sc. (IT)	Semester: Third	Year: II	w.e.f.: 2024-2025
1. Course Code	ITT302		
2. Course Title	PYTHON PROGRAMMING		
3. Course Type	Theory		
4. Pre-requisite (if any)	-		
5. Course Learning Outcomes (CLO)	At the end of this course, Students will be able to: <ul style="list-style-type: none">• Define the structure and components of a Python program.• Demonstrate proficiency in handling of loops and creation of functions. Identify the methods to create and manipulate lists, tuples and dictionaries.• Discover the commonly used operations involving regular expressions and file systems.• Determine the need for scraping websites and working with CSV, JSON and other file formats.• Interpret the concepts of Object-Oriented Programming as used in Python.		
6. Credit Value	Theory: 4		
7. Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks: 36	

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction to Python: Installing Python, basic syntax, interactive shell, editing, saving, and running a script. The concept of data types; variables, assignments; immutable variables; numerical types. operators (Arithmetic operator, Relational Operator, Logical or Boolean operator, Assignment. Operator, Ternary operator, Bit wise operator, Increment or Decrement operator) and expressions; comments in the program; understanding error messages.	12
II.	Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.) Function: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables.	12
III.	Strings and Text Files: Manipulating files and directories, os and sys modules; text files: reading/writing text and numbers from/to a file; creating and reading a formatted file (csv or tab-separated). String Manipulations: subscript operator, indexing, slicing a string; strings and number system: converting strings to numbers and vice versa. Binary, octal, hexadecimal numbers.	12
IV.	Lists, Tuples and Dictionaries: Basic list operators, replacing, inserting, removing an element: searching and sorting lists; Accessing tuples, Operations, Working, Functions and Methods, dictionary literals, adding and removing keys, accessing and replacing values; traversing dictionaries.	12
V.	Modules: Importing module, Math module, Random module, Packages, Composition Exception Handling: Exception, Exception Handling, Except clause, Try, Finally clause, User Defined Exceptions.	12



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

5

Part C - Learning Resource

Text Books, Reference Books, E-Resources

Text Books:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011.
2. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: Learning with Python, 2012.
3. Kenneth A. Lambert, Fundamentals of Python.
4. James Payne, Beginning Python using Python 2.6 and Python 3.

Reference Books:

1. Mark Lutz, Learning Python.
2. Tony Gaddis, Starting Out With Python.

E Resources:

1. <https://www.coursera.org/learn/python>
2. <https://www.udacity.com/course/introduction-to-python--ud1110>
3. <https://www.udemy.com/course/pythonforbeginnersintro/>

Members of BoS

- | | | |
|--|-------------------------------|----------------|
| 1. Dr. H.S. Hota
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Chairman | |
| 2. Dr. Amit Kumar Saxena
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) | - Member | |
| 3. Mr. Anil Rathore
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) | - Member | Present online |
| 4. Dr. Tarun Dhar Diwan
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 5. Mr. Kaushal Banjare
Asst. Prof., Dept. of Computer Application
Govt. J.P. Verma PG Arts and Commerce College, Bilaspur (C.G.) | -Member | |
| 6. Dr. Rashmi Gupta
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Member | |
| 7. Mr. Vivek Tiwari
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 8. Mrs. Gargee Shukla
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) | -Member | |
| 9. Dr. Manu Sood
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh) | - Member
(Approved Online) | |



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part A: Introduction			
Program: M.Sc. (IT)	Semester: Third	Year: II	w.e.f.:2024-2025
1. Course Code	ITT303		
2. Course Title	ADVANCED WEB TECHNOLOGIES		
3. Course Type	Theory		
4. Pre-requisite (if any)	NA		
5. Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">Analyze a web page and identify its elements and attributes.Create web pages using HTML, CSS, JAVASCRIPT, XHTMLBuild dynamic web pages using JavaScript (Client side programming).Create XML documents and Schemas.Build interactive web applications using, PHP, AJAX.Learn Web Hosting and Deployment.		
6. Credit Value	Theory :4		
7. Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36	
Part B: Content of the Course			
Unit	Topics		Total Hours
I.	Introduction :Introduction to web, Introduction to Internet, WWW, Web Browsers, Web Servers, URL, Multipurpose Internet Mail Extensions, protocols governing the web, web development strategies, Web Design Principles and Web site structure ,Web applications, Introduction to Web Publishing: Introduction, Domain name and hierarchy, Domain Name Registration .		12
II.	HTML : Introduction, Basic formatting tags: heading, paragraph, line break, bold, italic, underline, superscript, subscript, font and image. Different attributes like align, color, bgcolor, font face, border, size. Navigation Links using anchor tag: internal, external, mail and image links, Link to different web pages and sections. Lists: ordered, unordered and definition, Table tag, HTML Form controls: form, text, password, text area, button, checkbox, radio button, select box, hidden controls, Frameset and frames. Basics of DHTML ; XML.		12
III.	Scripting Languages : Usefulness of Style Sheets, Creating Style sheets, Classes and Pseudo Classes, CSS Tags, Background, Font, Text, Position etc. JavaScript: Overview, Syntax & Conventions, Variables, Expression, Branching & Looping, Function, Array, Objects, Events & Document Object model, Alerts, prompts and conforms. XML : Declaration, Root Element, Child Elements, Element Attributes, Entity References, Comments. Ajax : XMLHttpRequest Object, Sending Ajax requests, Handling Ajax Responses.		12
IV.	PHP : Introduction to PHP, Server side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue PHP functions. Passing information between pages, HTTP GET and POST method, String functions: strlen, strpos, strstr, strpos, substr, str_replace, string case, Array constructs: array(), list() and foreach(), PHP advanced functions: Header , Session, Cookie, Object Oriented Programming using PHP: class, object, constructor, destructor and inheritance.		12



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

7

V.	Web Hosting and Deployment: Introduction to Webhosting, WordPress: Introduction to CMS And WordPress Why CMS Advantages and Disadvantages of CMS, WordPress Installation, User Administration, WordPress Themes, Working with Widgets Working with Menu for Website. Web Deployment, XAMPP ,Configuring DHCP,IIS and DNS Server.	12
----	--	----

Part C - Learning Resource

Text Books, Reference Books, E-Resources

Text Books:

1. Xavier, C, Web Technology and Design, New Age International.
2. Ivan Bayross, HTML, DHTML, Java Script, Perl & CGI, BPB Publication.
3. Ramesh Bangia, Internet and Web Design, New Age International.
4. Ullman, PHP for the Web: Visual Quick Start Guide, Pearson Education.
5. Jim Converse & Joyce Park, PHP & MySQL Bible, Wiley India Publication
6. Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.


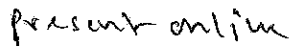

Reference Books:

1. Internet and Internet Engineering, Daniel Minoli, TMH.
2. Chuckmusiano & Bill Kenndy, O Reilly, HTML The Definite Guide
3. Joseph Schmuller, Dynamic HTML, BPB, 2000.
4. Deitel, Deitel, Goldberg, Internet & World Wide Web How to Program, Third Edition, Pearson Education, 2006.

E-Resources:

1. https://onlinecourses.swayam2.ac.in/aic20_sp11/preview
2. https://www.coursera.org/learn/introduction-to-web-development-with-html-css-javascript?action=enroll&adgroupid=154709125594&adposition=&campaignid=20395923513&creativeid=667061327480&device=c&devicemodel=&gclid=Cj0KCQjw2qKMBhCfARIsAFv8buKxiYam7tWtPzSO46fXKZcqBmupu3gKrwgxmSmbwdtKTLNiZCkYtqgaAm7JEALw_wcB&hide_mobile_promo&keyword=&matchtype=&network=g&specialization=ibm-full-stack-cloud-developer&utm_campaign=B2C_INDIA_ibm-full-stack-cloud-developer_ibm_FTCOF_professional-certificates_arte-agency&utm_medium=sem&utm_source=
3. https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000007CS/P001071/M017403/ET/1473335362etext-Module6.pdf

Members of BoS

1. **Dr. H.S. Hota**
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) -Chairman 
2. **Dr. Amit Kumar Saxena**
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) - Member
3. **Mr. Anil Rathore**
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) - Member present online 
4. **Dr. Tarun Dhar Diwan**
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) - Member
5. **Mr. Kaushal Banjare**
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.) -Member 






अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

8

6. **Dr. Rashmi Gupta**
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) -Member 
7. **Mr. Vivek Tiwari**
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) - Member 
8. **Mrs. Gargee Shukla**
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) -Member 
9. **Dr. Manu Sood**
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh) - Member
(Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

9

Part A: Introduction			
Program: M.Sc. (IT)		Semester: III	Year: II
w.e.f.:2024-2025			
1.	Course Code	ITT304	
2.	Course Title	Elective-II: SOFT COMPUTING	
3.	Course Type	Theory	
4.	Pre-requisite (if any)	Proficiency with algorithms and programming skills in python, MATLAB etc.	
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">Analyze and appreciate the applications which can use fuzzy logic.Understand the difference between learning and programming and explore practical applications of Neural Networks (NN).Students would understand the efficiency of a hybrid system and how Neural Network and fuzzy logic can be hybridized to form a Neuro-fuzzy network and its various applicationsAbility to appreciate the importance of optimizations and its use in computer engineering fields and other domains.To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience.	
6.	Credit Value	4	
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction: What is soft computing? Difference between Soft and Hard Computing, various types of soft computing techniques, Fuzzy Computing, Neural Computing, Genetic Algorithms, Associative Memory, Adaptive Resonance Theory, Classification, Clustering, Bayesian Networks, Probabilistic reasoning, Different tools of soft computing and its comparison, Area of application.	12
II.	Artificial Neural Network (ANN): Architecture, Introduction, Evolution of Neural Network, Biological Neural Network vs ANN, Basic Model of ANN, Different types of ANN, Single layer Perceptron, Solving XOR problem, Activation function, Linear separability, Supervised and unsupervised learning, perceptron learning, delta learning, Feed-forward and Feedback networks, Error Back Propagation Network (EBPN), Associative memories and its types, Hopfield Network, Kohenenself-organizing Map.	12
III.	Fuzzy Logic: Introduction to Classical Sets and Fuzzy Sets, Membership Function, properties and operations of classical set and Fuzzy set, α -cuts, Properties of α -cuts, Linguistic Variables, Membership function, Classical relation and Fuzzy Relation and its properties and operations, Defuzzification and its methods, Fuzzy rule base.	12
IV.	Genetic Algorithm: What is Optimization?, Introduction, Application, GA operators: selection, crossover and mutation ,different techniques of selection, crossover and mutation, different types of chromosomes, Application of GA.	12
V.	Hybrid Soft Computing: Design of Neuro-Fuzzy model like ANFIS, Neuro-Genetic, Fuzzy-Genetic Neuro-Fuzzy-Genetic model, MATLAB environment for soft computing.	12

Part C - Learning Resource	
Text Books, Reference Books, E-Resources	

[Handwritten signature]



10

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Text Books:

1. Principles of soft computing, S.N. Shivanandan and S.N Deepa , Wiley publication, Wilev India Edition.
2. Neural network and Learning Machines, Simon Haykin, Pearson Education, 2011.

Reference Books:

1. Artificial Neural Networks, Robert J. Scholkoff, McGraw Hill Education(India) Pvt. Limited,1997.
2. Neural Networks and Fuzzy Systems, A dynamical Systems Approach to Machine Learning, Bart Kosko, PHI learning private limited.
3. Neural Networks, Fuzzy Logic and Genetic Algorithm: Synthesis and Applications, S. Rakasekaran, G.A. VijayalakshmiPai, PHI learning private limited, 14th Edition. 2003.
4. Neural Networks and Fuzzy Logic, K. Vinoth Kumar, R. Saravana Kumar, S. K. Kataraiya and Sons publication.
5. Artificial Neural Networks, B.Yegnanarayana Prentice Halll of India (P) Limited.
6. Introduction to Artificial Neural Systems, Jacek M. Zurada, Jaico Publication House.
7. Fuzzy Sets, Uncertainty and Information, G. J. Klir and T.A. Folger, PHI learning private limited. Publisher- Pearson 3Edition 1999.

E-Resources:

1. https://onlinecourses.nptel.ac.in/noc20_cs17/preview
2. <http://vlabs.iitkgp.ernet.in/scte/index.html>
3. <http://vlabs.iitkgp.ac.in/vlt/project.html#>

Members of BoS

- | | | |
|--|-------------------------------|----------------|
| 1. Dr. H.S. Hota
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Chairman | |
| 2. Dr. Amit Kumar Saxena
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) | - Member | |
| 3. Mr. Anil Rathore
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) | - Member | Present online |
| 4. Dr. Tarun Dhar Diwan
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 5. Mr. Kaushal Banjare
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.) | -Member | |
| 6. Dr. Rashmi Gupta
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Member | |
| 7. Mr. Vivek Tiwari
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 8. Mrs. Gargee Shukla
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) | -Member | |
| 9. Dr. Manu Sood
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh) | - Member
(Approved Online) | |



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part A: Introduction			
Program: M.Sc. (IT)	Semester: Third	Year: II	w.e.f.:2024-2025
1. Course Code	ITT305		
2. Course Title	Elective-II: CURRENT TRENDS AND TECHNIQUES		
3. Course Type	Theory		
4. Pre-requisite (if any)	NA		
5. Course Learning, Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">• Learn how the Internet Of Things Works• Describe how Natural Language Processing can be done.• Understand the Concepts of Cloud Computing• Describe Fog computing, and Ambient Intelligence.• Develop clear understanding of Deep computing		
6. Credit Value	Theory: 4		
7. Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36	

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, Overview of IoT components and IoT Communication Technologies, Challenges in IOT.	12
II.	Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.	12
III.	Introduction to NLP: Definition of NLP, Difficulty in NLP, History of NLP, Pros and Cons of NLP, Components of NLP, Applications of NLP, NLP pipeline, Phases of NLP, NLP APIs, NLP Libraries.	12
IV.	BIG Data: Data Storage and Analysis - Characteristics of Big Data – Big Data Analytics - Typical Analytical, Advantages Of Big Data Processing, Challenges Of Traditional Databases, Big Data Benefits Over Traditional Database, Challenges And Risks In BigData, Big Data Technologies, Tools To Use Big Data Concepts, Applications of Big Data, BigData And Data Warehouse- OLTP And OLAP, Architecture' – Requirement for new analytical architecture – Challenges in Big Data Analytics –Need of big data frameworks.	12
V.	Cloud Computing: Cloud Computing services models and features in Saas, Paas and Iaas; Service oriented architecture and web services; Features of cloud computing architectures and simple case studies, Virtualization- Characteristic features, Taxonomy Hypervisor, Virtualization and Cloud Computing, Pros and Cons of Cloud Computing, Technology Examples/Case Studies, Fog and Deep computing, Ambient Intelligence.	12

Part C - Learning Resource	
Text Books, Reference Books, E-Resources	
Text Books:	
1. Distributed and Cloud Computing, Kaittwang Geoffrey C.Fox and Jack J Dongrra, Elsevier India 2012.	
2. Mastering Cloud Computing- Raj Kumar Buyya, Christian Vecchiola and S Tanuraiselvi, TMH, 2012.	
3. Beowulf Cluster Computing with Linux, William Gropp, Ewing Lusk, Thomas Sterling, MIT Press, 2003	
4. Big Data, Black Book: by DT Editorial Services .	



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

(12)

5. Internet of Things (IoT) by Dr Kamlesh Lakhwani Dr Hemant Kumar Gianey, Joseph Kofi Wireko Kamal Kant Hiran
6. An introduction to natural language processing, computational linguistics, and speech recognition. Daniel Jurafsky & James H. Martin.


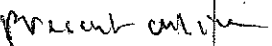




Reference Books:

1. Cloud Computing, John W. Ritting House and James F Ramsome, CRC Press, 2012.
2. Enterprise Cloud Computing, GautamShroff, Cambridge University Press, 2012.
3. Christopher D. Manning and Hinrich Schütze. 1999. Foundations of Statistical Natural Language Processing. Cambridge, MA: MIT Press.
4. Designing the Internet of Things Adrian McEwen, Hakim Cassimally, Wiley Publishers
5. Big Data: Concepts, Technology and Architecture Balamarugan Balusamy, Nandhini Abirami R, Seifedine Kadry and Amir Gandomi, Wiley Publishers

E-Resources:

1. https://onlinecourses.nptel.ac.in/noc23_cs112/preview
2. <https://archive.nptel.ac.in/courses/106/105/106105166/>
3. https://onlinecourses.swayam2.ac.in/arp19_ap52/preview
4. https://onlinecourses.nptel.ac.in/noc19_cs65/preview
4. <https://www.udemy.com/course/internet-of-things-iot-fundamentals/>
5. <https://www.coursera.org/learn/iot?specialization=iot>
6. <https://www.udemy.com/course/learn-big-data-basics/>
7. <https://www.coursera.org/learn/big-data-introduction>
8. <https://www.coursera.org/learn/big-data-introduction?specialization=big-data>
9. https://onlinecourses.nptel.ac.in/noc21_cs14/preview
10. https://onlinecourses.nptel.ac.in/noc19_cs56/preview

Members of BoS

1. **Dr. H.S. Hota** -Chairman 
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
2. **Dr. Amit Kumar Saxena** - Member
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
3. **Mr. Anil Rathore** - Member 
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.)
4. **Dr. Tarun Dhar Diwan** - Member
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
5. **Mr. Kaushal Banjare** -Member 
Asst. Prof., Dept. of Computer Application
Govt. J.P. Verma PG Arts and Commerce College, Bilaspur (C.G.)
6. **Dr. Rashmi Gupta** -Member 
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
7. **Mr. Vivek Tiwari** - Member 
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
8. **Mrs. Gargee Shukla** -Member 
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.)
9. **Dr. Manu Sood** - Member
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh)
(Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

13

Part A: Introduction			
Program: M.Sc. (IT)		Semester: III	Year: II
w.e.f.:2024-2025			
1.	Course Code	ITT306	
2.	Course Title	ELECTIVE-II: INTERNET OF THINGS	
3.	Course Type	Theory	
4.	Pre-requisite (if any)	NA	
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">• Understand IoT value chain structure (device, data cloud), application areas and technologies involved.• Understand working of IoT sensors.• Understand IoT sensors and technological challenges faced by IoT devices, with a focus on wireless, energy, power, and sensing modules• Market forecast for IoT devices with a focus on sensors.• Explore and learn about Internet of Things with the help of preparing projects designed for Raspberry Pi.	
6.	Credit Value	Theory: 4	
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks : 36

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction to Internet of Things- Definition and Characteristics of IoT, Sensors, Actuators, Physical Design of IoT – IoT Protocols, IoT communication models, IoT Communication APIs, IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Embedded Systems, IoT Levels and Templates, Domain Specific IoTs – Home, City, Environment, Energy, Agriculture and Industry.	12
II.	IoT Physical Devices - Introduction to Arduino and Raspberry Pi- Installation, Interfaces (serial, SPI, I2C).	12
III.	Controlling Hardware- Connecting LED, Buzzer, Switching High Power devices with transistors, Controlling AC Power devices with Relays, Controlling servo motor, speed control of DC Motor, unipolar and bipolar Stepper motors.	12
IV.	Sensors- Light sensor, temperature sensor with thermistor, voltage sensor, ADC and DAC, Temperature and Humidity Sensor DHT11, Motion Detection Sensors, Wireless Bluetooth Sensors, Level Sensors, USB Sensors, Embedded Sensors, Distance Measurement with ultrasound sensor.	12
V.	Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.	12

Part C - Learning Resource	
Text Books, Reference Books, E-Resources	
Text Book:	
1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547	
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759	



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

14

3. Raspberry Pi Cookbook, Software and Hardware Problems and solutions, Simon Monk, O'Reilly (SPD), 2016, ISBN 7989352133895


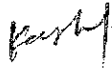
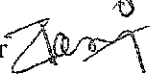
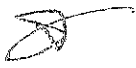


Reference Books:

1. Peter Waher, 'Learning Internet of Things', Packt Publishing, 2015 3. Editors Ovidiu Vermesan
2. Peter Friess, 'Internet of Things – From Research and Innovation to Market Deployment', River Publishers, 2014
3. N. Ida, Sensors, Actuators and Their Interfaces, SciTech Publishers, 2014.

E Resources:

1. Swayam/NPTEL: https://www.youtube.com/channel/UC6ZY_csXZc7YZZm2W8HcQ6A
2. Javatpoint: <https://www.javatpoint.com/iot-internet-of-things>
3. Tutorialspoint: https://www.tutorialspoint.com/internet_of_things/index.htm
4. Topics Related to IOT from data-flair: <https://data-flair.training/blogs/iot-tutorial/>
5. Topics Related to IOT from edureka: <https://www.edureka.co/blog/iot-tutorial/>

Members of BoS

1. **Dr. H.S. Hota** -Chairman 
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
 2. **Dr. Amit Kumar Saxena** - Member
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
 3. **Mr. Anil Rathore** - Member *Present online*
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.)
 4. **Dr. Tarun Dhar Diwan** - Member
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
 5. **Mr. Kaushal Banjare** -Member 
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.)
 6. **Dr. Rashmi Gupta** -Member 
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
 7. **Mr. Yivek Tiwari** - Member 
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
 8. **Mrs. Gargee Shukla** -Member 
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.)
 9. **Dr. Manu Sood** - Member
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh)
(Approved Online)
- 



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part A: Introduction			
Program: M.Sc. (IT)		Semester: III	Year: II
		w.e.f.:2024-2025	
1.	Course Code	ITP301	
2.	Course Title	LAB-5: PYTHON PROGRAMMING	
3.	Course Type	Practical	
4.	Pre-requisite (if any)	Theoretical knowledge of Python	
5.	Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to:</p> <ul style="list-style-type: none"> • Learn the Numbers, Math functions, Strings, List in Python. • Learn the tuples and dictionaries in Python. • Demonstrate proficiency in handling of loops and creation of functions. • Identify the methods to create and manipulate lists, tuples and dictionaries. • Express different Decision Making statements and Functions. 	
6.	Credit Value	2	
7.	Total Marks	External Marks: 100	Min Passing Marks:36

Part B: Content of the Course

Total Hours: 60

Tentative Practical List	Note: This is tentative list; the teachers concern can add more program as per requirement.
	<ol style="list-style-type: none"> 1. Python program to find the union of two lists. 2. Python program to find the intersection of two lists. 3. Using for loop, print a table of Celsius/Fahrenheit equivalences. Let c be the Celsius temperatures ranging from 0 to 100, for each value of c, print the corresponding Fahrenheit temperature. 4. Using while loop, produce a table of sines, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x). 5. Write a program that reads an integer value and prints —leap year or —not a leap year . 6. Write a program that takes a positive integer n and then produces n lines of output shown as follows. For example, enter a size: 5 * ** *** **** ***** 7. Write a function that takes an integer n as input and calculates the value of $1 + 1/1! + 1/2! + 1/3! + \dots + 1/n$ 8. Write a function that takes an integer input and calculates the factorial of that number. 9. Write a function that takes a string input and checks if it's a palindrome or not. 10. Write a list function to convert a string into a list, as in list ('abc') gives [a, b, c]. 11. Write a program to generate Fibonacci series. 12. Write a program to check whether the input number is even or odd. 13. Write a program to compare three numbers and print the largest one. 14. Write a program to print factors of a given number. 15. Write a method to calculate GCD of two numbers. 16. Write a program to create Stack Class and implement all its methods. (Use Lists). 17. Write a program to create Queue Class and implement all its methods. (Use Lists)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

18. Write a program to implement linear and binary search on lists.
19. Write a program to sort a list using insertion sort and bubble sort.
20. Write a python program to remove the 'I' th occurrence of the given word in a list where words repeat.
21. Python program to count the occurrences of each word in a given string sentence.
22. Python program to check if a substring is present in a given string.
23. Python program to map two lists into a dictionary.
24. Python program to count the frequency of words appearing in a string using a dictionary.
25. Python program to create a dictionary with key as first character and value as words starting with that character.
26. Python program to find the length of a list using recursion.
27. Python program to read a file and capitalize the first letter of every word in the file.
28. Python program to read the contents of a file in reverse order.
29. Python program to create a class in which one method accepts a string from the user and another prints it.
30. Study and Implementation of Database, Structured Query Language and database connectivity.

Part C - Learning Resource

Text Books, Reference Books, E-Resources

E-RESOURCES:

Text Books:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011.
2. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: Learning with Python, 2012.
3. Kenneth A. Lambert, Fundamentals of Python.
4. James Payne, Beginning Python using Python 2.6 and Python 3.

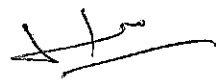

Reference Books:

1. Mark Lutz, Learning Python.
2. Tony Gaddis, Starting Out With Python.

E Resources:

1. <https://www.coursera.org/learn/python>
2. <https://www.udacity.com/course/introduction-to-python--ud1110>
3. <https://www.udemy.com/course/pythonforbeginnersintro/>

Members of BoS





1. **Dr. H.S. Hota**
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) -Chairman 
2. **Dr. Amit Kumar Saxena**
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) - Member
3. **Mr. Anil Rathore**
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) - Member Present on file 



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

4. Dr. Tarun Dhar Diwan Asst. Prof., Dept. of IT Govt. E.R.R. PG Science College, Bilaspur (C.G.)	- Member
5. Mr. Kaushal Banjare Asst. Prof., Dept. of Computer Application Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.)	-Member 
6. Dr. Rashmi Gupta Asst. Prof., Department of Computer Science and Application Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)	-Member 
7. Mr. Vivek Tiwari Asst. Prof., Dept. of Computer Application Govt. E.R.R. PG Science College, Bilaspur (C.G.)	- Member 
8. Mrs. Gargee Shukla Asst. Prof., Dept. of Computer Science Govt. Bilasa Girls PG College, Bilaspur (C.G.)	-Member 
9. Dr. Manu Sood Prof., Dept. of Computer Science Himachal Pradesh University, Shimla (Himachal Pradesh)	- Member (Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part A: Introduction			
Program: M.Sc. (IT)	Semester: III	Year: II	w.e.f.:2024-2025
1. Course Code	ITP302		
2. Course Title	LAB 6: WEB TECHNOLOGIES		
3. Course Type	Practical		
4. Pre-requisite (if any)	Theoretical knowledge of Web Technology		
5. Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to:</p> <ul style="list-style-type: none"> Analyse a web page and identify its elements and attributes. Create web pages using HTML, CSS, JAVASCRIPT, XHTML Build dynamic web pages using JavaScript (Client side programming). Create XML documents and Schemas. Build interactive web applications using, PHP, AJAX. Learn to work with CMS. 		
6. Credit Value	2		
7. Total Marks	External Marks: 100	Min Passing Marks:36	

Part B: Content of the Course																	
Total Hours: 60																	
Tentative Practical List	<p>Note: This is tentative list; the teachers concern can add more program as per requirement.</p> <p style="text-align: center;">HTML</p> <ol style="list-style-type: none"> Write an HTML program to create the following table: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Class</th> <th>Subject 1</th> <th>Subject 2</th> <th>Subject 3</th> </tr> </thead> <tbody> <tr> <td>BCA-I</td> <td>Visual Basic</td> <td>PC Software</td> <td>Electronics</td> </tr> <tr> <td>BCA-II</td> <td>C++</td> <td>DBMS</td> <td>English</td> </tr> <tr> <td>BCA-III</td> <td>Java</td> <td>Multimedia</td> <td>CSA</td> </tr> </tbody> </table> Write an HTML program to create the following lists: <ul style="list-style-type: none"> • C • C++ • Fortran • COBOL Write an HTML program to create the following lists: <ol style="list-style-type: none"> 1. Java 2. Visual Basic 3. Basic 4. COBOL Write an HTML program to demonstrate hyper linking between two web pages. Create a marquee & also insert an image. Write an HTML program to create frame in HTML with 3 columns (width= 30%, 30%, 40%). Write an HTML program to create a webpage with a blue background and print the following text with white background. Write an HTML program to create the following table: 	Class	Subject 1	Subject 2	Subject 3	BCA-I	Visual Basic	PC Software	Electronics	BCA-II	C++	DBMS	English	BCA-III	Java	Multimedia	CSA
Class	Subject 1	Subject 2	Subject 3														
BCA-I	Visual Basic	PC Software	Electronics														
BCA-II	C++	DBMS	English														
BCA-III	Java	Multimedia	CSA														



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

19

Course	OC	BC	MB	SC/ST	Total
Computer Science	9	18	5	5	37
Commerce	14	25	6	5	50
Grand Total					87

9. Write an HTML program to create the following table:

Maruti		Tata		Ford	
Model	Price	Model	Price	Model	Price
Maruti 800	2 Lac	Sumo	2 Lac	Icon	5 Lac
Omni	3 Lac	Scorpio	3 Lac	Gen	2 Lac

10. Write an HTML program to create the following table:

University		
Name	Roll No.	Class
Rahul	40	BCA-I
Preeti	85	BCA-I
Priya	74	BCA-I
Richa	95	BCA-I

11. Write an HTML program to create the following table:

Students Record		
Name	Subject	Marks
Arun	Java	70
	C	80
Ashish	Java	75
	C	69

12. Write an HTML program to create the following table and also insert an image in the webpage.

Subject	Max	Min	Obtain
Java	100	33	75
Multimedia	100	33	70
Operating System	100	33	68
C++	100	33	73

13. Write an HTML program to create the following table:

Name		Rahul	
Roll No.		101	
Subject	Max	Min	Obtain
Java	100	33	75
Multimedia	100	33	70

14. Write an HTML program to create a form as the following:

Enter Name:

Enter Roll No. :

Enter Age:

Enter DOB:

15. Write an HTML program to create the following webpage with background and the following text:

16. Write an HTML program to create the following form:



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

User Name :

Password :

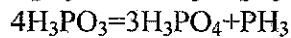
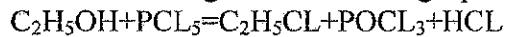
When user types characters in a password field, the browser displays asterisks or bullets instead of character.

17. Write a HTML Program to create Student Registration Form

18. Write a HTML Program to create Contact Form

19. Write a HTML Program to insert Audio & Video in HTML

20. Write the HTML coding for the following equations:



21. Write the HTML code to display the following:

- Actors

- Bruce Wills
- Gerand Butler
- Vin Diesel
- Bradd Pitt
- Paul Walker
- Jason Statham

- Actress

- Julia Roberts
- Angelina Jolie
- Kate Wins let
- Cameron Diaz

22. Write the HTML code to display the following:

1. Cricket Players

- A. Batsman

- i. Sachin Tendulkar
- ii. Rahul Dravid
- iii. VirendraSehwag

- B. Bowlers

- i. Kumble
- ii. Zaheer Khan
- iii. Balaji

- C. Spinner

- i. Harbhajan
- ii. RavindraJadeja
- iii. Kartik

JavaScript

1. Create a script using for loop to prime number between 1 and 50.
2. Write a script to get the largest value in an array.
3. Write a function to calculate the factorial of a number (a non-negative integer).
4. Write a script to demonstrate data validation.
5. Write a program to print date using JavaScript.
6. Write a program to Sum and Multiply two numbers using Javascript.

DHTML



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

1. Create a web page which shows the changes of header dynamically.
2. Create a webpage which explains the use of relative positioning.
3. Display an alert box to alert the x and y coordinates of the cursor.

PHP

1. Create a script using for loop to all integers between 0 and 30 and display the total.
2. Create a script to construct the following pattern, using nested for loop exercises.
3. Write a PHP script to get the largest key in an array.
4. Write a function to calculate the factorial of a number (a non-negative integer).
5. Write a PHP script to check string for palindrome.

WordPress and Server Configuration

1. Working with Widgets Working with Menu for Website using Wordpress.
2. Installing and Configuring XAMPP.
3. Configuring DHCP Server.
4. Configuring IIS Server.
5. Configuring DNS Server.

Part C - Learning Resource

Text Books, Reference Books, E-Resources

Text Book:

1. "Fundamentals of Data Structures", Horowitz and Sahani, Computer Science Press, 1978
2. Data structure Through C, G. S. Baluja, Dhanpat Rai And Co.

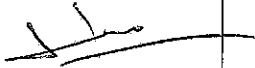
Reference Books:

1. "Data Structures and Algorithms in C++", Michael T. Goodrich, Wiley, 2007
2. "Data structures and Algorithms", Aefred V. Aho, Jhon E. Joperoft and J.E. Ullman.
3. "An Introduction to Data Structures with Applications", Jean.Paul Trembley and Paul Sorenson, TMH, International Student Edition, 1985
4. "Data Structures and Program Design in C", R. Kurse, Leung & Tondo, 2nd Edition, PHI publication

E-Resources:

1. https://onlinecourses.swayam2.ac.in/aic20_sp11/preview
2. https://www.coursera.org/learn/introduction-to-web-development-with-html-css-javascript?action=enroll&adgroupid=154709125594&adposition=&campaignid=20395923513&creativeid=667061327480&device=c&devicemodel=&gclid=Cj0KCCQiw2qKmBhCfARIsAFy8buKxIYam7tWtPzSQ46fXKZcqBmupu3gKrwgxmSmbwdtKTLNiZCkYtqgaAm7JEALw_wcB&hide_mobile_promo&keyword=&matchtype=&network=g&specialization=ibm-full-stack-cloud-developer&utm_campaign=B2C_INDIA_ibm-full-stack-cloud-developer_ibm_FTCOF_professional-certificates_arte-agency&utm_medium=sem&utm_source=
3. https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000007CS/P001071/M017403/ET/1473335362etext-Module6.pdf

Members of BoS

1. **Dr. H.S. Hota**
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
-Chairman 
2. **Dr. Amit Kumar Saxena**
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
- Member



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

- | | | |
|--|-------------------------------|-----------------------|
| 3. Mr. Anil Rathore
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) | - Member | <i>Present Online</i> |
| 4. Dr. Tarun Dhar Diwan
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 5. Mr. Kaushal Banjare
Asst. Prof., Dept. of Computer Application
Govt. J.P. Verma PG Arts and Commerce College, Bilaspur (C.G.) | -Member | <i>Kaushal</i> |
| 6. Dr. Rashmi Gupta
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Member | <i>Rashmi</i> |
| 7. Mr. Vivek Tiwari
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | <i>Vivek</i> |
| 8. Mrs. Gargee Shukla
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) | -Member | <i>A</i> |
| 9. Dr. Manu Sood
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh) | - Member
(Approved Online) | |



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part A: Introduction			
Program: M.Sc. (IT)		Semester: Forth	Year: II
		w.e.f.:2024-2025	
1.	Course Code	ITT401	
2.	Course Title	Artificial Intelligence & Machine Learning	
3.	Course Type	Theory	
4.	Pre-requisite (if any)	A sound knowledge of basic mathematics concepts, statistics, linear algebra, programming languages, and data modeling.	
5.	Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to:</p> <ul style="list-style-type: none"> Understand a wide variety of learning algorithms. Develop an understanding on how to evaluate models generated from data. Apply the algorithms to a real-world problem, optimize the models learned and report on the expected accuracy that can be achieved by applying the models. Apply ML algorithms in various domains. Simulate real world problems using ML techniques. Apply deep learning techniques for computer vision. 	
6.	Credit Value	Theory: 4	
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction: Overview of Artificial Intelligence (AI), Foundations of A.I., History of AI, Areas and state of the art in A.I., Knowledge: Introduction, Knowledge Based system, Knowledge representation techniques.	12
II.	Searching Techniques: Problem solving as state space search, production system, control strategies and problem characteristics, Search techniques: Breadth First search, Depth-first search, Hill-climbing, Heuristics search, Best-First search, greedy method, A* algorithm.	12
III.	Machine Learning: What is Machine learning, Types of machine learning, Statistical learning: background and general methods, Bayesian network, decision trees, supervised learning: linear regression, artificial neural network, Back propagation network, support vector machine, radial basis function network, unsupervised learning: types of clustering, K-means clustering, hierarchical clustering, self organization map, reinforcement learning.	12
IV.	Machine Learning Model: Measuring classification accuracy, data preprocessing, feature selection and generation, dimensionality reduction: Principal component analysis (PCA), training, testing and validation data sets, ensemble methods: Bagging and boosting.	12
V.	Application of ML and Deep Learning: Applying ML to solve real world problems in various domains like financial forecasting, classification problems, clustering, Natural language processing (NLP), health care, image classification etc. Introduction to deep learning, Convolutional Neural Network (CNN), Long Short Term Memory (LSTM), solving computer vision and other problems through deep learning techniques.	12

Part C - Learning Resource



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Text Books, Reference Books, E-Resources

Text Books:

1. Artificial Intelligence and machine learning, Vinod Chandra S.S., Anand Hareendrn S., PHI learning private Ltd.
2. Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson, PHI Publication.
3. Artificial Intelligence, Elaine Rich and Kevin Knight TMH publication.
4. Machine learning, Anuradha Srinivas araghavan, Vincy Joseph, Wiley publication, India , 2019 edition.


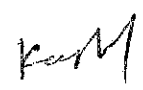

Reference Books:

1. Introduction to Machine Learning with python A guide for data scientists, Andreas, C. Muller & Sarah Guido, O'Reilly.
2. Applications of Mathematical Modeling , Machine Learning and Intelligent Computing for Industrial Development By Madhu Jain Dinesh K. Sharma, Rakhee Kulshreshta and H.S. Hota, CRC Press.
3. Understanding machine learning: From theory to algorithms, shaishalev-shwartz, shai ben-david, Cambridge University press.
4. Machine learning, Tom M. Mitchell, McGraw Hill, Indian Edition.

E-Resources:

1. https://www.youtube.com/watch?v=whSKA8aO6xQ&list=PLyqSpQzTE6M-SISTunGRBRiZk7opYBf_K&index=3
2. http://www.hpc.iitkgp.ac.in/pdfs/AI_HPC.pdf
3. <https://nthu-datalab.github.io/ml/>
4. https://www.tensorflow.org/resources/learn-ml?gclid=CjwKCAjw_ISWBhBkEiwAdqxb9hljli5hnqF0Cq2Fgy_JEWiD_uZbxtetr_BFUF_QztAELk8d2q3P_BoCodMQAvD_BwE
5. Deep Learning Resource From Coursera : <https://www.coursera.org/specializations/deep-learning>
6. <https://www.coursera.org/learn/machine-learning-introduction-for-everyone>

Members of BoS

1. **Dr. H.S. Hota**
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) -Chairman 
2. **Dr. Amit Kumar Saxena**
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) - Member
3. **Mr. Anil Rathore**
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) - Member present online
4. **Dr. Tarun Dhar Diwan**
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) - Member
5. **Mr. Kaushal Banjare**
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.) -Member 
6. **Dr. Rashmi Gupta**
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) -Member 



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

7.	Mr. Vivek Tiwari Asst. Prof., Dept. of Computer Application Govt. E.R.R. PG Science College, Bilaspur (C.G.)	- Member	
8.	Mrs. Gargee Shukla Asst. Prof., Dept. of Computer Science Govt. Bilasa Girls PG College, Bilaspur (C.G.)	-Member	
9.	Dr. Manu Sood Prof., Dept. of Computer Science Himachal Pradesh University, Shimla (Himachal Pradesh)	- Member (Approved Online)	



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

26

Part A: Introduction			
Program: M.Sc. (IT)		Semester: IV	Year: II
w.e.f.:2024-2025			
1.	Course Code	ITT402	
2.	Course Title	Data Mining & Data warehousing	
3.	Course Type	Theory	
4.	Pre-requisite (if any)	Basic knowledge of statistics, mathematics and RDBMS	
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none"> • Store voluminous data for online processing. • Preprocess the data for mining applications. • Apply the association rules for mining the data. • Design and deploy appropriate classification techniques. • Cluster the high dimensional data for better organization of the data. • Evaluate various mining techniques on complex data objects. 	
6.	Credit Value	Theory: 4	
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction: What is data mining?, Why it is important?, Mining on what kind of data, Data mining Functionalities, steps of data mining, Knowledge discovery.	12
II.	Data Warehouse: Meaning, definition, OLTP vs. OLAP, Data warehouse architecture, Three Tier Architecture Data warehouse architecture, Data cube and OLAP technology.	12
III.	Association Rule: Basic concept, Frequent item set mining: Apriori algorithm etc., Mining various kind of association rules: Mining Multilevel association rules, Mining multidimensional association rules.	12
IV.	Classification and Prediction: What is classification and prediction, Decision tree algorithms: CART, ID3 C4.5, CHAID, Bayesian classification, Rule based classification, Classification by backpropogation, Support vector machine, Association classification and other classification methods. Prediction using Regression and Neural Network methods, Accuracy measures, Ensemble methods.	12
V.	Cluster Analysis: What is cluster analysis?, Partitioning method, Hierarchical methods, Experiments with python data mining tools for model development, data preprocessing, feature selection for Financial data, health care data etc.	12

Part C - Learning Resource	
Text Books, Reference Books, E-Resources	
Text Books:	
1. Data Mining: Concepts and Techniques, Jiawei Han, Micheline Kamber, Morgan Kaufmann Publishes (Elsevier, 2nd edition), 2006.	
2. Data mining techniques, Arun K Pujari, Universities Press (India) private limited, 2007.	

[Handwritten Signature]



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Reference Books:

1. Data Mining Methods for Knowledge Discovery , Cios, Pedrycz, Swiniarski, Kluwer Academic Publishers, London – 1998. Core JAVA for beginners, Rashmi Kanta Das , Vikas Publication.
2. Data Mining, Data Warehousing and OLAP, Gajendra Sharma, S.K. Kateria and Sons, 2010.

E-Resources:

1. https://onlinecourses.swayam2.ac.in/cec19_cs01/preview
2. <https://docs.oracle.com/database/121/DWHSG/concept.htm#DWHSG-GUID-452FBA23-6976-4590-AA41-1369647AD14D>
3. https://www.edx.org/course/data-mining-and-knowledge-discovery?index=product&objectID=course-742ebc04-732e-4133-b674-41124c0df79b&webview=false&campaign=Data+Mining+and+Knowledge+Discovery&source=edX&product_category=course&placement_url=https%3A%2F%2Fwww.edx.org%2Flearn%2Fdata-mining
4. https://onlinecourses.nptel.ac.in/noc21_cs06/preview

Members of BoS

- | | | |
|--|-------------------------------|----------------|
| 1. Dr. H.S. Hota
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Chairman | |
| 2. Dr. Amit Kumar Saxena
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) | - Member | |
| 3. Mr. Anil Rathore
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) | - Member | Present online |
| 4. Dr. Tarun Dhar Diwan
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 5. Mr. Kaushal Banjare
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.) | -Member | |
| 6. Dr. Rashmi Gupta
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Member | |
| 7. Mr. Vivek Tiwari
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 8. Mrs. Gargee Shukla
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) | -Member | |
| 9. Dr. Manu Sood
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh) | - Member
(Approved Online) | |



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part A: Introduction			
Program: M.Sc. (IT)	Semester: Forth	Year: II	w.e.f.:2024-2025
1.	Course Code	ITT403	
2.	Course Title	ELECTIVE III: DOT NET TECHNOLOGY	
3.	Course Type	Theory	
4.	Pre-requisite (if any)	NA	
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">• Study and use of .NET framework and object-oriented programming.• Develop the console and GUI applications using .Net programming.• Evaluate the .NET framework namespace contents.• Understand the procedures, File I/O, Error handling and Message queues.• Understand and remember the components in VB.NET IDE, ADO.NET and also the window forms.	
6.	Credit Value	Theory: 4	
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction to .NET: Overview of .net framework, Features and architecture, Managed Execution process, CLR, Common language specification, JIT Compilation, MSIL, Namespace, Assemblies, Metadata common type, System, Visual development and event driven programming , Cross language, Interoperability, Garbage collection.	12
II.	Programming with .NET Framework: Windows form: working with Visual Studio IDE, Creating a .NET solution, MDI application, Components and controls, Data types, Variable, Type conversions, Operators, Methods and events, Scope and lifetime of variables, Creating Enumerations.	12
III.	Control Structures: Control Structures: conditional statement, Loops, Arrays, Types of methods, Method data, Creating Sub Procedures and Function, Introduction to exception handling try catch statement, finally statement, throw, user defined Exception.	12
IV.	GUI Programming: GUI Programming with window forms, Showing & hiding, Textbox, RichText box, Label, Button, Listbox, Combobox, Checkbox, PictureBox, Radio button, Toggle button, Panel, Groupbox, Scrollbar, Timer, Dialog boxes, OpenFileDialog, Save File dialog, Print dialog, Front dialog, Color dialog, Designing menus and sub menus, MsgBox and Inputbox.	12
V.	Database Programming with ADO.net – ADO .Net Architecture, .Net data provider, dataset components, creating database application using Window forms (Database connectivity through ADO.Net), Accessing data using server explorer, Data Adapters and Data sets, Command & Data reader, Data bind controls, displaying data in data grid.	12



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part C - Learning Resource

Text Books, Reference Books, E-Resources

Text Books:

1. Visual Basic .Net Complete- by BPB Publications , New Delhi
2. The Complete Reference VB.Net –by Jeffery R. Shapiro , Tata Mcgraw Hill.
3. Bill Evjen, Jason Beres, et.al, Visual Basic .Net programming, Wiley Dreamtech India (p) Ltd.

Reference Books:

4. Professional VB.Net 2003 – by Bill Evjen & others , Wiley Dreamtech India(P) Ltd. New Delhi.
5. Fergal Grimes, Microsoft .NET for programmers, Shroff Publishers & Distributors (P) Ltd.
6. Thuan Thai & Hoang Q.Lam, .NET Framework Essentials, Shroff Publishers & Distributors (P) Ltd.
7. MSDN online – by Microsoft.

E-Resources:

1. VB.Net Basic Tutorial:
https://www.tutorialspoint.com/vb.net/vb.net_loops.htm.
2. VB.NET Tutorial:
<https://www.javatpoint.com/vb-net>.
3. VB.NET Tutorial for Beginners: Learn VB.Net Programming :
https://www.guru99.com/vb-net-tutorial.html?gpp&gpp_sid.
4. Home and Learn: VB Net Programming Course Contents:
<https://www.homeandlearn.co.uk/NET/vbNet.html>.
5. Programming with VB.NET :
<https://www.mcu.ac.in/wp-content/uploads/2020/04/1PGDCA4B-Part-I-Programming-with-VB-Net.pdf>
6. Programming with visual Basic.Net (Notes in Hindi):
<https://computerhindinotes.com/programming-with-visual-basic-net-notes-in-hindi/>
7. Programming with visual Basic.Net (Video Lectures in Hindi):
<https://computerhindinotes.com/visual-basic-net-video-tutorials-in-hindi>.
8. Visual Basic .NET The Complete Reference:
https://ravithanki.files.wordpress.com/2010/10/complete-reference-vb_net.pdf
9. Learning Visual Basic.NET Language:
<https://riptutorial.com/Download/visual-basic--net-language.pdf>.
10. VB.NET Programming:
<https://mkasoft.com/downloads/VB.NET%20programming.pdf>.
11. Visual Basic.Net:
https://books-library.net/files/books-library.online_noo25328f31569407903f036b-8313.pdf
12. Visual Basic.Net Black Book:
<https://bcaofficial.wordpress.com/wp-content/uploads/2017/05/vb-net-black-book.pdf>.
13. A Programmer's Introduction to Visual Basic.Net:
<https://www.interplat.com/vbnet.pdf>.
14. Visual Basic 2017 Made Easy :
https://www.vbtutor.net/vb2017/vb2017me_preview.pdf.

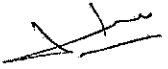






अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Members of BoS

1. **Dr. H.S. Hota** -Chairman 
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
2. **Dr. Amit Kumar Saxena** - Member
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
3. **Mr. Anil Rathore** - Member *Present online*
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.)
4. **Dr. Tarun Dhar Diwan** - Member
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
5. **Mr. Kaushal Banjare** -Member 
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.)
6. **Dr. Rashmi Gupta** -Member 
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
7. **Mr. Vivek Tiwari** - Member 
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
8. **Mrs. Gargee Shukla** -Member 
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls' PG College, Bilaspur (C.G.)
9. **Dr. Manu Sood** - Member
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh)
(Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

(31)

Part A: Introduction			
Program: M.Sc. (IT)	Semester: IV	Year: II	w.e.f.:2024-2025
1.	Course Code	ITT404	
2.	Course Title	ELECTIVE- III: MOBILE APPLICATION DEVELOPMENT	
3.	Course Type	Theory	
4.	Pre-requisite (if any)	-	
5.	Course Learning Outcomes (CLO)	At the end of this course, Students will be able to: <ul style="list-style-type: none">• Apply general programming knowledge in the field of developing mobile applications.• Understand the specific requirements, possibilities and challenges when developing for a mobile context.• Interact between user interface and underlying application.• Plan and carry out a design work including developing a prototype that can be evaluated with a specified user group.• Reflect over possibilities and demands in collaborative software development.	
6.	Credit Value	Theory: 4	
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Introduction to Mobile Applications: History of Android, Android Features, Android Versions, Fundamentals: Basic Building blocks, Activities, Services, Broadcast Receivers & Content providers; UI Components: Views & notifications.	12
II.	Android Development: Java, Android Studio, Eclipse, Virtualization APIs. Android tools: Debugging with DDMS, Android File system, Working with emulator and smart devices, A Basic Android Application, Deployment. Android Activities: The Activity Lifecycle, Lifecycle methods, Creating Activity; Intents, Intent Filters, Activity stack.	12
III.	Basic UI Design: Styles & Themes Form widgets, Text Fields, Layouts: RelativeLayout, TableLayout, FrameLayout, LinearLayout, Nested layouts (dip,dp.sip,sp versus px), styles.xml, drawable resources for shapes, gradients(selectors), Style attribute in layout file, Alert Dialogs & Toast, Time and Date, Images and media.	12
IV.	Android User Interface: Menus: Option menu, context menu, pop-up menu; Lists and Notifications: creation and display. Input Controls: Buttons, Text Fields, Checkboxes, alert dialogs, Spinners, rating bar, progress bar, Android Threads and Thread handlers. Files, Content Providers, and Databases.	12
V.	Messaging and Location-Based Services: Sending SMS Messages Programmatically, Getting Feedback after Sending the Message Sending SMS Messages Using Intent Receiving, sending email. Introduction to location-based service, configuring the Android Emulator for Location-Based Services, Geocoding and Map-Based Activities; Introduction to App Deployment and Testing: Doodlz app, Tip calculator app, Weather viewer app.	12



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

32

Part C - Learning Resource

Text Books, Reference Books, E-Resources

Text Books:

1. Bill Phillips, Chris Stewart, Brian Hardy, and Kristin Marsicano, Android Programming: The Big Nerd Ranch Guide, Big Nerd Ranch LLC, 3rd edition, 2017.
2. Rajiv Ramnath, Roger Crawfis, and Paolo Sivilotti, Android SDK 3 for Dummies, Wiley.


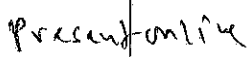
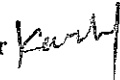



Reference Books:

1. Android Programming with Kotlin for Beginners by John Horton ; "Internet and Internet Engineering", Daniel Minoli, TMH.
2. Android 9 Development Cookbook Author Name: Rick Boyer Publisher: Packt Publishing Latest Edition: 3rd edition.

E-Resources:

1. https://www.udemy.com/course/learn-android-application-development-y/?utm_source=adwords&utm_medium=udemyads&utm_campaign=DSA_Catchall_Ia.EN_cc.INDIA&utm_content=deal4584&utm_term=.ag_82569850245_.ad_533220805577_.kw_.de.c_.dm_.pl_.ti_dsa-406594358574_.li_9179839_.pd_.&matchtype=&gclid=Cj0KCCQjwib2mBhDWARIsAPZUn_mtjIDJOdtj7qB2lyWYvjT8K3BJ8JU8H4erT4C5jBBUW7b86AOOy34aAjuQEALw_wcB
2. <https://www.coursera.org/specializations/android-app-development>

Members of BoS

1. **Dr. H.S. Hota** -Chairman 
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
2. **Dr. Amit Kumar Saxena** - Member
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
3. **Mr. Anil Rathore** - Member 
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.)
4. **Dr. Tarun Dhar Diwan** - Member
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
5. **Mr. Kaushal Banjare** -Member 
Asst. Prof., Dept. of Computer Application
Govt. J.P. Verma PG Arts and Commerce College, Bilaspur (C.G.)
6. **Dr. Rashmi Gupta** -Member 
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)
7. **Mr. Vivek Tiwari** - Member 
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.)
8. **Mrs. Gargee Shukla** -Member 
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.)
9. **Dr. Manu Sood** - Member
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh)
(Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

37

Part A: Introduction				
Program: M.Sc. (IT)		Semester: IV	Year: IV	w.e.f.:2024-2025
1.	Course Code	ITT405		
2.	Course Title	ELECTIVE- III: CLOUD COMPUTING		
3.	Course Type	Theory		
4.	Pre-requisite (if any)	-		
5.	Course Learning Outcomes (CLO)	After Completing this course, students will be able to: <ul style="list-style-type: none">• Understand the concepts, characteristics and benefits of cloud computing.• Understand the key security and compliance challenges of cloud computing.• Understand the concept of Cloud Security and governance.• Learn the Concept of Cloud Infrastructure Model.• Understand the cloud storage, Cloud Virtualization & Micro services.		
6.	Credit Value	Theory: 4		
7.	Total Marks	Internal Marks: 20 External Marks: 80	Min Passing Marks:36	

Part B: Content of the Course		
Unit	Topics	Total Hours
I.	Fundamental Cloud Computing: Concepts, Terminology, Technologies, Benefits, Challenges, SLAs and business cost metrics associated with cloud computing, SaaS, IaaS, PaaS delivery models, Common cloud deployment models and cloud characteristics, Various applications of cloud computing.	12
II.	Cloud Architecture: The technology architecture of cloud platforms and cloud-based solutions and services and their utilization via a set of cloud computing design patterns, Hybrid cloud deployment models, Compound design patterns and solution architectures that span cloud and on-premise environments.	12
III.	Cloud Security & Governance: The cloud security mechanisms, cloud security architecture, A set of security design patterns, The definition of cloud governance precepts, Roles, Practices and processes, Common governance challenges and pitfalls specific to cloud computing.	12
IV.	Cloud Storage: The cloud storage devices, Structures and technologies, cloud storage mechanisms, Persistent storage, Redundant storage, Cloud-attached storage, Cloud-remote storage, Cloud storage gateways, Cloud storage brokers, Direct Attached Storage (DAS), Network Attached Storage (NAS), Storage Area Network (SAN), Various cloud storage-related design patterns.	12
V.	Cloud Virtualization & Microservices: Core topic areas pertaining to the fundamental virtualization mechanisms and types used within contemporary cloud computing platforms are explored along with various key performance indicators and related metrics, Microservices of Cloud Computing.	12

Part C - Learning Resource	
Text Books, Reference Books, E-Resources	
Text Books Recommended: <ul style="list-style-type: none">• Distributed Computing by Dollymore Cloud Computing (Wind) by Dr. Kumar Saurabh, 2nd Edition, Wiley India.	

(Handwritten signature)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

34

Reference Books Recommended:

- Cloud Computing: Principles and Paradigms, Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wile, 2011 Cloud Computing: Principles, Systems and Applications, Editors: Nikos Antonopoulos, Lee Gillam, Springer, 2012.
- Handbook of Cloud Computing by Anand Nayyar, Publisher: BPB Publication.

E-Resources:

- Introduction to Cloud Computing from W3shool: <https://www.w3schools.in/cloud-computing/tutorials/>
- Introduction to Cloud Computing from Coursera: <https://www.coursera.org/learn/introduction-to-cloud>
- Cloud Computing Basics: <https://www.coursera.org/learn/cloud-computing-basics>
- Cloud Computing Concepts: <https://www.coursera.org/learn/cloud-computing>
- Cloud Computing Specialization from Coursera: <https://www.coursera.org/specializations/cloud-computing>
- Cloud Computing from SWAYAM/NPTEL: https://onlinecourses.nptel.ac.in/noc22_cs20/preview
<https://www.youtube.com/channel/UCK73enkjFONDwdBqMyaMtRg>
- Cloud Computing Basics: https://terroregum.com/tfox/books/cloudcomputingbasics_asefteachingintroduction.pdf
- CLOUD COMPUTING Principles and Paradigms : https://dphoto.lecturer.pens.ac.id/lecture_notes/internet_of_things/CLOUD%20COMPUTING%20Principles%20and%20Paradigms.pdf
- Cloud Computing Tutorial For Beginners: https://www.youtube.com/watch?v=flV_t2qKYyU
- Introduction to Cloud Computing: <https://www.youtube.com/watch?v=Dv0sjAYnVCY>
- Cloud Computing Tutorials: <https://www.youtube.com/watch?v=NyA9PB6j8bg>

Members of BoS

- | | | |
|---|-----------|----------------|
| 10. Dr. H.S. Hota
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Chairman | |
| 11. Dr. Amit Kumar Saxena
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) | - Member | |
| 12. Mr. Anil Rathore
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) | - Member | Present online |
| 13. Dr. Tarun Dhar Diwan
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 14. Mr. Kaushal Banjare
Asst. Prof., Dept. of Computer Application
Govt. J.P.Verma PG Arts and Commerce College, Bilaspur (C.G.) | -Member | |
| 15. Dr. Rashmi Gupta
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Member | |
| 16. Mr. Vivek Tiwari
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 17. Mrs. Gargee Shukla
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) | -Member | |



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

18. **Dr. Manu Sood**

Prof., Dept. of Computer Science

Himachal Pradesh University, Shimla (Himachal Pradesh)

- Member

(Approved Online)



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-स्तनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

37

Part A: Introduction			
Program: M.Sc. (IT)	Semester: IV	Year: II	w.e.f.:2024-2025
1.	Course Code	ITP401	
2.	Course Title	Major Project	
3.	Course Type	Practical	
4.	Pre-requisite (if any)	Programming and research knowledge as per project.	
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none">• Demonstrate a sound technical knowledge of their selected project topic.• Undertake identification, formulation and solution.• Design engineering solutions to complex problems utilizing systems approach.• Communicate with the community at large in written and oral forms.• Demonstrate the knowledge, skills and attitudes of a professional.	
6.	Credit Value	8	
7.	Total Marks	Max. Marks: 300	Min Marks: 108

Part B: Important Guidelines for Major Project

Total Lectures: 30 /Total Hours: 60

A project report has to be submitted as per the rules described below:

- 1. Number of Copies:** The student should submit One hard bound copy of the Project Report with one RW/CD/DVD.
- 2. No of students:** Every student has to submit separate project.
- 3. Acceptance / Rejection of Project Report:** The student must submit a project report to the Head of Department/Project Guide for approval. The Head of Department/Project Guide holds the right to accept the project or suggest modifications for resubmission.
- 4. Format of the Project Report :** The student must adhere strictly to the following format for the submission of the Project Report

- I. Paper:** The report shall be typed on white paper, A4 size or continuous computer stationary bond, for the final submission. The report to be submitted to the University must be original and subsequent copies may be photocopied on any paper.
- II. Typing:** The typing shall be of standard letter size, double-spaced and on one side of the paper only, using black ribbons and black carbons.
- III. Margins:** The typing must be done in the following margins
Left ----- 35mm, Right ----- 20mm
Top ----- 35mm, Bottom ----- 20mm
- IV. Binding:** The Report shall be Rexene bound in black. Plastic, spiral bound Project Reports not be accepted.
- V. Front Cover:** The front cover should contain the following details:
TOP: The title in block capitals of 6mm to 15mm letters.
CENTER: Full name in block capitals of 6mm to 10mm letters.
BOTTOM: Name of the University, year of submission- all in block capitals of 6mm to 10mm letters on separate lines with proper spacing and centring.

- VI. Blank Sheets:** At the beginning and end of the report , two white black bound papers should be provided, one for the purpose of binding and other to be left blank.
5. **Abstract:** Every report should have an abstract following the Institute's Certificate. The abstract



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

shall guide the reader by highlighting the important material contained in the individual chapters, section, subsection etc.

6. **Certificates etc:** The report should contain the following:

- I. Certificate from Company
- II. Institute Certificate: Successful completion of project by competent authority.
- III. Acknowledgment
- IV. List of Figures
- V. Tables
- VI. Nomenclature and Abbreviations

7. **Contents of the Project Report:** The project report must contain following in form of chapter, however student may include any other relevant chapter(s):

- I. **Company Profile:** This chapter should highlight the company details. This would be chapter 1 and should include the main stream activity of the company, the product line of the company and the details of the department where the student has carried out his/her project work. This should not exceed two pages or 800 words.
- II. **Introduction to the project:** This chapter shall highlight the purpose of project work, it will also define the chapters to be followed in the Project Report.
- III. **Scope of work:** Brief scope of the project work done
- IV. **Existing System and Need for proposed System:** If there is some system already in use, then give brief detail of it in order to help to understand the enhancements carried out by the student in the existing system.
- V. **Operating Environment:** Hardware and Software required and used.
- VI. **Proposed System:** Which may contain following:
 - a. **Objectives to be fulfilled:** clearly define the objective(s) of the system.
 - b. **User Requirements:** State the requirements of the use in an unambiguous manner.
 - c. **Requirements Determination Techniques and Systems Analysis Methods Employed:** Use the formal methods to describe the requirements of the use like Fact Finding Methods, Decision Analysis, Data Flow Analysis etc.
 - d. **Prototyping:** If the prototypes has been developed prior to the detailed design, then give details of the prototype.
 - e. **System Feature:** Which includes as follows:
 - Module specifications
 - D.F.D. and ER
 - System flow charts
 - Data Dictionary
 - Structure charts
 - Database /File layouts
 - Design of Input Design of Output screens and reports
 - User Interfaces
 - Design of Control Procedures

8. **Testing procedures and Implementation phase**

9. **Problems encountered, Drawbacks and Limitations**

10. **Proposed Enhancements/ Future enhancement**

11. **Conclusions**

12. **Bibliography**

Annexure



अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर-रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Part C - Learning Resources

Text Books, Reference Books and E-Resources

As per project topic.

Members of BoS

- | | | |
|--|-------------------------------|----------------|
| 1. Dr. H.S. Hota
Prof. and Head, Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Chairman | |
| 2. Dr. Amit Kumar Saxena
Prof., Dept. of Computer Science and IT
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) | - Member | |
| 3. Mr. Anil Rathore
Asst. Prof., Dept. of Computer Science
K.N. College, Korba (C.G.) | - Member | present online |
| 4. Dr. Tarun Dhar Diwan
Asst. Prof., Dept. of IT
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 5. Mr. Kaushal Banjare
Asst. Prof., Dept. of Computer Application
Govt. J.P. Verma PG Arts and Commerce College, Bilaspur (C.G.) | -Member | |
| 6. Dr. Rashmi Gupta
Asst. Prof., Department of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.) | -Member | |
| 7. Mr. Vivek Tiwari
Asst. Prof., Dept. of Computer Application
Govt. E.R.R. PG Science College, Bilaspur (C.G.) | - Member | |
| 8. Mrs. Gargee Shukla
Asst. Prof., Dept. of Computer Science
Govt. Bilasa Girls PG College, Bilaspur (C.G.) | -Member | |
| 9. Dr. Manu Sood
Prof., Dept. of Computer Science
Himachal Pradesh University, Shimla (Himachal Pradesh) | - Member
(Approved Online) | |