

Govt. Digvijay Autonomous PG College Rajnandgaon(CG)



SCHEME OF EXAMINATION & SYLLABUS

**FOR
THE FOUR-YEAR UNDERGRADUATE PROGRAMME
(FYUGP)**

**BACHELOR OF COMPUTER APPLICATION
(BCA- 3RD & 4TH) SEMESTER EXAM**

**UNDER
DEPARTMENT OF COMPUTER APPLICATION
SESSION - 2025-26**



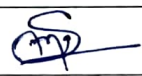
(APPROVED BY BOARD OF STUDIES)

**Govt. Digvijay Autonomous PG College ,
Rajnandgaon(CG)**

Department of Computer Application

Session – 2025 -26

List of Members of Board of Studies(BOS)

S.No	Name of Member	Nominee Type	Signature
1	Mrs. Hempushpa	Chairman	
2	Dr. Durga Prasad Rao	VC Nominee	
3	Prof. Gulame Mustafa Ansari	Principal Nominee	
4	Prof. Shailendra Arya	Principal Nominee	
5	Mr. Anshu Ramteke	Adviser Member	
6	Ms. Nadini sahu	Ex-Student	

SYLLABUS AND MARKING SCHEME

Session – 2025-26

BCA- III Semester

S . N o	Course Type	Course-code	Subject	Credit	Theory Marks	Internal Marks	Total Marks	
							Max	Min
1	DSC	CASC – 07	Software engineering	4	70	30	100	40
2		CASC – 08 T	Relational database Management system	3	70	30	100	40
		CASC – 08 P	Lab 5 : Relational database Management system (Oracle/My SQL)	1	35	15	50	20
3		CASC – 09 T	Programming in java	3	70	30	100	40
4		CASC – 09 P	Lab 6 : Programming in java	1	35	15	50	20
5	DSE	CASE – 01	Cyber security and cyber Law	4	70	30	100	40
TOTAL				20	-	-	600	-

BCA- IV Semester

S . N o	Course Type	Course-code	Subject	Credit	Theory Marks	Internal Marks	Total Marks	
							Max	Min
1	DSC	CASC – 10	Theory of computation	4	70	30	100	40
2		CASC – 11 T	Web Technology	3	70	30	100	40
		CASC – 11 P	Lab 7 :Web Technology	1	35	15	50	20
3		CASC – 12 T	Python programming	3	70	30	100	40
4		CASC – 12 P	Lab 8 : Python programming	1	35	15	50	20
5	DSE	CASE – 02	Artificial Intelligence and expert system	4	70	30	100	40
6								
7								
TOTAL				20	-	-	600	-

DSC- Discipline Specific Course,

DSE- Discipline Specific Elective

AEC-Ability Enhancement Core Course,

SEC- Skill Enhancement Course,

GE- Generic Elective,

VAC- Value Added course

GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE,
RAJNANDGAON,
(SEMESTER-III & IV)

Program Objective(PO)

- Po1- To learn the importance of DBMS in the present scenario and about DBMS architecture, SQL to interact with database.
- Po2- To provide a professionally guided education in software engineering that prepares agility in solving software
- Po3- To provide a comprehensive understanding of Java programming, preparing students for real-world software development challenges.
- Po4 To provide students with a foundational understanding of computational models and their limitations.
- Po5- Primary objectives of Cyber security focuses on protecting systems, networks, and data from cyber threats.
- PO6- understanding of the fundamentals of the Internet, World Wide Web, and web design principles.
- PO7- To introduce students to the syntax and semantics of Python, enabling them to write and execute Python scripts effectively.
- PO8- To impart foundational knowledge about Artificial Intelligence (AI), including its concepts, history, and various subfields such as machine learning, neural networks, and natural language processing.

Program Specific Outcome (PSO)

- PSO1-Student able to learn about the database concept, Architecture, various users data model and data management
- PSO2- Student should be able to Create user defined class interface and packages which help them to develop new application software and utility software
- PSO3- Understand the fundamental concepts in cyber security and distinguish among the attacks, threats and vulnerabilities.
- PSO4- Understanding and analyzing the fundamentals of compiler designing.
- PSO5- Create a web page using HTML, CSS, JAVASCRIPT, XHTML.
- PSO6- Understand the Programming Logics in Artificial Intelligence.
- PSO7- In python programming, Determine the need for scraping websites and working with CSV, JSON and other file format.

PART- A: Introduction

PART -B: Content of the Course

Unit	Topics (Course contents)	No. of Period
I	Introduction to Language Compiler: What is a compiler, phases of a compiler, the role of lexical analyzer, specification of tokens, recognition of tokens; different types of parsers; types of grammars, and their associated language in theory of computation. Finite Automata: Introduction to Finite State Automata (FSA): Formal definition, Representation notations (state transition diagram, transition table). Types of FSA: Deterministic Finite Automata (DFA), Nondeterministic Finite Automata (NFA), Finite Automata with Epsilon Transitions, Elimination of Epsilon transitions, Conversion of NFA to DFA, Equivalence of NFA and DFA. Applications of Finite Automata, Minimization of Deterministic Finite Automata. Mealy machine, Moore machine.	15
II	Regular Expressions: Introduction to RE, Identities of Regular Expressions, Finite Automata and Regular Expressions- Converting from DFA to Regular Expressions, Converting Regular Expressions to Automata, Applications of Regular Expressions. Regular Grammars: Definition, Regular grammar, and FA, FA for regular grammar, Regular grammar for FA. Proving languages to be non-regular -Pumping lemma, applications, Closure properties of regular languages.	15
III	Context Free Grammar: Introduction to CFGs, Properties of CFGs, Derivation Trees, Sentential Forms, Rightmost and Leftmost derivations of Strings. Ambiguity in CFG, Minimization of CFG, Chomsky Normal Form (CNF), Greibach Normal Form (GNF), Pumping Lemma for CFLs. Pushdown Automata: Introduction of PDA and its model, types of PDA, Languages accepted by the PDA, Acceptance by Final State and Acceptance by Empty stack and its Equivalence, Equivalence of CFG and PDA.	15
IV	Turing Machines: Formal definition and model of Turing Machine, Types of TMs, Languages of a TM, TM as acceptors, Properties of recursive and recursively enumerable languages, Universal Turing machine, The Halting problem, Undecidable problems about TMs. Context-sensitive language and linear bounded automata (LBA).	15
Keywords	<i>Language compiler, grammar, and their associated language, Finite Automata, Regular Expression, Regular Grammar, Context Grammar, and Turing Machine.</i>	

Keywords

Name and Signature of Convener & Members of CBoS:

~~Dr. H. S. Hota~~
Chairman

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman (2007), Introduction to Automata Theory Languages and Computation, 3rd edition, Pearson Education, India
- K. I. P. Mishra, N. Chandrasekaran (2003), Theory of Computer Science-Automata Languages and Computation, 2nd edition, Prentice Hall of India, India
- Tools Alfred V. Aho, Ravi Sethi, D. Jeffrey Ullman and Monica S. Lam, Compilers Principles, Techniques and Tools, Addison Wesley

Reference Books Recommended:

- A.M. Padma Reddy, Finite Automata and Formal languages, Pearson Education India
- Michael Sipser, Third Edition, Introduction to the Theory of Computation, Cengage Learning

Online Resources:

- NPTEL YouTube Channel: Lectures on Theory of Computation
<https://youtube.com/playlist?list=PLbMVogVj5nJSd25WnSU144ZyGmsqjuKr3&si=EvuSjnO-TT1oTHjn>
- NPTEL YouTube Channel: Lectures on Theory of Automata, Formal Languages and Computation
<https://youtube.com/playlist?list=PL85CF9F4A047C7BF7&si=SBm-gIkmkjOBdscB>
- NPTEL YouTube Channel: Lectures on Theory of Computation and Automata
<https://youtube.com/playlist?list=PL3-wYxbt4yCgBHUpwXDTLos3JStccGfax&si=TbYH91hmlOrtUEnN>
- SWAYAM YouTube Channel: Introduction to Automata, Languages and Computations
https://youtube.com/playlist?list=PLbRMhDVUMngcwWkzVTm_kFH6JW4JCtAUM&si=RbTG3WZ0JH6Zx_pu
- NPTEL YouTube Channel:
<https://www.youtube.com/watch?v=ckILnm28hQ&list=PLbRMhDVUMngcscCW7wXDvITDemCulI80tP>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 +20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
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End Semester
Exam (ESE):

Two section - A & B

Section A: Q1. Objective - 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks

Section B: Descriptive answer type qts. 1 out of 2 from each unit-4x10=40 Marks

Name and Signature of Convener & Members of CBOS:

Dr. H.S. Khatke
Chairman

Dr. K.B. Dubey

(Dr. S.K. Saini)

(Dr. P. S. Jain)

(Dr. P. S. Jain)

(Dr. P. S. Jain)

(Sushil Kumar Sahas)

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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF COMPUTER APPLICATION
COURSE CURRICULUM

PART- A: Introduction

Program: Bachelor in Computer Application (Certificate / Diploma / Degree/Honors)		Semester - IV	Session: 2024-2025, 25-26
1	Course Code	CASC-11T	
2	Course Title	Web Technology	
3	Course Type	DSC (Discipline Specific Course)	
4	Prerequisite	As per program	
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, XHTML Build dynamic web pages using JavaScript (Client-side programming) Create XML documents and Schemas. Build interactive web applications using PHP, AJAX. Handling MySQL Database using PHP. 	
6	Credit Value	3 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40

PART -B: Content of the Course

Total No. of Teaching-Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)

Unit	Topics (Course contents)	No. of Period
I	Introduction: Fundamentals of web technology: Webpages, website, browser, client, web servers, Basics of HTML CSS, Scripting Languages, MySQL, PHP etc., protocols governing the web, Web applications. Web Publishing: Introduction, Domain Name Registration, choosing a web host and signing up for an Account, web hosting, IDE for web development.	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, image tag, iframe tag. HTML Form controls: form, text, password, text area, button, checkbox, radio button, select box, hidden controls, Frameset and frames. Basics of DHTML, introduction of XML and its uses. Introduction of AJAX.	11
III	CSS and Scripting Languages: Introduction and features of CSS, CSS syntax, Creating Style sheets, CSS selectors (simple selector, combinator selectors, pseudo-class-selectors, pseudo-element-selectors, attribute selector), different ways to insert the CSS, different styling attributes and their settings like color, background, font, text, margin, position, border etc. JavaScript: introduction and features of java script, Syntax & Conventions, Variables, Expression. Branching & Looping, Function, Array, Objects. Events and Document Object model, Alerts, prompts and conforms.	11
IV	PHP: Introduction and features of PHP, data types, operators, control statements and looping, functions, array, string and string functions, object oriented, programming features of PHP: class-objects, abstraction, encapsulation, constructor, destructor, inheritance, polymorphism etc., Exception Handling. Handling HTML forms with PHP, Working with files and directories, session and cookies, PHP functions for Database Connectivity and basic operation with MySQL.	11

Keywords Webpage, Website, HTML, AJAX, CSS, JavaScript, PHP, MySQL.

Name and Signature of Convener & Members of CBoS:

Dr. B. S. Hota Kien
Chairman Dr. K. B. Dubey
Sanjit SK
(Clerical Thakur)
SP
Shankar Prasad
A97
Amal
T. Kulkarni
Dr. S. D. Jyoti
Dr. S. D. Jyoti
R. Khurshid
Anjeeta Kulkarni

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- Xavier, C, Web Technology and Design, New Age International.
- Ivan Bayross, HTML, DHTML, Java Script, Perl & CGI, BPB Publication.
- Ramesh Bangia, Internet and Web Design, New Age International.
- Ullman, PHP for the Web Visual QuickStart Guide, Pearson Education.

Reference Books Recommended:

- Jim Converse & Joyce Park, PHP & MySQL Bible, Wiley India Publication
- Chuck Musiano & Bill Kenndy, O Reilly, HTML The Definitive Guide
- Joseph Schumiller, Dynamic HTML, BPB, 2000.
- Deitel, Deitel, Goldberg, Internet & World Wide Web How to Program, Pearson Education,
- Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.

Online Resources:

- Swayam Portal : Web technology: Web Technology - Course (swayam2.ac.in)
- W3schools: Web development Programming and Scripting Languages
<https://www.w3schools.com>
- Fundamentals of PHP: PHP Tutorial (tutorialspoint.com)
- IIT Kharagpur YouTube Link: Database and SQL
<https://youtube.com/playlist?list=PLIwC9bZ0rmjSkmlVRJROX4vP2YMI4Ebh&si=Z5JJlgtF MUWTfNtg>
- NPTEL: SQL
<https://youtube.com/playlist?list=PLLQP1umE5cEgzU5hChH1V3H93x4UOIHR&si=2dxqvodF ZcnQUdR>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

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End Semester Exam (ESE):

Two section - A & B

Section A: Q1. Objective - 10 x1= 10 Mark: Q2. Short answer type- 5x4 = 20 Marks

Section B: Descriptive answer type qts..1 out of 2 from each unit-4x10=40 Marks

Name and Signature of Convener & Members of CB&S:

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Dr. Anil Sharma

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R. Khuntia

Dr. Sushil Kumar Sahu

Dr. Suresh Kumar

Dr. Sushil Kumar

Dr. Sushil Kumar

Dr. Sushil Kumar

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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF COMPUTER APPLICATION
COURSE CURRICULUM

PART- A: Introduction

Program: Bachelor in Computer Application (Certificate / Diploma / Degree)		Semester – IV	Session: 2024-2025, 25-26
1	Course Code	CASC-11P	
2	Course Title	Lab 7: Web Technology	
3	Course Type	Practical	
4	Prerequisite	As per program	
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"> Analyze 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. Handling MySQL Database using PHP. 	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20

PART -B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)						No. of Period
Module	Topics (Course contents)					
Lab./Field Training/ Experiment	HTML					
	1. Write HTML code 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		
	2. Write HTML code to create the following lists:					
	• C					
	• C++					
	• Fortran					
• COBOL						
3. Write HTML code to create the following lists:					30	
1. Java						
2. Visual Basic						
3. Basic						
4. COBOL						
4. Write HTML code to demonstrate hyper linking between two web pages.						
5. Create a marquee & also insert an image.						
6. Write HTML code to create a frame in HTML with 3 columns (width= 30%, 30%, 40%) and put hyperlinked pictures inside each.						
7. Write HTML code to create a webpage with a blue background and print the following text with white background.						
"Hello Word "						
8. Write HTML code to create the following table:						
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 HTML code 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 HTML code to create the following table:

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

11. Write HTML code to create the following table:

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

12. Write HTML code 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 HTML code to create the following table:

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

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

Enter Name:
Enter Roll No:
Enter Age:
Enter DOB:

15. Write HTML code to create the following form:







User Name :

Password :

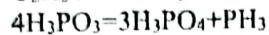
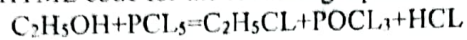
When user types characters in a password field. The browser displays asterisks or bullets instead of character

16. Write HTML code to create Student Registration Form

17. Write HTML code to create Contact Form

18. Write HTML code to insert Audio & Video in HTML

19. Write HTML code for the following equations:



20. Write the HTML code to display the following list:

• Actors

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

• Actress

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

21. Write the HTML code to display the following list:

1. Cricket Players

A. Batsman

- i. Sachin Tendulkar
- ii. Rahul Dravid
- iii. Virendra Sehwag

B. Bowlers

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

C. Spinner

- i. Harbhajan
- ii. Ravindra Jadeja
- iii. Kartik

JavaScript

1. Write a java script, to print prime numbers from 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 dates using JavaScript.
6. Write a program to Sum and Multiply two numbers using JavaScript.

DHTML

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. write script using for loop to print all integer between -10 to 10
2. write script to construct the following pattern, using nested for loop


```

1
1 2
1 2 3
1 2 3 4 5
      
```
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.
6. Write a PHP script to collect the data from the registration form designed in HTML, and submit it to the database.
7. Write a PHP script to read the data from the database and display it into the web page in tabular form.

MySQL

Task - I

Create the following table in MySQL:

College (cname, city, caddress, cphone)
 Staffjoins (sid, cname, dept, doj, post, salary)
 Staffs (sid, sname, saddress, scontacts)
 Teaching (sid, class, paprid, fsession, tsession)
 Subject (paperid, subject, paper, papername)

Write the queries to perform the following operations.

1. List the name and post of a teacher teaching a computer subject.
2. List the name and city of all staff working in your college.
3. List the name and city of all staff working in your college who earn more than 15000.
4. Find the staff whose date of joining is 2005.
5. Find the staff whose names start with 'M' or 'R' and 'A' and/or 7 characters long.
6. Modify the database so that staffN1 now works in C2 college.
7. List maximum, average, minimum salary of each college.
8. Acquire details of staff by name in a college or each college.
9. List names of staff in ascending order according to salary who are working in all colleges.
10. Find the staff that earn a higher salary who earn greater than the average salary of their college.

Task - II

Create the following table MySQL:

Enrollment (enrollno, name, gender, DOB, address, phone)
 Admission (adno, enrollno, course, yearsem, date, cname)
 Feestructure (course_yearsem, fee)
 Payment (billno, admno, amount, pdate, purpose)

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Write the queries to perform the following operations.

1. Get full detail of all students who took admission this year class wise.
2. Get details of students who took admission in sai colleges.
3. Calculate the total amount of fees collected in this session.
4. List the students who have not paid full fees in your colleges
5. List the number of admission in your college every year
6. List the students in colleges in your city and also live in your city.

Task - III

Create the following table MySQL:

Subject (paperid, subject, paper, papername)

test(paperid,tdate,max,min)

score(rollno,paperid,marks,attendance)

students(admno,rollno,class,yearsem)

Write the queries to perform the following operations.

1. List roll no of students who were present in a paper of a subject.
2. List all roll numbers who have passed in first division.
3. List all students in BCA-II who have scored higher than average in your college.

Note: Concerned teacher can add additional practical exercises as per requirement

Keywords HTML, Hyperlinks, Form, List, Table, CSS, JavaScript, MySQL, PHP.

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hota

Chairman (Dr. K.A. Dubey)

(Sushil Kumar Sahu)

(Suresh Kumar)

(Dr. S.K. Saha)

(Dr. Anil Sharma)

(Dr. S. Jain)

(Dr. R. Khuntia)

(Dr. A.S.S.)

(Dr. Anjana Kulkarni)

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- Xavier, C, Web Technology and Design, New Age International.
- Ivan Bayross, HTML, DHTML, Java Script, Perl & CGI, BPB Publication.
- Ramesh Bangia, Internet and Web Design, New Age International.
- Ullman, PHP for the Web: Visual QuickStart Guide, Pearson Education.

Reference Books Recommended:

- Jim Converse & Joyce Park, PHP & MySQL Bible, Wiley India Publication
- Chuck Musiano & Bill Kenndy, O Reilly, HTML The Definitive Guide
- Joseph Schmuller, Dynamic HTML, BPB, 2000.
- Deitel, Deitel, Goldberg, Internet & World Wide Web How to Program, Pearson Education,
- Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.

Online Resources:

- Swayam Portal : Web technology: Web Technology - Course (swayam2.ac.in)
- W3schools: Web development Programming and Scripting Languages
<https://www.w3schools.com>

(Aman) Ravi

- ## **PART -D: Assessment and Evaluation**

[Signature]

Keywords: List, Tuple, Dictionary, Panda Numpy, TensorFlow, Scikit-Learn, Keras, PyTorch, Deep Learning.

Name and Signature of Convener & Members of CBoS:

Dr.H.S.Hota ~~Hira~~
Chairman Dr.K.B.Dubey
Smit
(Sushil Kumar Sahu)
(Anurag Thakkar)

Jai
(DVS Jain)
(Dr Anshuman)
(R Khunzay)
Ajanta
ANJEETA KUT

Anamika Agri

Tanvi

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF COMPUTER APPLICATION
COURSE CURRICULUM

PART- A: Introduction

Program: Bachelor in Computer Application (Certificate / Diploma / Degree/Honors)		Semester - IV	Session: 2024-2025, 25-26
1	Course Code	CASC-12T	
2	Course Title	Python Programming	
3	Course Type	DSC (Discipline Specific Course)	
4	Prerequisite	As per Program	
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"> 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 system. 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	3 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40

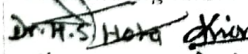
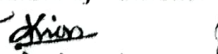
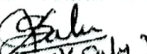
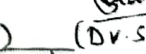
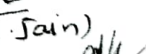

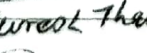
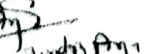








PART -B: Content of the Course

Total No. of Teaching–Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)

Unit	Topics (Course contents)	No. of Period
I	Introduction to Python Programming: What is a Program, Formal and Natural Languages, Why use Python, Uses of python, Strengths & Drawbacks, The Python Interpreter, Running Python, The IDLE User Interface, The Interactive Prompt, Script Mode, Dynamic Typing , Debugging. Types, Operators, Expressions & Statements: Values and Types. Assignment Statement, Variable Names, Expressions & Statements, Order of Operations, String Operations, Comments.	10
II	Conditionals: Boolean Expressions, Logical operators, Conditional & Alternative Execution, Chained and Nested Conditions. Iterations: Reassignment, Updating Variables, The “for” and “while” statements, break. Strings: String is a sequence, len, Traversal with a for loop, String Slices, Searching, Looping and Counting, String Methods, the “in” operator, String Comparison.	10
III	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.	10
IV	Function, Files and Graphics: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables, Files: Files & Persistence, Reading and Writing, Filenames and Paths. Graphics programming: Drawing with turtle graphics, using turtle module, moving the turtle with any direction, moving turtle to any location, the color, bgcolor, circle and speed method of turtle, drawing with colors, drawing basic shapes using iterations. Python Libraries: Exploring python libraries like Panda, Numpy, TensorFlow, Scikit-Learn, Keras, PyTorch, SciPy etc.	15

Keywords List, Tuple, Dictionary, Panda, Numpy, TensorFlow, Scikit-Learn, Keras, PyTorch, SciPy.

Name and Signature of Convener & Members of CBoS:

Dr. H. S. Hota (Chairman) 
 Dr. K. B. Dubey 
 Dr. S. K. Saha 
 Dr. S. Jain 
 Dr. R. Khuntia 
 Dr. Anil Kumar 
 Dr. Anurag Thakur 
 Dr. Anurag Prasad 
 Dr. Anurag Singh 
 Dr. Anurag Kumar 
 Dr. Anurag Singh 
 Dr. Anurag Kumar 
 Dr. Anurag Singh 
 Dr. Anurag Kumar 
 Dr. Anurag Singh 
 Dr. Anurag Kumar 

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- T. Budd, Exploring Python, TMH, 1st Ed, 2011
- Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: Learning with Pyth, Freely available online, 2012

Reference Books Recommended:

- Luca Massaron John Paul Mueller, Python for Data Science For Dummies, Wiley, 2ed, 2019
- Allen B. Downey, Think Python: How to Think Like a Computer Scientist, 2nd edition by O'Reilly, 2015
- Zed A. Shaw, Learn Python 3 the Hard Way (Addison-Wesley, 2016)

Online Resources:

- NPTEL URL link for Python Programming:
https://www.youtube.com/watch?v=eoPsX7MKfc8&list=PLIdgECt554OVFKXRpo_kul0XpUQKk0ycO
- Complete NPTEL link for Basic Python Programming:
https://www.youtube.com/watch?v=Y3Ri2GdYIYg&list=PLqftY2uRk7oXvERQEgATSr-KzAh8WLW_D
- File Handling: https://www.w3schools.com/python/python_file_handling.asp
- NumPy: <https://www.w3schools.com/python/numpy/default.asp>
- Pandas: <https://www.w3schools.com/python/pandas/default.asp>
- SciPy: <https://www.w3schools.com/python/scipy/index.php>
- Django: <https://www.w3schools.com/django/index.php>
- Matplotlib: https://www.w3schools.com/python/matplotlib_intro.asp
- Machine Learning: https://www.w3schools.com/python/python_ml_getting_started.asp
- Python MySQL: https://www.w3schools.com/python/python_mysql_getstarted.asp
- Topics related Python from SWAYAM/NPTEL
<https://www.youtube.com/channel/UCxulcR5XRauYn37yg-Fh6rA>
<https://www.youtube.com/channel/UCJAgwIniUkaShdmA5aAZdQw>
- Topics related Python from Tutorials
 - <https://www.javatpoint.com/python-tutorial>
 - <http://docs.python.org/3/tutorial/index.html>
 - <http://interactivepython.org/courselib/static/pythonds/>
 - <http://www.ibiblio.org/g2swap/byteofpython/read/>
- Python for Beginners:
 - https://www.w3schools.com/python/python_intro.asp
 - <https://www.python.org/about/gettingstarted/>
 - <https://www.javatpoint.com/python-tutorial>
 - <https://www.geeksforgeeks.org/python-programming-language/>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 +20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
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End Semester
Exam (ESE):


Two section - A & B

Section A: Q1. Objective - 10 x 1 = 10 Mark. Q2. Short answer type - 5x4 = 20 Marks

Section B: Descriptive answer type qts. 1 out of 2 from each unit - 4x10 = 40 Marks


Name and Signature of Convener & Members of CBAS:

Dr. H.S. Hota
Chairman


Dr. K.B. Dubay



Dr. S.K. Sahu


Dr. Anil Sharma


Dr. S. Sain



Dr. A.S.S



R. Khuntia


Sushil Kumar Sahu


Karesti Kherkar


JMD


JMD


ANJETA KUTUR









FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF COMPUTER APPLICATION
COURSE CURRICULUM

PART- A: Introduction

Program: Bachelor in Computer Application (Certificate / Diploma / Degree)		Semester - IV	Session: 2024-2025, 25-26
1	Course Code	CASC-12P	
2	Course Title	Lab 8: Python Programming	
3	Course Type	Practical	
4	Prerequisite	As per program	
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"> • 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 system. • 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	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20

PART -B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	Topics (Course contents)	No. of Period
List of Practical Experiments	<p>Note: This is tentative list; the teachers concern can add more program as per requirement.</p> <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 sins, 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 $1 + 1/1! + 1/2! + 1/3! + \dots + 1/n$ 	30

- Keywords** List, Tuple, Dictionary, Panda, Numpy, TensorFlow, Scikit-Learn, Keras, PyTorch, SciPy.
- Name and Signature of Convener & Members of CBoS:**
- Dr. H.S. Hota
Chairman
- Kris
Ex
- Raj
Chakrabarty
- Pooja
Shrivastava
- Anurag
Kumar
- Sunil
Kumar
- R. Khattar
- Jyoti
Kumar
- Sunil
Kumar

<p>Text Books, Reference Books and Others</p> <p><i>Text Books Recommended:</i></p> <ul style="list-style-type: none"> • T. Budd, Exploring Python, TMH, 1st Ed, 2011 • Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: Learning with Pyth, Freely available online. 2012 <p><i>Reference Books Recommended:</i></p> <ul style="list-style-type: none"> • Luca Massaron John Paul Mueller, Python for Data Science For Dummies, Wiley, 2ed, 2019
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- Allen B. Downey, Think Python: How to Think Like a Computer Scientist, 2nd edition by O'Reilly, 2015
- Zed A. Shaw, Learn Python 3 the Hard Way (Addison-Wesley, 2016)

Online Resources:

- NPTEL URL link for Python Programming:
https://www.youtube.com/watch?v=coPsX7MKfc8&list=PLIdgECt554OVFKXRpo_kuf0XpUQKk0ycO
- Complete NPTEL link for Basic Python Programming:
https://www.youtube.com/watch?v=Y3Ri2GdYfYg&list=PLqftY2uRk7oXvERQEGATSr-KzAh8WLW_D
- File Handling: https://www.w3schools.com/python/python_file_handling.asp
- NumPy: <https://www.w3schools.com/python/numpy/default.asp>
- Pandas: <https://www.w3schools.com/python/pandas/default.asp>
- SciPy: <https://www.w3schools.com/python/scipy/index.php>
- Django: <https://www.w3schools.com/django/index.php>
- Matplotlib: https://www.w3schools.com/python/matplotlib_intro.asp
- Machine Learning: https://www.w3schools.com/python/python_ml_getting_started.asp
- Python MySQL: https://www.w3schools.com/python/python_mysql_getstarted.asp
- Topics related Python from SWAYAM/NPTEL
 - <https://www.youtube.com/channel/UCxulcR5XRauYn37yg-Fh6rA>
 - <https://www.youtube.com/channel/UCJAgwlniUkaShdmA5aAZdQw>
- Topics related Python from Tutorials
 - <https://www.javatpoint.com/python-tutorial>
 - <http://docs.python.org/3/tutorial/index.html>
 - <http://interactivepython.org/courselib/static/pythononds>
 - <http://www.ibiblio.org/g2swap/byteofpython/read/>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

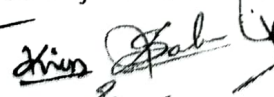

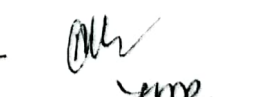
Maximum Marks: 50 Marks


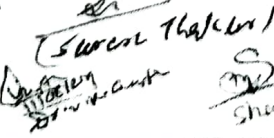

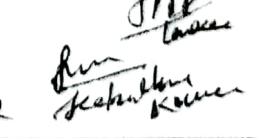

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance - 05 Total Marks - 15	Better marks out of the two Test Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) - 10 Marks Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status

Name and Signature of Convener & Members of CBaS:





FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF COMPUTER APPLICATION
COURSE CURRICULUM

PART-A: Introduction

Program: Bachelor in Computer Application (Certificate / Diploma / Degree/Honors)		Semester – IV	Session: 2024-2025, 25-26
1	Course Code	CASE-02	
2	Course Title	Artificial Intelligence and Expert System	
3	Course Type	DSE (Discipline Specific Elective)	
4	Prerequisite	As per program	
5	Course Learning Outcomes(CLO)	At the end of the course, students will be able to: <ul style="list-style-type: none"> • Understand the Basics about Artificial Intelligence and Expert Systems. • Understand the Programming Logics in Artificial Intelligence. • Understand various search methods in Artificial Intelligence. • Understand the Knowledge about the Expert Systems. • Understand the latest developments in Knowledge systems and Tools. 	
6	Credit Value	4 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40

PART – B: Content of the Course

Total No. of Teaching–Learning Periods (01 Hr. per period) - 60 Periods (60 Hours)

Unit	Topics (Course contents)	No. of Period
I	Introduction: History, Definition of AI, Emulation of human cognitive process, knowledge search trade off, stored knowledge, semantic nets. An abstract view of modelling, elementary knowledge. Computational logic, analysis of compound statements using simple logic connectives, predicate logic, knowledge organization and manipulation, knowledge acquisition.	15
II	AI Programming languages: LISP and other programming languages- introduction to LISP, syntax and numerical function, LISP and PROLOG distinction, input output and local variables, Interaction and recursion, property list and arrays alternative languages, formalized symbolic logics- properties of WFRS, non-deductive inference methods. Inconsistencies and uncertainties- Truth maintenance systems, default reasoning and closed world assumption, Model and temporary logic.	15
III	Problems and Heuristic Search Techniques: Problem Characteristics, Production Systems, Control Strategies, Search techniques: Breadth First, Depth-first search, Hill-climbing, Heuristics Search Techniques: Best First Search, A* algorithm. Knowledge Representation: Approaches and Issues, Frame, Conceptual dependency, Semantic Net, Scripts etc., Propositional Logic, First order, Propositional Logic (FOPL), Conversion to clausal form, Inference rules, Resolution principal.	15
IV	Expert System: Introduction, Application, Existing Expert systems. Components of typical expert system, Rule based system architecture. Pattern Recognition: Pattern recognition system- understanding speech recognition, image transformation, low level processing, medium and high level processing, vision system architecture.	15
Keywords	Artificial Intelligence (AI), AI Agent, State Space, Production System, LISP, PROLOG, Knowledge Representation, Semantic Net, Propositional Logic, Expert System.	

Names and Signatures of Convener & Members of CBoS:

Dr. H. S. Hota
chairman

K. S. K. K. K.
(Suresh Kulkarni)

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

Shalendra Singh

ANJEEVA KUTU

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- Dan W. Patterson, Introduction to Artificial Intelligence and Expert Systems, PHI Publication.
- Elaine Rich and Kevin Knight, Artificial Intelligence, TMH publication.
- George. F. William. A. Stubblefield, 'Artificial intelligence and the design of expert systems', The Benjamin Cummins Publishing Co., Inc 2nd Edition, 1992.
- V.S. Jankiraman, K. Sarukesi and P. Gopala krishnan, Foundations of Artificial Intelligence and Expert Systems , Macmillan Series in Computer Science.

Reference Books Recommended:

- Vinod Chandra S.S., Anand Hareendrn S., Artificial Intelligence and machine learning, PHI learning private Ltd.
- V.S. Jankiraman, K. Sarukesi and P. Gopala Krishnan, Foundations of Artificial Intelligence and Expert Systems, Macmillan Series in Computer Science
- Russel (Stuart), 'Artificial Intelligence- Modern approach, Pearson Education series in AI', 3rd Edition, 2009.
- Eugene Charniak, Drew Mc Dermot, 'Introduction to Artificial intelligence', Addison Wesley Longman Inc., 2009
- Robert J Schalkoff, 'Artificial intelligence An Engineering Approach', McGraw Hill International Edition, 1990

Online Resources:

- Introduction to Artificial Intelligence from SWAYAM:
https://www.youtube.com/watch?v=pKeVMlkFpRe&list=PLwdnzlV3ogoXaceHrrFVZCJkbm_laSHcH&index=2
- Artificial Intelligence: Knowledge Representation And Reasoning from SWAYAM
https://onlinecourses.nptel.ac.in/noc24_cs14/preview
- An introduction to Artificial Intelligence from SWAYAM:
https://onlinecourses.nptel.ac.in/noc24_cs08/preview
- Introduction to Artificial Intelligence from Coursera: <https://www.coursera.org/learn/introduction-to-ai>
- Problem Solving as State Space Search from SWAYAM:
https://www.youtube.com/watch?v=fLw8SfvaJWA&list=PLwdnzlV3ogoXaceHrrFVZCJkbm_laSHcH&index=3
- Heuristic Search from SWAYAM:
https://www.youtube.com/watch?v=0awSpFyh2MY&list=PLwdnzlV3ogoXaceHrrFVZCJkbm_laSHcH&index=5
- Introduction to Artificial Intelligence:
<https://www.javatpoint.com/artificial-intelligence-ai>
- How to Learn Artificial Intelligence from Coursera: <https://www.coursera.org/articles/how-to-learn-artificial-intelligence>
- What is knowledge representation:
<https://courses.csail.mit.edu/6.803/pdf/davis.pdf>
- Informed Search
https://www.youtube.com/watch?v=-R12hOyJZB8&list=PLwdnzlV3ogoXaceHrrFVZCJkbm_laSHcH&index=6
- Artificial; Intelligence and Expert System:
 - https://sist.sathyabama.ac.in/sist_coursematerial/
 - https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SMRA3003.pdf

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks:	100 Marks
Continuous Internal Assessment (CIA):	30 Marks
End Semester Exam (ESE):	70 Marks

 (Amali) 

