Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA301	Major	Cloud Computing Concepts	3	0	0	3	60	20	20	0	0

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs):

1. Introduction to cloud computing and platforms on Cloud
2. Understand Business Problems and evolution of IBM cloud
3. Introduced to Cloud Architecture
4. Understanding Cloud Foundry and resources
5. Introduced to weather insights on IBM cloud
6. Working on Chatbot using Watson services
7. Understanding DevOps and its lifecycle
8. Introduced to nodes used in Cloud application development

Course Outcomes (COs):

1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing
2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
3. Explain the core issues of cloud computing such as security, privacy, and interoperability.
4. Choose the appropriate technologies, algorithms, and approaches for the related issues.
5. Identify problems, and explain, analyze, and evaluate various cloud computing solutions.
6. Provide the appropriate cloud computing solutions and recommendations according to the applications used.
7. Attempt to generate new ideas and innovations in cloud computing.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA301	Major	Cloud Computing Concepts	3	0	0	3	60	20	20	0	0

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Syllabus:

Unit I: Introduction to Cloud Computing7 HRS
Traditional way of working in IT, Traditional IT Challenges, Future Trend in IT, What is Cloud Computing Cloud Characteristics, service and Delivery models, Cloud Computing helps overcome IT challenges, Traditional On-premises Core IT, Cloud Service, IBM Cloud – IAAS, PAAS and SAAS,IBM cloud Infrastructure (Iaas) Offerings, IBM Cloud Platform as a service offerings, Cloud Delivery models, Private Cloud, Public Cloud.

Unit II: Deep Dive into IBM Cloud8 HRS
What is IBM Cloud, Evolution of IBM Cloud, Business Problems, Developer Problems, Why IBM Cloud Speed – Time to Value, Predictability – Reduced Risk and Cost, Agility, IBM Cloud UI tour, IBM Cloud Login IBM cloud UI Dashboard, IBM Cloud Region, Organizations, spaces, users and domains, Organizations Spaces. Quota, User Management, Monitoring and Logs, IBM Cloud Catalog, Containers, IBM containers on IBM Cloud, IBM Cloud Container Advantages and Differentiators Services, IBM cloud value to developers

Unit III: IBM Cloud Architecture 10 HRS
Is IBM cloud a cloud foundry, How cloud foundry works, How the cloud balances its load, how apps runanywhere, How CF organizes Users and workspaces, Where CF stores Resources, How CF components communicate, How to monitor and analyze a CF deployment, Using services with CF, What is cloud foundry, Cloud foundry languages, frameworks and services, Cloud foundry architecture – high level,Cloud foundry architecture – CF kernel internal, description of each of the components, Cloud controller and diego brain nsync, BBS and Cell reps, App storage and execution, Diego Cell messaging, metrics and logging, Cloud foundry – application staging, Various IBM cloud architecture, IBM cloud dedicated architecture, Cloud foundry command line interface, Important CF CLI Calls, Cloud foundry tools

Chairperson	Chairperson	Controller of Examinations	Joint Registrar
Board of Studies	Faculty of Studies	Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth
Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth	Vishwavidyalaya, Indore	Vishwavidyalaya, Indore
Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA301	Major	Cloud Computing Concepts	3	0	0	3	60	20	20	0	0

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Unit IV: IBM Cloud Services10 HRS

IBM cloud services, Analytics Services, Types of data services available in IBM Cloud, Cloud API feature, Watson Services, Storage, DevOps, Auto scaling, vertical scaling and horizontal scaling, Adding a service to application, Requesting a new service instance, Configuring your application to interact with a service, VCAP services, service Metadata, IBM cloud user provided service instance – service metadata IBM cloud user provided service instance – user interface service metadata

Unit V: Nodes Creation 7 HRS

What is IBM cloud DevOps Services, Tool chain overview, Code and eclipse orion web IDE, Git Repos and Issue tracking, Delivery pipeline, Stages, jobs, Installing Node.js windows build tools ,Running Node RED, Node RED architecture, Creating nodes RED flow, Types of Nodes and functions, Inject and Debug Node, Change Node.

Textbooks:

1. Cloud Computing Bible by Barrie Sosinsky,Wiley
2. Cloud Computing: Concepts, Technology & Architecture by Zaigham Mahmood, Ricardo Puttini, Thomas Erl,The Prentice Hall Service

References:

1. Cloud Computing: Saas, Paas, Iaas, Virtualization, Business Models, Mobile, Security and More Paperback– 2012 by Dr Kris Jamsa Kris Jamsa, Jones & Bartlett;
2. Cloud Computing Paperback– 2019 by Mehul Mahrishi Kamal Kant/RuchiDoshi/ Temitayo Fagbola, BPB Publications.
3. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, 1ePaperback– 2008 by Miller, Pearson

Chairperson	Chairperson	Controller of Examinations	Joint Registrar
Board of Studies	Faculty of Studies	Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth
Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth	Vishwavidyalaya, Indore	Vishwavidyalaya, Indore
Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA302	Major	Python Programming	2	0	2	3	60	20	20	30	20

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks.

Course Education Objectives (CEOs):

The goal of this course is to provide students with an understanding of basic concepts of Python Programming Language along with its features.

Course Outcomes (COs): After completion of this syllabus students will be able to

- Apply basic concepts of python programming.
- Write clear and effective python code based on conditional and iterative statements.
- Will be having an idea about string, list, tuple and functions.
- Create an applications using python programming.

Syllabus

Unit-I

Introduction: Basic Concept of python, its characteristics, Features, Names of popular application in python, various flavours of python, limitations of python, versions of python, Python-2 and Python-3 differences. Identifiers,keywords,datatypes, use of comments in python, variables and constants, various operators used in python.

Unit-II

Input-output and Conditional statements:input and output statements and basic simple programs using it.Decision Making statements: if statement, if-else statement and nested if statement.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA302	Major	Python Programming	2	0	2	3	60	20	20	30	20

Iterative and Transfer Statements: Iterative statements: For Loop, While loop, nested loops.Transfer statement: break and continue statement.

Unit-III

Strings Used in Python Programming: Definition, accessingcharacters or values of a String, Updating Strings,String Special Operators, String Formatting Operator.

List, Tuples, Functions, Introductory concept of Python Lists and Python Tuples, list Vs tuples, Basic concept of python functions.

Unit-IV

Python File Handling: concept and types of files used in Python Programming language.

Operations like opening and closing a file with various modes, deleting a file.

Unit-V

Introduction of Python OOPs Concepts: Introduction of Class and Object, creating class and its instance, constructor **(**Parameterized Constructor and Non-Parameterized Constructor), destructors, polymorphism, inheritance (Multilevel and multiple), definition of data abstraction.

Text Books:

1. PratiyushGuleria," Basics of Python Programming, BPB Publications, March 2020.
2. Jason Cannon" Python programming for beginners, Kindle book, 2020
3. Ryan Turner, "Python Programming: 3 Books in 1: Ultimate Beginner's, Intermediate & Advanced Guide to Learn Python Step-by-Step", Kindle Edition, 2018.
4. Martin Brown, "Python: The Complete Reference", Mc-Graw-Hill, 2018.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA302	Major	Python Programming	2	0	2	3	60	20	20	30	20

List of Practical:

1. Write python program to print Hello World.
2.Write python program to print your Bio Data.
3. Write a program to perform different Arithmetic Operations on numbers in Python.
4. Write python program to Hello World using string variable.
5. Write python program to show use of break statement.
6. Write python program to show use of continue statement.
7.Write a python program to find largest of three numbers.
8. Write a Python program to convert temperatures to and from Celsius, Fahrenheit. [Formula : c = (f-32)/1.8]
9.Write a python program to find Smallest of three numbers
10.Write python program to store data in list and then try to print them.
11.Write a python Program to print first five even numbers.
12. Write a python Program to print first five odd numbers.
13.Write python program to print list of numbers using for loop.
14. Write a python program to find factorial of a number using loop.
15.Write a python program to display Fibonacci series.

Chairperson	Chairperson	Controller of Examinations	Joint Registrar
Board of Studies	Faculty of Studies	Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth
Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth	Vishwavidyalaya, Indore	Vishwavidyalaya, Indore
Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA304	Minor	Operating Systems	3	0	0	3	60	20	20	0	0

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs): The course is designed to make students:

- Familiar with design of operating systems as resource manager of a computer system
- Aware about the basic concepts of operating system architecture
- Understand about the concepts of processor management and memory management techniques
- Familiar with deadlock handling and inter-process communication
- Understand the device management.

Course Outcomes (Cos):

- The student will be able to understand the internal design of operating system.
- The student will be able to demonstrate operating system structure.
- The student will be able to demonstrate the scheduling and memory management techniques.
- The student will be able to understand the IPC and other techniques.
- The student will be able to understand device management system of computer.

UNIT I

Introduction to Operating System:- Objectives, functions and the services provided by Operating System. Evolution of operating system:-Batch processing, Multiprogramming, Multithreading, Time-sharing systems, Real Time, Distributed systems. Operating system structure:-System calls and system programs.

UNIT II

Process Management: -Process concept, Process Control Block, Process states, Process scheduling, CPU scheduling: - Basic concept and scheduling criteria, Long term, medium term , short term schedulers, various Scheduling algorithms, Measurement of performance of processor.

UNIT III

Memory management:-Logical and physical address spaces, Memory management without Swapping or Paging, Swapping and paging, Contiguous, allocation and its drawbacks, Non-contiguous allocation.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA304	Minor	Operating Systems	3	0	0	3	60	20	20	0	0

Virtual memory: - Demand paging and its need, Performance of demand paging, Page replacement and its need, Thrashing and allocation of frames.

UNIT IV

Deadlocks: - Characterization of deadlock, Methods of handling prevention, detection and avoidance, Recovery from deadlock.

Case Study of Linux: History, Features, Architecture of Unix and Linux, Linux Shell and kernel, Linux file system, simple shell commands, Editors, using Vi editors, working with files, absolute and relative paths.

UNIT V

I/O system: - Various I/O devices, Device drivers, structure of I/O software, TransformingI/O request of h/w operation. Secondary storage structure:- Disk structure, Disk Scheduling algorithms (First come first serve, shortest seek time first, SCAN, C-SCAN, LOOK and C-LOOK algorithms), Disk management, Swap space management and Disk reliability.

Text Books:

1. Silberschatz Galvin, Operating System concept, 5th edition.
2. D. M. Dhamdhare, System Programming and operating system, Tata McGraw Hill,2nd edition.
3. Milan Milenkovi'c, Operating System concept and design, Tata McGraw Hill.
4. Tanenbaum, A.S. "Modern Operating System", Prentice Hall of India Pvt. Ltd..
5. William Stallings "Operating Systems" , Prentice Hall of India Pvt. Ltd.
6. Joshi R.C. "Operating System" Wiley India.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA303	Minor	Computer Organization and Architecture	3	0	0	3	60	20	20	0	0

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

Course Education Objectives (CEOs):

a) To introduce the fundamental knowledge needed for the design of computer systems.
b) Explain in detail the logical operation of the most common standard digital components.
c) To show how the various data types found in digital computers are represented in binary form in computer registers.
d) To introduce a register transfer language and show how it is used to express micro operations in symbolic form.
e) To present the organization and design of a basic digital computer.
f) To deal with the central processing unit (CPU).
g) To understand the concepts in modern computer architecture.

Course Outcomes (COs):

Students will have thorough knowledge about:

a) The logical operation of the most common standard digital components.
b) The design of computer systems.
c) The various data types found in digital computers and how are they represented in binary form in computer registers.
d) Register transfer language and will be able to show how it is used to express micro operations in symbolic form.
e) The concepts in modern computer architecture.

Unit-I

Number System: Binary, Octal, Hexadecimal; Character Codes: BCD, ASCII, EBCDIC; Logic gates, Boolean Algebra, Canonical and Standard Forms, K-map simplification, Half Adder, Full Adder, Half Subtractor, Full Subtractor.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Program: BCA (Big Data Analytics) in association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCABDA303	Minor	Computer Organization and Architecture	3	0	0	3	60	20	20	0	0

Unit-II

Combinational logic Design: Binary Parallel Adder, Carry look ahead adder, BCD Adder, Decoders, Encoders, Multiplexers, Demultiplexers; Sequential Logic: Flip-Flops – RS, JK, D and T Flip Flops.

UNIT-III

Register Transfer and Micro-operations: Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro operations, Arithmetic logic shift unit.

UNIT-IV

Basic Computer Organizations and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Register reference instructions, Input-Output Instructions,

UNIT-V

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Difference between RISC and CISC.

Text Books:

1. M. Morris Mano, “Computer System Architecture”, 3e, Pearson Education, Inc. 2007
2. William Stallings, “Computer Organization and Architecture”, 8e, Pearson, 2010
3. Subrata Ghoshal, “Computer Architecture and Organization” , 1e, Pearson, 2011
4. Malvino, “Digital Computer Electronics: An Introduction to Microcomputers”, 2e, McGraw Hill Education, 1984.