



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* |
| BCCA301 | Compulsory | Computer Organization and Architecture | 4 | 0 | 0 | 4 | 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):

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

Course Outcomes (COs):

Students will have thorough knowledge about:

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

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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.

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Choice Based Credit System (CBCS) 2020-21

SEMESTER III

| COURSE CODE | CATEGORY | COURSE NAME | L | T | P | CREDITS | TEACHING & EVALUATION SCHEME | | | | |
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| BTIBM401 | UG | Cloud Computing: Project Based Learning | 3 | 1 | 2 | 5 | 60 | 20 | 20 | 30 | 20 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

*Teacher Assessment shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:

1. Understand the evolution and impact of cloud computing in the world today.
2. Understand the evolution and impact of cloud computing in the world today.
3. Explore end-to-end case studies for every key cloud industry and identify common patterns: public cloud, private cloud, hybrid cloud.
4. Understand technical aspects of cloud solutions: software as a service, platform as services and infrastructure as a service.
5. Build cognitive solutions, leveraging AI and data science in cloud solutions.
6. Understand industry practices to design and build agile cloud solutions, using the cloud Garage methodology.
7. Work in teams jointly exploring real-world cloud scenarios.
8. Prototype bespoke cloud solutions leveraging industry-proven concepts, technologies and mythologies.

Course Outcomes:

1. Understand how deep our industries and societies rely on the cloud computing global infrastructure.
2. Identify the consumer massive adoption of cloud computer application through mobile devices.
3. Understand the role that cloud computing plays in the digital modernization journey of organization today.
4. Validate the different patterns of cloud computing adoption including public cloud services, private enterprise setting and hybrid approaches.
5. Identify common challenges associated with the adoption of cloud computing solutions.

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SEMESTER III

Syllabus:

UNIT I : CLOUD COMPUTING LANDSCAPE

- Cloud impact in our lives
- Cloud enterprise adoption
- Cloud services
- Summary & resources

CLOUD INDUSTRY ADOPTION

- Drivers for Digital Transformation
- Cloud Impact in Banking
- Cloud Impact in Education
- Summary & resources

UNIT II: API PLATFORM REVOLUTION

- Cloud Culture of Change
- API Platforms Landscape
- APIs driving the Cloud platform revolution
- Summary & resources

UNIT III: DATA IN THE CLOUD

- Where and how will data be used?
- Why use NoSQL?
- Attributes of NoSQL databases
- Summary & resources

UNIT IV: CLOUD AND AI

- AI Industry Adoption
- AI Evolution
- Empowered Cloud Apps with AI
- Summary & resources

CLOUD FOR MULTI-CHANNEL

- The Need for a Multi-channel platform
- Multi-channel platform characteristics
- Rapid and Intelligent
- Summary and resources

UNIT V: CLOUD SECURITY

- Cloud Security landscape
- Security concerns in microservices
- OAuth protocol
- Summary & resources

DEVOPS FRAMEWORK

- What is DevOps?
- DevOps Agile Culture

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SEMESTER III

- DevOps Lifecycle

Text Books:

1. Cloud Computing Bible by Barrie Sosinsky, 2010
2. Cloud Computing: Concepts, Technology & Architecture by Zaigham Mahmood, Ricardo Puttini, Thomas Erl, 2013

Reference Books:

1. Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More by Dr Kris Jamsa , 2012
2. Cloud Computing Paperback – 2019
3. by Mehul Mahrishi Kamal Kant/Ruchi Doshi/ Temitayo Fagbola
4. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, 1e Paperback – 2008 by Miller
5. IBM Skills Academy (PDF Provided by IBM)

List of Practical:

- Create an IBM Cloud Account

ACME AIRLINE CLOUD ADOPTION

- Prepare your Environment
- Creating an APP
- Developing an App
- Acme Business Case- Preparing the APP
- Prepare Your Environment
- Creating an App
- Developing an App
- Acme Business Case – Preparing the App

MAINTENANCE CREW CLOUD APP

- Digital App Builder Data Sets
- Cloud Management
- Return to the Digital App Builder
- Preview Dataset in Action

ADD AUTO MAINTENANCE CREW APP

- Create Cloud Cognitive Services
- Connect Services to your App
- Train and Implement Cognitive Services

ADD MULTI-CHANNEL SUPPORT

- Android Studio
- Enabling Android in Digital App Builder
- Preview your APP in Android Device

SECURE THE MAINTENANCE CREW APP

- Login Security

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SEMESTER III

- Mobile Phone Authorization
- Test new security functionality

EXPLORE TOOLCHAINS

- Enable Toolchains
- Create and Explore the Garage Method
- Finalize the Creation of Toolchain
- Agile Planning
- Continuous Integration and Delivery
- Manage IBM Cloud Apps
- Manage App Using New Relic & PagerDuty
- Slack and PagerDuty Integration
- Learn from Users

DEVELOP & TEST MICROSERVICES

- Create Microservices Toolchain
- Configure Tool Integrations
- Configure Tool Integrations
- View Build & Deployment Activity
- Manager Access
- Configure Pager Duty
- Submit an Issue
- Modify Code

IDENTIFY AN ERROR

- Fix the Problem and Deploy
- Fix the Problem and Deploy
- Explore the DevOps Insights
- Improve Deployment Management
- Improve Visibility
- Delete Tools and Artifacts

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| | | | | | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* |
| BCCAIBM301 | Compulsory | Python Programming | 4 | 0 | 4 | 6 | 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.

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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.

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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, accessing characters 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.

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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.

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| BCCA304 | Compulsory | 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.

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| BCCA304 | Compulsory | 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, Transforming I/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.

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BBAI501 HUMAN VALUES AND PROFESSIONAL ETHICS

| SUBJECT CODE | SUBJECT NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
|--------------|--------------------------------------|------------------------------|---------------|---------------------|-------------------------|---------------------|---|---|---|---------|
| | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
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| BBAI501 | Human Values and Professional Ethics | 60 | 20 | 20 | - | - | 4 | - | - | 4 |

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Course Objective

The objective of the course is to disseminate the theory and practice of moral code of conduct and familiarize the students with the concepts of "right" and "good" in individual, social and professional context

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of 5 questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. Help the learners to determine what action or life is best to do or live.
2. Right conduct and good life.
3. To equip students with understanding of the ethical philosophies, principles, models that directly and indirectly affect business.

COURSE CONTENT

Unit I: Human Value

1. Definition, Need for Human Values, Sources of Values



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2. Essence of Values
3. Classification of Values (Temporal Values, Universal Values, Instrumental Values, Terminal Values)
4. Values Across Culture

Unit II: Morality

1. Morality its meaning and definition
2. Values Vs Ethics Vs Morality
3. Concept of Impression Management
4. Impression Management Strategies (Intimidation, Ingratiation, Self-promotion, Supplication, Exemplification)

Unit III: Leadership in Indian Ethical Perspective.

1. Leadership, Pre-requisites of Leadership
2. Approaches to Leadership, Leadership Styles
3. Ethical Leadership
4. Values in Leadership

Unit IV: Business Ethics

1. Business Ethics its meaning and definition
2. Relevance of Ethics in Business organizations.
3. Theories of Ethics (Teleological, Deontological)
4. Code of Ethics

Unit V: Globalization and Ethics

1. Globalization and Business Changes
2. Values for Global Managers
3. Corporate Social Responsibility
4. Benefits of Managing Ethics in Work Place.

Suggested Readings:

1. Kaur, T. (2004). *Values and Ethics in Management*. Galgotia Publishing Company: New Delhi
2. Kaushal, S.L. (2006). *Business Ethics. Concepts, Crisis and Solutions*. Deep & Deep Publications Pvt. Ltd.: New Delhi
3. Beteille, Andre (1991). *Society and Politics in India*. Athlone Press: New Jersey.
4. Chakraborty, S. K. (1999). *Values and Ethics for Organizations*. Oxford University Press
5. Fernando, A.C. (2009). *Business Ethics - An Indian Perspective*. India: Pearson Education: India



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