Yearly Syllabus for Undergraduates
As recommended by Board of Studies of Computer Science and Applications
Barkatullah University, Bhopal
Session 2019-20 onwards

Class: BCA III Year (for Regular Students only)

Paper Code	Paper Title	Internal			Theory	Grand Total
		Three Months	Six Months	Total		
BCA-301	Computer Networks, Internet Tech. & Security	5	5	10	40	50
BCA-302	Core Java	5	5	10	40	50
BCA-303	MIS	5	5	10	40	50
BCA-304	Python Programming	5	5	10	40	50
BCA-305	E-Governance	5	5	10	40	50
BCA-306	Principles and Practices of Management	5	5	10	40	50
BCA-307	Project: Application Development using PHP/JSP & MySQL	5	5	10	40	50
BCA-308	Lab-I(java programming)					50
BCA-309	Lab-II (python programming)					50
					Grand Total	450

Paper Code: BCA-301
Paper Title : COMPUTER NETWORKING& INTERNET SECURITY Max.Marks:40

UnitI

Definition and concept of networking ,transmission modes, transmission media, Internetworking, connecting devices, Adapters, Brouters, evolution of Network Technology, Standards and protocol, Introduction to Analog signal, Digital signal, Modulation and Demodulation OSI Reference Model-Layered architecture, function of each layer, protocol used.

Unit II

Switching-Message, Packet, and Circuit Switching, Multiplexing - FDM, TDM, WDM, SONET, Cellular network, satellite network, IEEE 802 STANDARDS-CSMA/CD, TOKEN BUS, TOKEN RING, FDDI, Routing algorithms – Distance Vector routing, Link state routing, TCP/IP- Overview, Architecture, functions of each layer and protocol, IP addressing, subnet and subnet mask, IP addressing-classes, IPV4,IPV6.

Unit III

Bootstrap protocol, DHCP, mobile IP, DNS, Telnet, SMTP, HTTP, SNMP ,TFTP, ATM network, ATM Architecture, BISDN reference model, ATM applications, Data link control - Line discipline, Flow control, Error control, Conventional Encryption – Convention Encryption: Conventional Encryption Model, Steganography, Classical Encryption Techniques, Simplified DES, Block Cipher Design Principles, Block Cipher Modes of Operation.

Unit IV

Cryptography, Public key encryption and hash functions –public key cryptography, principles of public key cryptosystems, The RSA algorithm, Message Authentication and Hash Functions Authentication Requirements, Authentication Functions, Message Authentication Codes, MAC Algorithm, Hash Function algorithms, Secure Hash Algorithm (SHA-1,SHA-256,SHA-512),IP Security.

Unit V

Network Security at various layers, Secure-HTTP, SSL, PSP, authentication Header, Key distribution protocols, Digital Signature, Digital Certificates, Security protocol, Levels of security, Virus and Worms related threats, Malicious programs, FIREWALL design principles, Wifi, Bluetooth, Infrared.

Textbooks and Reference Books:

1. Forouzan,Data Communication - TMG
2. Tanenbaum, Computer Networks
3. William Stallings, Cryptography and Network Security
4. P S Gill, Cryptography and Network Security
5. RajnishAgarwal, B Tiwari, Data Communication and Computer Network

Paper Code :BCA- 302
Paper Title: CORE JAVA

Max.Marks:40

Unit I

History and Features of java, C++ Vs Java, how java works,JAVA Program Structure, Java Virtual Machine concepts, java platform overview,Primitive data types, tokens, variables and constants, operators, precedence, expressions ,statements – branching , looping and jumping , labeled statements.

Unit II

Classes, objects and methods : defining a class, adding variables and methods, creating objects, constructors, Instances, fields and methods initialization by constructors, access methods Arrays , String and String buffer classes , Wrapper classes, using the JDK tools.

Unit III

Inheritance, Super class, Subclass, basic types, using super keyword, abstract and final classes, Method overloading, Interface, Thread, Thread Life cycle, Multithreading examples, Synchronized threading, Priorities of thread.

Unit IV

Exception handling: fundamentals, exception types, uncaught exceptions, throws, throw, try-catch, finally, built in exceptions, creating your own exceptions, Packages, Built in Packages, Creating your own Package
put/output-basics-streams, byte and character streams.

UnitV

Applet programming- Local and Remote Applets ,AppletVs Applications creating and executing java applets , inserting applets in a web page , java security, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applet Tag, Getting Input from the User.
Networking –basics, networking classes and interfaces, using java.net package, TCP/IP and datagram programming.

Text books & Reference books:

1. E.Balaguruswamy, "Programming with java".
2. Schildt, "Java Complete Reference", TMH.
3. Das Rashmikanta, "Core Java", IE, Vikas Publication.
4. BansalNitin, Ajit Kumar,"A Simplified approach to Java Programming", KALYANI Publications.

Paper Code: BCA- 303
Paper Title :Management Information Systems

Max.Marks:40

Unit I

The System Concept: Definition, Characteristics of Systems, Elements of a System, Open and Closed System, Formal and Informal Information Systems, Computer based Information Systems, Decision Support System, Interpersonal Communicational System, Physical or Abstract Systems.
Systems Analysis and Design: Life Cycle: SDLC, Requirements specifications, Feasibility analysis, Final Specifications, Role of System Analyst, Attributes of a Systems Analyst.

Unit II

Systems Analysis: System Planning and Initial Investigation, Information gathering tools, Tools used in System Analysis, Data flow diagrams, case study for use of DFD. Leveling of DFDs, Logical and physical DFDs, Structured and Unstructured DFDs, Types of Interviews and Questionnaires, Data Dictionary, Decision Trees and Structured English, Feasibility Study, Cost/Benefit Analysis.
Systems Design: Logical & Physical Design, Design methodologies, Structured Design, Input/output and Forms Design: Input Design, Output Design, Requirements of form Design, Screen design, graphical user interfaces, interactive I/O on terminals, Specification oriented design vs. Procedure oriented Design, File Organization and Database Design .

Unit III

System Implementation: System Testing and validation, Systems Quality Assurance, Level of Quality Assurance, Implementation and software maintenance, Hardware and software selection, Project Scheduling, System Maintenance: Maintenance activities and issues, Security , Disaster/Recovery Planning, Ethicscodes and standards of behavior in system development.
Management Information Systems – Need, Purpose and Objectives – Contemporary Approaches to MIS, Information as a strategic resource – Use of information for competitive advantage – MIS as an instrument for the organizational change.

Unit IV

Management and Decision Making – Models of Decision Making – Classical, Administrative and Herbert Simon's Models – Attributes of information and its relevance to Decision Making. Types of information.
Information Technology – Definition, IT Capabilities and their organizational impact. IT enabled services such as Call Centers, Geographical Information Systems etc., Data Base Management Systems – Data Warehousing and Data Mining. **Information Security and Control** – Quality Assurance -Ethical and Social Dimensions – Intellectual Property Rights as related to IT Services / IT Products – Managing Global **Information** Systems.

Unit V

Decision Support System– Importance of decision support system, Characteristics of Decision Support System, Computerized Decision Support-Decision Making: introduction and Definitions, Models, Phases of the Decision-Making Process: The Intelligence Phase, Design Phase, implementation Phase, Executive **Information Systems** – Executive Support Systems – Expert Systems and Knowledge Based Expert Systems – Artificial Intelligence.
Performance Evaluation and monitoring, Model Building, Simulation, Quality Control and Quality Assurance.

Textbooks & Reference Books:

1. Laudon and Laudon, —Management Information Systems, Pearson Education Asia.

2. Jawadekar, —Management Information Systems, Tata McGraw-Hill.
3. Elias M.Awad, "System Analysis and Design"
4. Perry Edwards, "System Analysis and Design"
5. I.T. Haryszkiewycz, "Introduction of System Analysis and Design" , PHI
6. Davis and Olson, —Management Information Systems, Tata McGraw-Hill.
7. Turban and Aronson, —Decision Support Systems and Intelligent Systems, Pearson Education.
8. O'Brien, —Management Information Systems, 8/e, Tata McGraw-Hill.
9. Kroenk Hatch,. —Management Information Systems, Tata McGraw-Hill.
10. JayantOke, —Management Information Systems.
11. Ron Weber, —Information System Control and Audit.
12. Management Information System- Rakesh Kothari

Paper Code: BCA-304
Paper Title: Python Programming

Max. Marks: 40

UNIT I

Python Basics : Python interpreter, Python idle, dynamically typed and strongly typed features,basic data types, variables, expressions, statements, operators, flow of execution. Input and Output statements, Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration: while, for, break, continue, pass, implementing 'for' through range(),'in' and 'not in' operators for sequence traversal. Creating and executing .py scripts.

UNIT II

Data Structures: Lists- append, extend, insert, index, remove, pop,count, sort, reverse, slicing, list comprehension, Copying a list:deep copy, shallow copy. Tuples- index, count, usage, use of tuples as a swap function. Dictionaries-keys, values, tuples, nested dictionaries, dictionary comprehension. Strings-Single line and multi-line strings, formatter, isdigit, isalpha, isalnum, islower, istitle, isspace, title, lower, upper, strip, split, splitlines,join etc. Sets – union, intersection, subset, superset, difference, symmetric difference, copy, add, remove, discard etc.

UNIT III

Functions& File Handling: Inbuilt Functions- id, len,chr, ord etc., defining and calling a function, arguments, global versus local variables, defining and using lambda functions. the map(), filter(), reduce() functions.

Working with files : read, write and append modes: r,w,a,r+,w+,a+, reading-read(), readline(), readlines(), writing-write(), writelines(), seek(), tell(). Word count, copy file scripts through file handling concepts.

UNIT IV

Classes, modules and exceptional handling: Classes: Introduction, Member variables and defining methods, constructor, destructor, data encapsulation, inheritance, multiple inheritance, diamond problem solving technique of python.

Modules: inbuilt modules- sys, random, time etc. import, from..import, from..import *. Constructing packages, role of __init__.py

Exceptional Handling: The **try-except-else-finally** block, the **raise** statement, the hierarchy of exceptions, adding exceptions.

Unit V

Database & GUI Programming: importing sqlite, connecting to database, creating table, insert, select, update, delete, drop tables, accessing and modifying tables through python.

Graphical user interfaces; event-driven programming paradigm; tkinter module, creating simple GUI; buttons, labels, entry fields, dialogs; widget attributes - sizes, fonts, colors layouts, nested frames.

Textbooks & Reference Books:

1.TanejaSheetal& Kumar Naveen , "Python Programming: A modular approach", Pearson
2.Zed A. Shaw , "Learn Python the Hard Way", Zed Shaw's Hard Way Series
3.Liang Y. Daniel, "Introduction to Programming Using Python", Pearson
4.Charles Dierbach, "Introduction to Computer Science using Python", Wiley
5.Michael T. Goodrich, "Data Structures and Algorithms in Python", Wiley

Paper Code: BCA-305
Paper Title :E-GOVERNANCE

Max.Marks: 40

Unit I

Introduction to E-Governance: Needs of E-Governance, Issues in E-Governance applications and the Digital Divide: Evolution of E-Governance. Its scope and content, Present global trends of growth in E-Governance; Other issues.
Models of E-Governance: Introduction; Model of Digital Governance. Broadcasting/ Wilder Dissemination Model, Critical Flow Model, Comparative Analysis Model, Mobilization and Lobbying Model, Interactive-service Model/Government-to-Citizen-to-Government Model (G2C2G), Evolution in E-Governance and Maturity Models: Five Maturity Levels, Characteristics of Maturity Levels, Key areas, Good Governance through E-Governance Models.

Unit II

E-Governance Infrastructure and Strategies: E-readiness: Digital System Infrastructure, Legal Infrastructural Preparedness, Institutional Infrastructural Preparedness, Human Infrastructural Preparedness, Technological Infrastructural Preparedness; Evolutionary Stages in E-Governance.
Data Warehousing and Data Mining in Government: Introduction, National Data Warehouses: Census Data, Prices of Essential Commodities, Other areas for Data Warehousing and Data Mining: Agriculture, Rural Development, Health, Planning, Education, Commerce and Trade, Other Sectors.

Unit III

C er Security: Information System Threats and attacks, Classification of Threats and Assessing Damages, Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices, Authentication Service Security, Security Implication for organizations, Laptops Security Framework for Information Security, ISO 27001, SEE-CMM, Security Metrics, Information Security Vs Privacy.
Basic Principles of Information Security, Confidentiality, Integrity, Availability and other terms in Information Security, Information Classification and their Roles, Security Threats to E-Commerce, Virtual Organization, Business Transactions on Web, E-Governance and EDI, Concepts in Electronics payment systems, E-Cash, Credit/Debit Cards.

Unit IV

Virtual Private Networks- Need, Use of Tunneling with VPN, Authentication Mechanisms, Types of VPNs and their Usage, Security Concerns in VPN.
IT Act & Cyber Laws :Cyber Crime and Cyber Laws, Types of Cyber Crimes, Cyber Law Issues in E-Business Management, Overview of Indian IT Act, Information Technology Act 2000, International Scenario in Cyber Laws: Data Protection Laws in EU and USA, Ethical Issues in Intellectual property rights, Copy Right, Patents, Data privacy and protection, Domain Name, Software piracy, Plagiarism, Issues in ethical hacking.

Unit V Case Studies: Indian Context: Cyber Laws, Implementation in the Land Reform, Human Resource Management Software; India: NICNET, Collectorate, Computer-aided Administration of Registration Department (CARD), Smart N arpalika, National Reservoir Level and Capacity Monitoring System, Computerization in Andra Pradesh, EkalSevaKentra, SachivalayaVahini, Bhoomi, IT in Judiciary, E-Khazana, DGFT, PRAJA, E-Seva, E-Panchyat, General Information Services of National Informatics Centre; E-Governance initiative in USA; E-Governance in China; E-Governance in Brazil and Sri Lanka.

Textbooks & Reference Books:

1. C.S.R. Prabhu, —E-Governance: Concepts and Case Studies, Prentice-Hall of India Private Limited, 2004.
2. Backus, Michiel, —e-Governance in Developing Countries, IICD Research Brief, No. 1, March 2001.
3. N. Gopalsamy, —Information Technology & e-Governance, New Age Publication, First Edition 2009.
4. Godbole,— Information Systems Security, Willey
5. Merkov, Breithaupt.— Information Security, Pearson Education
6. Schou, Shoemaker, —Information Assurance for the Enterprise, Tata McGraw Hill
7. Sood,—Cyber Laws Simplified, Mc-Graw Hill
8. Indian IT Act 2000-Bare Act Professional.
9. PavanDuggal, —Cyberlaw-The Indian Perspective: 2009 Edition with IT Act amendments 2008, Saakshar Law Publications.
10. Farooq Ahmad, —Cyber law in India, Pioneer Books
11. Vakul Sharma, —Information Technology Law and Practice, Universal Law Publishing Co. Pvt. Ltd..
12. Suresh T Vishwanathan Bharat, —The Indian Cyber Law, Law house New Delhi.
13. P.M. Bakshi& R. K. Suri, —Hand Book of Cyber & E-Commerce Law, Bharat Law House New Delhi.

Paper Code: BCA-306
Paper Title: PRINCIPLES AND PRACTICES OF MANAGEMENT **Max. Marks: 40**

Unit I

Introduction to Management Concept, Definition and Characteristics: Management as an Art or Science: Objective of business management, Manager: roles and responsibilities, Management Theories and Practices; Core functions of Management.

Unit II

Planning: Introduction (concept, definition and characteristics) ; Types of Planning; significance of planning,Planning versus forecasting. Planning Principles; Planning Process; Factors responsible for failure; Management by objectives.

Unit III

Organizing: Introduction (concept, definition and characteristics), Organizing Process and its importance; Span of Management; Organizing Principles; Line and staff relationship(s); Delegation of Authority,Departmentation; Centralization and decentralization.

Unit IV

Directing: Introduction, Components of Directing; Principles of Directing; Directing Styles; Tools for Directing. Leadership: styles and importance.
Controlling: Introduction, Control process; Types of control, Controlling Principles and Techniques; Resistance to control- effects and ways to overcome resistance; Controlling by Exception.

Unit V

Coordinating: Introduction, Elements of coordination, Principles of coordination; Approaches of coordination.
Staffing: Introduction; Roles and responsibility of staffing; Staffing process; Factors affecting staffing process.

TEXT BOOKS& REFERENCE BOOKS:

1. Haroid Koontz, O'Donnel and Heinz Welhrich, 'Principles of Management',McGrawHillCo
2. R.D. Agarwal , 'Organization and Management Concepts', Tata McGraw Hill.
3. Newman and Warran, 'The process of management: concepts, behavior and practices', PHI
4. S M Shukla, 'Principles of Management', SahityaBhawan, Agra.
5. Robbins S. P. and Decenzo David, " Fundamentals of Management: Essential Concepts and Applications", Pearson Education,
6. Hillier Frederick S. and Hillier Mark S. - Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets, Tata McGraw Hill, 2nd Ed., 2008.

Paper Code :BCA-307 Marks :50

Paper Title: Project :Application Developmentusing PHP & MySQL.

Recommendation: The technology to be used for Project Development to be revised every 2 yrs .as per the prevailing trends and needs of the industry/market.

GUIDELINES for Project Development in BCA Final Year.

- **Internal Evaluation (CCE) will be based on viva on project synopsis((i.) System study and system design, (ii.) Presentation) submitted by the student – 10 marks.**
- **External Evaluation will be based on , Viva and demonstration of the work done in the project– 40 marks**

1. Project will consist of software development taken up in a group consisting of not more than 2 students.
2. Report will be submitted jointly by the group in one copy.
3. Project can be done eitheras on-the-job training in a software development organization/company or it can be a self effort as a suitable solution to a real world problem identified in consultation with guide teacher.

GUIDELINES FOR PROJECT FORMULATION

*** TYPE OF PROJECT**

It is **suggested** that the project to be chosen should have some direct relevance to the real world. Students are expected to work out a solution for real life problemsinvolving diverse application domains in some industry/development laboratories/educational institutions/software companies. However, it is not mandatory for a student to work on a live project. The student can formulate or innovatea project problem with the help of his/her Guide.

The project work will give an opportunity to the students to develop quality software solutions. Project development should involve all the stages of the software development life cycle (SDLC) like requirements analysis, systems design, software development/coding, testing and documentation, with an overall emphasis on the development of reliable software systems. The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, and develop good understanding of SDLC.

Project Ethics to be adhered to: Plagiarism to be avoided: The project should be genuine and original in nature and should not be copied from anywhere . Students should be encouraged to work in the suggested areas listed at the end of the guidelines.

***Calendar For The Project**

Sr. No.	Topic	Date
1	Assigning of teacher guide	Before 25/July
2	Topic Finalized	Before 20/August/

3	Submission Of the Project Abstract And Synopsis (CCE 1)	Before 20/September/
4	PPT Presentation (CCE 2)	Before 20 /December/
5	First proof of the Project Report to be checked by teacher guide	Before 20/February/
6	Final Submission and Viva/demonstration by external examiner	2nd week of March

*** PROJECT PROPOSAL (SYNOPSIS)**

The project proposal should be prepared in consultation with thementor in organisation / teacher guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project proposal should contain complete details in the following form:

1. Title of the Project
2. Introduction and Objectives of the Project
3. Relevance of the topic for the benefit of the society
4. Analysis :(DFDs at least up to second level , ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).
5. Design: A complete structure which includes: Number of modules and purpose of each module to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules.
6. Testing process to be used.
7. Reports generation (Mention tentative content of report)
8. Tools / Platform, Hardware and Software Requirement specifications
9. Are you doing this project for any Industry/Client? Mention Yes/No. If Yes, Mention the Name and Address of the Industry or Client
10. Future scope and further enhancement of the project.

Incomplete project proposals in any respect should be given another chance and re-submitted after incorporating changes and suggestions given by the guide. CCE marks to be given based on synopsis viva.

*** PROJECT REPORT FORMULATION**

I. The project report must contain the following in detail :

1. Certificate from the organization where project has been undertaken.
2. Certificate of Originality (Format given).
3. Declaration(Format given).
4. Acknowledgement (Format given).
5. Introduction
4. Objectives
5. Tools/Environment Used
6. Analysis Document (This should include SRS in proper structure based on Software

Engineering concepts. E-R diagrams/Class diagrams/any related diagrams (if the former are not applicable), Data flow diagrams/other similar diagrams (if the former is not applicable), Data dictionary)

7. Design Document (Modularization details, Data integrity & constraints including database design, Procedural design, User interface design)
8. Program Description (Detailed specification instead of code), Comments & Description.)
9. Testing (Test case designs are to be included separately for Unit testing, Integration testing, System testing; Reports of the outcome of Unit testing, Integration testing, System testing are to be included separately. Also, details of debugging and code improvement are to be included.)
10. Input and Output Screens
11. Implementation of Security for the Software developed (In case, you have set up a User Name and Password for your software, you should ensure the security of User Name and Password during transmission to server)
12. Limitations, future scope for improvement/enhancement of the Project
13. Application of the project mentioning benefit to the real world
14. Bibliography/ References
15. Synopsis

II. The Project Report may not be more than 80 1.5mm spaced A-4 size typed pages .

III. Executable file of the project must be submitted in soft copy attached at the back of the project report.

IV. The project report should be hard bound; should consist of a Contents page; all pages of report should be numbered; content should be well organized in a meaningful manner; printouts of text & screen layouts should be original and should not be xeroxed)

***Important Points For Preparation & Submission of the Project Report**

1. The Project Report should be submitted in A-4 size typed in 1.5mm line space, justified. (Font Times New Roman, size normal 12 , Heading 16 and Subheading 14)
2. The length of the report should be between 50 to 80 pages including the cover page, summary, table of contents, list of figures, list of tables, and acknowledgement.
3. Ensure that Project Synopsis and the final report contain the signatures of both the Guide and the student along with date.
4. If any project report is received in the absence of the items listed above, it will be rejected and returned to students for compliance. Also, violation of Project Guidelines may lead to rejection of the Project .
5. Spiral bound photocopy of the project report is to be submitted to the College. Original copy of the same Project Report is to be retained with the student and the student is supposed to carry his copy while appearing for viva voce.
6. If the title and content of the Project differs from the title mentioned in the Project Proposal, the Project Report should be rejected by the external examiner and valuation to be done accordingly.

***Suggested list of topics for Application Development**

A sample list of topics for Project development is provided below. This is just a suggested list and students are free to choose any other innovative project relevant to computer applications **which can be developed using PHP/ MySQL.**

- Customer Targeted E-Commerce
- Automated Faculty Evaluation System
- Online Health Shopping Portal With Product Recommendation
- College Forums with Alumni With Content Filtering
- Sql Injection Prevention System
- College Social Network Project
- ERP System
- Online Book Recommendation Using Collaborative Filtering
- Monitoring Suspicious Discussions On Online Forums
- Fake Product Review Monitoring & Removal For Genuine Ratings
- A Commodity Search System For Online Shopping Using Web Mining
- Secure Online Auction System
- Farming Assistance Web Service
- Online Loan Application & Verification System
- Matrimonial Portal
- Online Herbs Shopping Project
- Online Bakery Shop System
- Course Material Distribution System
- Online Furniture Shop Project
- Hotel Room Comparison System Project
- Salon management System
- Sports Club Management Project
- Online Blood Bank Project
- Stationery Management System
- Online Application for the Training and Placement
- Online Leave Management System
- Airline Reservation System
- Recipe Management System
- Complaint Management System
- Web Based Meeting Scheduler
- Student Project Allocation And Management
- Ticket Reservation System
- Content Management System
- Call Center Management
- Online On-Request Courses Coordination System
- Civil Registry
- Online Career Guidance and Placement Unit
- Ad Agency

* Formats of certificates to be included

A. Cover page:

PROJECT REPORT

On

<Project Title>

SUBMITTED TO

Barkatullah University

<logo of university>

IN PARTIAL FULLFILLENT
OF THE DEGREE OF
Bachelor of Computer Applications
Session <>

By

Name : .....
Roll No : .....
Enrollment No.....

Under the
Guidance of

<Name of Internal Guide>
<Designation >

< Name of External Guide>
<Designation>

B. Certificate from the organization :(to be issued by the organization and the photocopyof the certificate is to be attached in the report)

C. Format for acknowledgement

ACKNOWLEDGEMENT

I convey my sincere gratitude to _____ for giving me the opportunity to prepare my project work in _____. I express my sincere thanks to all the staff members of _____.

I am thankful to _____ for her/his guidance during my project work and sparing her/his valuable time for the same.

I express my sincere obligation and thanks to the Principal and all Faculties of the Department of _____, _____, for providing me with guidance, help, motivation and valuable advice at every stage for completing the project work successfully.

Signature:
Name:
Roll No:

D. Format for Declaration

DECLARATION

I do hereby declare that the project work entitled "_____"submitted by me for the partial fulfillment of the requirement for the award of Bachelor of Computer Applications, is an authentic work completed by me. The report being submitted has not been submitted earlierfor the award of any degree or diploma to any Institute or University.

Date:

Signature :
Name:
Roll No:

E. Certificate of Originality

CERTIFICATE OF ORIGINALITY

This is to certify that the project report entitled _____ Submitted to Barkatullah University, Bhopal, in partial fulfillment of the requirement for the award of the degree of Bachelor of Computer Applications, is an original work carried out by Mr./ Ms. _____ Enrollment No.: _____ Roll.No.....

The matter embodied in this project is a genuine work done by the student and has not been submitted whether to this University or to any other University / Institute for the fulfillment of the requirement of any course of study.

Signature of the Guide
Name, Designation and
Address of the Guide

BCA 308 Lab I :

A. Core Java Programming (Using any Text editor)

1. Find greater number between two numbers. Using conditional operator.
2. Find the factorial of number if number is given by user using command line argument.
3. Write a program to check if a number is prime or not.
4. Write a program to display tables from 2 to 10.
5. Write a program to print Fibonacci series.
6. Enter a no. and check whether it is even or odd.
7. Write a Program to find sum & average of 10 no. using arrays
8. Write a program to display reverse of a digit no. using array.
9. Write a program to display grade according to the marks obtained by the student.
10. Write a program to calculate the salary of an employee if salary is greater than or equal to 20000 and year of service is greater than or equal to 5 years then bonus will be 2000 otherwise 1000 and print grass salary of employee.
11. Write a program to convert the given no of days into months & days using with classes, objects and method.
12. Write a program to convert given string into Uppercase and lowercase and get the length of string using array.
13. Create a package called "Arithmetic" that contains methods to deal all arithmetic operations. Also write a program to use the package.
14. Define an exception called "Marks out of Bound" exception that is thrown if the entered marks are greater than 100.
15. Write a program using application of single inheritance. Find the area of rectangle & volume of cube.
16. Develop a simple real life application to illustrate the use of multithreading.
17. Write a program using multiple inheritance calculate area and parameter of a circle
18. Write a program which takes input from keyboard and sends output to the console
19. Write an applet program to draw a Rectangle (color = orange)and an right aligned oval.
20. Develop an applet that receives 3numeric values as inputs from the user and then displays the largest no. on the screen.

B. **Management Information System Lab**

1. Identify some Real time Business Domain Problems.
2. Documentations of any one identified Problem (Preparation of Problem statement) by using process Analyst tools for making DFD/ER Diagrams.

BCA 309 : Lab II : PYTHON PROGRAMMING

Max.Marks: 50

SUGGESTED LIST OF PRACTICALS

1. Find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500?
2. Print the first 2 and last 3 characters in a given string. Use the string slicing.
3. Write a program that eliminates duplicates in a list.
4. Implement shallow copy and deep copy of a list.
5. Find the largest of n numbers, using a user defined function largest()
6. Write a function that capitalizes all vowels in a string.
7. Read a line containing digits and letters. Write a program to give the count of digits and letters.
8. Write a function myReverse() which receives a string as an input and returns the reverse of the string.
9. Use the list comprehension methodology in python, to generate the squares of all odd numbers in a given list.
10. Generate a dictionary and print the same. The keys of the dictionary should be integers between 1 and 10 (both inclusive). The values should be the cubes of the corresponding keys.
11. Create a nested dictionary. The roll number of a student maps to a dictionary. This inner dictionary will have name, age, and place as keys. Read details of at least three students.
12. Enter a word. Create a dictionary with the letters of this word as keys, and the corresponding ASCII values as values.
13. Define a class with three methods: readString(), printString(), writeString(). The first method should read the contents of a file. The second method should print the contents to the console. The third method should write the contents to a new file.
14. Create a class account which has constructor to input account_no, name, balance from user, print_account() to display the account details, and deposit(), withdraw() which inputs amount and add/subtract them from the total amount of individual object.
15. Create a database table in sqlite and show the table data in python.
16. Implement DML commands in SQLite from python interface.
17. Implement tkinter methods in a python script.