


TEACHING PLAN (2021-22)
DEPARTMENT OF COMPUTER APPLICATION

Programme : B.A(NEP)	Year: First	Semester: First
Name of Faculty: Ms. Vandana Agarwal		
CourseCode: B070101T	Course Title: Problem Solving using Computer	
Credits:4	Core Compulsory	
Max.Marks: 25+75	Theory	
Courseoutcomes:		
<ul style="list-style-type: none"> ✓ Understand hardware components of computer systems such as memory system organization, input/output devices, aware of software components of computer system, and windows operating system concepts. ✓ Develops basic understanding of computers, the concept of algorithm and algorithmic thinking ✓ Develops the ability to analyze a problem, develop an algorithm to solve it. ✓ Develops the use of the Python programming language to implement various algorithms, and develops the basic concepts and terminology of programming in general. ✓ Introduce the more advanced features of the Python language 		
Unit	Topic	No.of Lectures
I	Computer Fundamentals: Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers.	7
II	Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices. Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.	8
III	Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	7
IV	Overview of Programming: Structure of a Python Program, Elements of Python, IDEs for Python, Python Interpreter, Using Python as calculator, Python shell, Indentation.	8
V	Introduction to Python: Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).	8


 Co.ordinator,
 Dept. of Computer Application
 R.G. (P.G.) College, Meerut

VI	Creating Python Programs: Input and Output Statements, Control statements (Looping- while Loop, for Loop, Loop Control, Conditional Statement- if...else, Difference between break, continue and pass).	7
VII	Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments. File handling in python.	7
VIII	Introduction to Advanced Python: Objects and Classes, Inheritance, Regular Expressions, Event Driven Programming, GUI Programming. Basic concepts of concepts of Package and modules	8

Suggested Readings:


1. P.K.Sinha & Priti Sinha, "Computer Fundamentals", BPB Publications, 2007.
2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.
3. T. Budd, Exploring Python, TMH, 1st Ed, 2011
4. Python Tutorial/Documentation www.python.org 2010
5. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: learning with Python, Freely available online. 2012
6. Robert Sedgewick, K Wayne- Introduction to Programming in Python: An interdisciplinary Approach" Pearson India

Suggested digital platforms weblinks-

<https://www.pearsoned.co.in/prc/book/anita-goel-computer-fundamentals-le-1/9788131733097>

<http://docs.python.org/3/tutorial/index.html> <http://interactivepython.org/courselib/static/python> <http://www.ibiblio.org/g2swap/byteofpython/read/>


Programme : B.A	Year: First	Semester: First
Name of Faculty: Ms. Vandana Agarwal		
Course Code: B070102P	Course Title: Software Lab using Python	
Course outcomes:		
<ul style="list-style-type: none"> ✓ To learn and understand Python programming basics. ✓ To learn and understand python looping, control statements and string manipulations. ✓ Students should be made familiar with the concepts of GUI controls and designing GUI applications. ✓ To learn and know the concepts of file handling, exception handling and database connectivity. 		
Credits: 2	Max. Marks: 25+75	Practical


Co.ordinator,
Deptt. of Computer Application
R.G. (P.G.) College, Meerut

Suggested Readings:


1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (<http://greentapepress.com/wp/thinkpython/>)
2. Guido van Rossum and Fred L. Drake Jr, "An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011."
3. Charles Dierbach, "Introduction to Computer Science using Python: A Computational Problem-Solving Focus, Wiley India Edition, 2013.
4. John V Guttag, "Introduction to Computation and Programming Using Python", Revised and expanded Edition, MIT Press, 2013
5. Kenneth A. Lambert, "Fundamentals of Python: First Programs", CENGAGE Learning, 2012.

Programme : B.A	Year: First	Semester : Second
Name of Faculty: Ms. Shweta Mittal		
Course Code: B070201T	Course Title: Database Management System	
Max. Marks: 25+75	Theory	Credits :4
Course outcomes:		
<ul style="list-style-type: none"> ✓ Understands the basic concepts of data base management systems. ✓ 2. Design E-R diagrams for real world applications. ✓ 3. Formulate relational algebraic expressions using relational data models and languages. ✓ 4. Apply normalization transaction properties and concurrency control to design database. ✓ 5. Analyze the security algorithms for database protection. 		
Unit	Topic	No. of Lecture
I	Introduction: Database System Concepts, File system vs. database system, Database system architecture, Data models and their types, Data base scheme and instances, Data independence, Database Languages and Interfaces. Monitor, Architect, and Psychologist	7
II	Data Modeling Concepts ER model concepts: Notations for ER diagram, Extended E-R diagram, Extended E-R model, E-R model design issues, constraints, and keys: Weak entity set strong entity set, Relationships of higher degree.	8
III	Relational model concepts: code rules, constraints, Relational Algebra operations, Extended relational algebra operations, Relational Calculus, Tuple and Domain relational calculus.	7
IV	Database Design Functional dependencies, Normal forms, First, second, and third normal forms, BCNF, Multi-valued dependencies and Fourth Normal form, Join Dependencies and Fifth Normal form	8
V	Transaction, Query Processing Transaction and system concepts: transaction states, ACID properties	7


 Co.ordinator,
 Deptt. of Computer Application
 R.G. (P.G.) College, Meerut

	of transactions, concurrent execution schedules and Recoverability, Serializability of schedules. Query Processing and Optimization: Measures of Query cost, Cost, Evaluation of expression. Optimization: Transformation of relational expression, Choice of evaluation plan.	
VI	Concurrency Control: Concurrency Control Techniques: Two phase Locking Techniques for Concurrency Control; Time stamping in Concurrency control.	8
VII	Introduction to SQL Basic Structure of SQL Query, Set operators, SELECT, UNION, INTERSECT, and EXCEPT, Nested queries, Aggregate function, Null values, Derived Relations, Modification of the Database, Joined relations and up-dates in SQL.	8
VIII	Database Security Importance of data, Threats and risks, Users and database privileges, Access Control, Security for Internet Applications, Role of Database Administrator.	7
Suggested Readings:		
<ol style="list-style-type: none"> 1. Henry F. Korth and Abraham Silberschatz, "Database System Concepts," Second Edition, McGraw Hill, 1991. 2. AtulKahate, "Introduction to Database Management Systems," Pearson India, 2004. 3. Raghu Ramakrishnan and Johannes Gehrike, "Database Management Systems," Third McGraw Hill, Edition, 2003. 4. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6 Edition, Pearson Education, 2013. 5. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6 th Edition, McGraw Hill, 2010. 6. C.J Date " An Introduction to Database Systems", Addison Wesley 		


Programme : B.A	Year: First	Semester: Second
Name of Faculty: Ms. Shweta Mittal		
Course Code: B070202P	Course Title: Database Management Systems Lab	
Courseoutcomes:		
Ability to:		
<ol style="list-style-type: none"> 1. Understand, analyze and apply common SQL statements including DDL, DML and DCL statements to perform different operations. 2. Design and implement a database schema for a given problem. 3. Do connectivity of PHP and MySQL to develop applications. 		
Credits: 2	Max. Marks: 25+75	Practical


Co.ordinator,
Deptt. of Computer Application
R.G. (P.G.) College, Meerut

Suggested Readings:


1. Paul DuBois, "MySQL Cookbook: Solutions for Database Developers and Administrators," Third Edition, O'Reilly Media, 2014.
2. Frank M. Kromann, "Beginning PHP and MySQL: From Novice to Professional," Fifth Edition, Apress, 2018.
3. Joel Murach and Ray Harris, "Murach's PHP and MySQL," First Edition, Mike Murach & Associates, 2010.
4. Luke Welling, Laura Thomson, "PHP and MySQL Web Development," Fourth Edition, Addison-Wesley, 2008.

Programme : B.A	Year: Second	Unified Syllabus(old)
Name of Faculty: Ms. Shweta Mittal		
Course Code: A-292	Course Title: System Analysis and Development (paper-I)	
Max. Marks: 25	Theory	
Course outcomes:		
<ul style="list-style-type: none"> ✓ Adequate understanding of systems concept system analysis, and systems design, which would help them in having efficient and workable information system for management. ✓ To provide an understanding of the role of system analysis and design within various systems development stages. ✓ To understand the activities of the management and systems analyst, and in the overall development of system ✓ To develop an understanding of Testing software and complying the various software quality parameters. 		
Unit	Topic	No. of Lecture
I	System Concepts and Information System Environment: Introduction, The system Concept, Definition, Characteristics of system, Types of system- Physical or Abstract System, Elements of a system, System Models. b) System Development Life Cycle- Introduction, SDLC- Recognition of need, Feasibility Study, Analysis , Design, Implementation, Post –Implementation and Maintenance. c) The Role of Analyst- Introduction, Definition, Historical Perspective, Academic and Personal Qualification, Multifaceted role of analyst - change Agent, Investigator, Monitor, Architect, and Psychologist	15
II	System Planning and Initial Investigation - Introduction, Base for planning, Dimension of Planning, Initial Investigation, Need of Investigation, determination of feasibility. b) Information Gathering : Introduction ,What kind of information Needed ,Where does information originate ?Tools for information gathering c) Tools for Structured Analysis- DFD, Data Dictionary, Decision Tree and structured English, Decision Tables Pros and cons of each tool. .	15
III	Process of Design- Logical and Physical Design, Design Methodologies, Form –Driven Methodology-: The IPO charts, Forms, Classification of Forms, Requirements of from Design .Types of Forms. b) System Testing & Quality Assurance- What is Testing? Why Testing? ,Nature of Test Data , The Test Plan :Activity, Network for system testing ,System testing, Unit , Integration , Alpha , Beta , White-box and Black Box testing .	20


 Co.ordinator,
 Deptt. of Computer Application
 R.G. (P.G.) College, Meerut

	Levels of Quality Assurance, Role of Data Auditor, Verification and Validation.	
IV	Security, Disaster / Recovery and Ethics in System Development – Introduction, System Security- Definitions, Threats to system Security, Control Measures, Disaster/Recovery. Ethics codes and standard of Behavior.	10
Suggested Readings: 1. System Analysis and Design by Elias M. Awad. 2. Software Engineering by Pressmen.		


Programme : B.A .	Year: Second	Unified Syllabus(old)
Name of Faculty: Ms. Shweta Mittal		
Course Code: A-293	Course Title: DBMS and RDBMS (paper-II)	
Max. Marks: 25	Theory	
Courseoutcomes: ✓ Adequate Understanding the basic concepts of data base management systems. ✓ Design E-R diagrams for real world applications. ✓ Formulate relational algebraic expressions using relational data models and languages. ✓ Apply normalization transaction properties and concurrency control to design database. ✓ Identify the need of Data Warehouse tools and techniques for designing and developing different types of databases. ✓ Compare and evaluate different Data Mining techniques for knowledge discovery.		
Unit	Topic	No. of Lecture
I	Introduction to databases-Database and its Hierarchies, History of Databases, Types of DBMS, Data Environment –Database and DBMS software, Database Architecture, Three layered Architectural /O Functions, Characteristics of database approach. Relational Model – Logic Data models, Relational Data Model, Querying Relational Data Model, Relational Algebra, and Relational Calculus	15
II	SQL – SQL Language, SQL Database object, SQL Data Types, DDL, DML, and DCL commands, Deleting data, Retrieving Data, Insertion of Data, Updating Data , Integrity constraint ,Keys, Creating and altering tables ,Views, Sequence, Index.	15
III	E-R Modeling, Normalization-Database Design, Entity ,Attributes, and Entity sets, Relationship and Relation sets, ER Diagram, Features of ER Diagram, Conceptual Database Design with ER model, Anomalies in Database, Redundancy, Inconsistency, Update Anomalies, Good Database Designing. b) Database Security – Access Control , Discretionary Access Control, Mandatory Access Control, Additional Issues to Security. File Organization – Sequential ,Direct ,Index Sequential Files Hashing , B-Trees.	20
IV	Data warehousing Definition, usage, trends. DBMS vs Data Warehouse ,Data marts , Metadata Multidimensional Data Mode , Data Cubes, Schemas for Multidimensional Database- Star, snowflakes, and fact constellation, Datawarehouse process & architecture, OLTPvsOLAP, RO LAPvsMOLAP, types of OLAP, 3-tier Data warehouse architecture, Distributed and Virtual Data	10


 Co.ordinator,
 Deptt. of Computer Application
 R.G. (P.G.) College, Meerut

warehouses, Data warehouse manager, Data warehouse implementation. Data mining- Definition & Task, KDD vs Data mining, Data mining techniques-Association rules, Clustering techniques, Decision tree, Data mining tools and applications, Data mining query languages
Suggested Readings: 1. Database Systems and Concepts, Henry F. Korth 2. DBMS by Date 3. Database Management System by Bipin Desai


Programme : B.A	Year: Second	Unified Syllabus(old)
Name of Faculty: Ms. Vandana Agarwal		
CourseCode: A-590	CourseTitle: Object Oriented Programming with C++ (paper-III)	
Max. Marks:25	Theory	
Courseoutcomes:		
<ul style="list-style-type: none"> ✓ To learn and understand C++ programming basics. ✓ To learn and understand C++ looping, control statements and string manipulations. ✓ To learn and know the concepts of file handling, and Object Oriented Programming 		
Unit	Topic	No. of Lecture
I	Principals of OOP- Basic Concept of OOP, Benefits of OOP, Object oriented VS Procedural and structured programming, header files, I/O statements, Datatypes- User defined, Basic, Derived Data-types. Access specifier, this operator, Member variable, Member function, Scope resolution operator	15
II	Control statements, Looping, Array, Array Declaration, Array Initialization, Multidimensional Array.	15
III	Functions in C++ - Call by value, Call by reference, Inline function, Friend function, Function Overloading, Virtual function. Class and object, Constructors and Destructors: Introduction, Multiple Constructors in a class, Operator Overloading, Inheritance- Introduction, types of Inheritance, Abstract class, Virtual base class, Polymorphism, Data Encapsulation.	20
IV	Working with Files – Introduction, Classes for File Stream Operations, Opening and Closing a File, Detecting End-of File.	10
Suggested Readings:		
1. Let Us C++ by Yashwant Kanitkar, BPB 2. Object Oriented Programming , Robert Lafore		

Programme : B.A	Year: Second	
Name of Faculty: Ms. Vandana Agarwal		


Co.ordinator,
Deptt. of Computer Application
R.G. (P.G.) College, Meerut


Ms. Shweta Mittal		
Course Code: A-892	Course Title: SQL, PL/SQL and C++ Programming	
Course outcomes:		
<ul style="list-style-type: none"> ✓ To learn and understand programming basics. ✓ To learn and understand looping, control statements and string manipulations. ✓ Students should be made familiar with the concepts of GUI controls and designing GUI applications. ✓ To learn and know the concepts of file handling, exception handling and database connectivity. ✓ Understand, analyze and apply common SQL statements including DDL, DML and DCL statements to perform different operations like creating views, sequences, Indexes and nested SQL queries etc. 		
	Max. Marks: 25	Practical
Suggested Readings:		
<ol style="list-style-type: none"> 1. Let Us C++ by Yashwant Kanitkar, BPB. 2. Object Oriented Programming, Robert Lafore. 3. SQL, PL/SQL, The Programming Language of Oracle, Ivan Bayross. 		

Programme : B.A	Year: Third	Unified Syllabus(old)
Name of Faculty: Ms. Vandana Agarwal		
Course Code: A-392	Course Title: Java Programming (paper – I)	
Max. Marks: 25	Theory	
Course outcomes:		
<ul style="list-style-type: none"> ✓ To learn and understand Java programming basics. ✓ Design and construct simple object-oriented software with an appreciation for data abstraction and information hiding. ✓ To learn and know the concepts of file handling, exception handling and database connectivity. 		
Unit	Topic	No. of Lecture
I	Java programming language overview, Referring to applets and applications, The first step in writing Java application, Basic Java application, Primary application components, Class code block, Data, Method code block, Using semicolon and braces, Compiling and running a program, Requirement for your source file, Compiling, Running the program	15
II	Java Primitive Types and Reference Types- Integral primitive types, Floating point primitive types, Textual primitive types- char, Logical primitive types- Boolean, Variable identifier conventions and rules, using variables in program, how primitives and constants are stored in memory, using a string class as a data type, using string and the new modifier, using string without the new modifier,	15


Co.ordinator,
Deptt. of Computer Application
R.G. (P.G.) College, Meerut


	Using string without using modifier, Value you can assign to string, How string can be stored in memory , Using string reference variables, Using main method.	
III	Abstract classes and Inheritance, Java2 Platform Class Library packages, Grouping classes in packages, Coding structure, Source file layout , Filenames, Java Methods and Object Interaction, Java Methods, Declaring Methods, Invoking Methods, Types of method, Passing Arguments, Method Overloading , Arithmetic operators, Operators precedence, Increment and decrement operators, The if construct, The While loop, The for loop, while VS for, The do loop, The switch Construct, The break statement, The continue statement , Java keywords.	20
IV	Graphical user interface development, Java AWT Package Class Hierarchy, GUI Project, Frame, Adding a button, Creating panels and complex layout, ActiveX Technologies & Implementation, ActiveX-based architecture, ActiveX controls, ActiveX documents, ActiveX code components, Implementing Client-Side Solutions, Introduction to scripting, Client-side scripting, Implementing ActiveX controls, Implementing Server-side solutions, Introducing Server-side scripting, Authoring active server pages(ASP), Reading a hypertext transfer protocol(HTTP) request, Creating HTTP response, Saving user information, User ActiveX server components.	10
Suggested Readings: The Complete Reference, Herbert Schildt, TMH		

Programme : B.A	Year: Third	Unified Syllabus(old)
Name of Faculty: Ms. Shweta Mittal		
Course Code: A-393	Course Title : Advanced Topics in Computer(paper-II)	
Max. Marks: 25	Theory	
Course outcomes: <ul style="list-style-type: none"> ✓ Adequate Understanding of the basics of operating systems like kernel, shell, types and views of operating systems ✓ Describe the various CPU scheduling algorithms and remove deadlocks. ✓ Explain various memory management techniques and concept of thrashing ✓ Use disk management and disk scheduling algorithms for better utilization of external memory. ✓ Understand the basics of computer graphics, different graphics software and applications of computer graphics. ✓ Use of geometric transformations on graphics objects and their application in composite form. ✓ Extract scene with different clipping methods and its transformation to graphics display 		



 Co.ordinator,
 Deptt. of Computer Application
 R.G. (P.G.) College, Meerut

device. ✓ Understands the concept of Fuzzy logic, Data Encryption techniques, the fundamental concepts of image processing system.		
Unit	Topic	No. of Lecture
I	Computer Graphics- Introduction, Co-ordinate system, Information handling software, Graphics software, Area of application, translation, rotation, scaling, matrix representation. Homogenous co-ordinate system, composite transformation, inverse transformation, computer art, animation, morphing, projection and clipping, 2D & 3D transformation, lines, curves and their representation	15
II	Basics of multimedia technology, computers, communication & entertainment, multimedia and introduction, frame work for multimedia systems, multimedia devices like CD: Audio, CDROM, CD-I, Presentation devices and the user interface, multimedia presentation and authoring, professional development tools, LANs and multimedia, internet , WWW and multimedia distribution network- ATM and ADSN, Multimedia servers and databases, vector graphics, video on demand .	15
III	Artificial Intelligence- Introduction to AI, Knowledge base system, Properties of AI, Software of AI, Organization working for AI, Fuzzy logic base machines, Work of cell and their classification. Data Encryption- Coding and Decoding techniques, First stage and second stage decoding, standard for data encryption. Image Processing- Introduction, Digital Image Processing, Various Phases of Image Processing.	15
IV	Operating System- Introduction, OS concepts, Types of OS, OS Structure, System calls and Types, Processes- Introduction to process, Inter-process Communication, Process Scheduling, Memory Management- Introduction, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management- Demand Paging, Page Replacement, Deadlock- Prevention, Avoidance, Detection, Recovery, Algorithms .	15
Suggested Readings: 1. Operating System Principles , ArbrahamSilberschatz& Peter Baer Galvin 2. Digital Image Processing & Analysis, B. Chandra, D. Dutta Majumdar		

Programme : B.A	Year: Third	Project Max. Marks:25
Name of Faculty: Ms. Vandana Agarwal		
CourseCode: A-690	CourseTitle: Report Project Report- Java, Visual Basic, Web Technology and Oracle	
Courseoutcomes:		
✓ To render students to the real life problems. ✓ To facilitate the student to independently formulate and solve a social, philosophical, commercial, or technological problem and present the results in written and oral form.		


 Co.ordinator,
 Deptt. of Computer Application
 R.G. (P.G.) College, Meerut

Programme : B.A	Year: Third	Practical Max. Marks: 25
Name of Faculty: Ms. Vandana Agarwal		
CourseCode: A-992	CourseTitle: Java and Oracle	
Courseoutcomes: <ul style="list-style-type: none">✓ To learn and understand Java programming basics.✓ To learn and understand Java looping, control statements and string manipulations.✓ To learn and know the concepts of file handling, exception handling and database connectivity.		


Co-ordinator,
Deptt. of Computer Application
R.G. (P.G.) College, Meerut