

Subject Name	L	T	P	Credits
Environmental Science	-	1	-	4

Course Objectives:

- To give students an understanding of how science and the scientific method work to address environmental problems.
- The student will become familiar with the Earth's major systems (ecosystems), how they function and how they are affected by human activity (population growth, air, water and soil pollution, ozone depletion, global warming, solid waste disposal).
- Students will learn about the interaction of human society (urban sprawl, energy use/generation, resource consumption and economics) with the Earth's systems.

Unit I

Introduction: Domestic and Global Environmental concerns, principles of sustainable development, Sustainable agriculture, organic farming, bio-fuels, Threats for sustainability.

Unit II

Environmental Ethics & Legislations: Enforcement of Environment laws in India – The water act, The Air (Prevention and Control of Pollution) Act, 1981, The Environment (Protection) Act, 1986, Environmental Auditing, value education – HIV/AIDS- Women and child welfare.

Unit III

Environmental Pollution: Air Pollution – sources, types of air pollutants, National Ambient Air Quality Standards, Controlling Air Pollution. Water pollution – sources, types of water pollutants, water quality indicators, water quality standards. Soil Pollution - types of soil pollutants: industrial wastes, pesticides ,fertilizers and manures, salination of soil, Controlling Soil Pollution. Noise: Sources of noise pollution Measurements of noise and indices, effect of metrological parameters on noise propagation, Noise exposure levels and Standards. Noise control and battement measures. Impact of noise on human health.

Unit IV

Environmental Challenges: Local Challenges - Solid Waste – Impact of solid waste on natural resources, Deforestation; Global Challenges - climate change and global warming, Kyoto Protocol Greenhouse Gases, Ways to reduce Greenhouse gases emissions, Carbon Footprint, ways to reduce carbon footprint, Carbon Trading.

Unit V

Sustainable habitat, industrialization and urbanization: Concept of Green Building, Volatile Organic Compounds (VOC), GRIHA Rating, LEED Rating, HVAC, Hybrid Car Technology, Industrial ecology, India's renewable energy capacity. *Green Technology & Green Business:* Green Business, Green Computing, E-waste management.

Reference Books:

1. R. Rajagopalan, Environmental Studies, Oxford IBH Pub, 2011.
2. Kogent Learning Solutions Inc., Energy, Environment, Ecology and Society, Dreamtech, 2012.
3. Rag, R. L, Ramesh, Lekshmi Dinachandran, Introduction to sustainable engineering.

Course Outcomes

- This course is designed to give a basic understanding of the Earth's life-supporting, ecological systems and the threats to those systems.
- To acquire knowledge of the origin and functioning of the natural system and its correlation with the living world
- To develop an awareness of the need and responsibility to keep the natural system in a condition that it sustains life.
- To develop sensitivity in personal attitudes to environmental issues.
- To develop an understanding of how local environment contributes to the global environment.

Subject Name	L	T	P	Credits
Communicative English	-	1	-	4

Unit I: Modern Usages

Grammar: Modal Auxiliaries, Sentence Types, Paraphrasing.

Vocabulary: Common Errors, Pairs of Confusing Words, Words and Phrases of Foreign Origin.

Unit II: Linguistic Techniques

Introduction, Meaning of Linguistics, Importance of Linguistics, Definitions of Language and Techniques of Effective Communication.

Unit III: Developing Reading Skills

Introduction to Reading, Meaning of Reading, Importance of Reading, Types of Reading, Reading Strategies, SQ3R, How to Read Effectively.

Unit IV: Summarization and Comprehension

Narration and Written Communication of Experiences

Unit V: Language Laboratory Sessions:

Social and Professional Etiquettes, Language Etiquettes, Intonation and Common Errors in Pronunciation, Extempore, Public Speaking, GD, Debate, Listening (Including Listening comprehension) Cartoon Movies based on learning English with subtitles. Teaching various language topics with the help of Language Lab Software.

Reference Books:

1. A practical English Grammar, A.J. Thomson and A.V. Martinet.
2. Living English Structure, W.S. Allen; Longmans.
3. English Grammar- Ehrlich, Schaum Series, THM.
4. Spoken English for Indian students, R.K. Bansal and IB Harrison Orient Longman.
5. Business Communication, Dr. R.C. Sharma.
6. Communication Skills, Dr. Neeta Sharma, Satya Prakashan, New Delhi.

Subject Name	L	T	P	Credits
Database concepts & RDBMS	3	1	4	6

Course Objectives:

- To describe a sound introduction to the discipline of database management systems.
- To give a good formal foundation on the relational model of data and usage of Relational Algebra.
- To introduce the concepts of basic SQL as a universal Database language.
- To enhance knowledge to advanced SQL & PL/SQL topics
- To demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization.

Unit I

Introduction to DBMS: Basic concepts, Comparison between DBMS & Conventional file system, Role of DBMS, Advantages and Disadvantages of DBMS, Schema and Instance, Data Independence, Database Languages, Database Administrator, Database Users, Architecture of DBMS, Applications of DBMS, **Data Models:** Entity Relationship model, Elements—Entities, Attributes, Relationships, Key, Type of Keys, ER Diagram, Various data models.

Unit II

Relational Data models: Basic terminology of relational model, Kinds of relation, Relational database, DBMS v/s RDBMS, Relational algebra, Relational calculus, Functional & Additional operations, Functional dependencies, Multivalued dependencies, Normalization, Types of normalizations.

Unit III

Database Integrity: Definition, Transaction, ACID properties, Transaction state, Concurrency, Concurrency control, Recovery, Distributed database, Data storage, Data Warehousing and Mining, Introduction to oracle and its tools, Client/Server computing.

Unit IV

Introduction to SQL: Characteristics of SQL, Basic structure, Data types, SQL Commands, Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL), SQL Operators - Arithmetic Operator, Logical Operators, Pattern Matching, Data Constraints, Different Clauses, Joins.

Unit V

PL/SQL: Indexes, Views, Granting & Revoking permissions, PL/SQL-Block structure, Variables, Constants, Controls & Loops, Transactions- Commit & Rollback, Locks, Error handling in PL/SQL, Procedure & Functions, Database Triggers.

Reference Books:

1. Database System Concepts, Silberschatz Korth, Sudarshan, MH
2. Ullman, "principles of database systems", (2nd ed. Galgotia, 1984).
3. Naveen Prakash, Introduction to database management", TMH, 1993.
4. Ivan Bayross, SQL, PL/SQL "The Programming Language of Oracle" (2nd Revised ed.), BPB Publications

Course Outcomes:

- Explain the features of database management systems and Relational database.
- Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra.
- Create RDBMS with constraints and keys, using SQL.
- Retrieve any type of information from a data base by formulating complex queries in SQL.
- Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database.
- Build indexing mechanisms for efficient retrieval of information from a database.

List of Experiments

1. To implement the DDL,DML and DCL commands in RDBMS.
2. Create table for student information like name, age, add, phone, class, college.
3. Insert data into tables using both types of insert commands.
4. Add another column into database using modify command.
5. Select particular type of data using select command like, functions .
6. Run commands like DROP table, ROLLBACK, EDIT, DESC, / .
7. Apply nested Queries by joining two tables & select particular data item from both tables.
8. Arrange columns data items in ascending or descending order.
9. Join tables using join command.
10. create customer table with following fields- cust_id, cust_name, cust_add, city, state and insert 10 record and apply the following constraints *NOTNULL, *PRIMARY KEY ,*unique.
11. Apply the Where clause on client(cid, cname, salary, cadd, city, state) table with
1.select 2.delete 3. To insert data into some other table.

12. Write a PL/SQL block to display whether the given number is odd or even.
13. Write a PL/SQL block to display LJJET 10 times using for loop.
14. Write a PL/SQL block using cursor to update salary of a given programmer by 25%.
15. Write a PL/SQL block to display addition of all the numbers in the given range
16. Write a PL/SQL block to display the detail about given employee from EMP table.
17. Write a PL/SQL block to find the salary of a given employee and raise his salary by 20%.
18. Create trigger on Supplier Detail on update or insert of Scity to convert first letter of scity into capital letter.

Subject Name	L	T	P	Credits
Cloud Computing Concepts-II	3	1	4	6

Course Objectives:

- Provide a platform for students to understand and manage various infrastructure services of cloud like data centre and storage.
- Equip students with learning on various Cloud Architectural Patterns which will help in providing solutions for various cloud platforms related scenarios
- In science, cloud computing is a synonym for distributed computing over a network and means the ability to run a program on many connected computers at the same time.

Unit I

Introduction: Definition, Types of Cloud services: Software as a Service - Platform as a Service –Infrastructure as a Service - Database as a Service- Monitoring as a Service – Communication as services. Service providers- Google App Engine, Amazon EC2, Microsoft Azure, Sales force. Introduction to Map Reduce, GFS, HDFS, Hadoop Framework.

Unit II

Virtualization, Virtualization Architecture, Need for Virtualization, Pros and cons of Virtualization, Types of Virtualization, Virtual Machine monitor, Virtual machine properties, Interpretation and binary translation, Understanding Hypervisors– Xen, KVM, VMware Workstation, Virtual Box, Hyper-V, Virtual Desktop Infrastructure.

Unit III

Hardware Virtualization, Software Virtualization, Server Virtualization, Storage Virtualization, OS Virtualization, Linux Virtualization, Windows Virtualization, Virtualization Examples.

Unit IV

Load Balancing and Virtualization, Imaging, Porting Applications, Virtual Machines Provisioning and Manageability, Migration, Provisioning in the Cloud Context, Virtual Clusters and Resource management, Virtualization for Data Centre Automation

Unit V

Security in Clouds: Cloud security challenges, Software as a Service Security, Common Standards: The Open Cloud Consortium, The Distributed management Task Force, Standards for application Developers –Standards for Messaging – Standards for Security, End user access to cloud computing, Mobile Internet devices and the cloud.

Reference Books:

1. "Cloud Computing for Dummies"(Wiley India Edition),2010,Bloor R., Kanfman M., Halper F. Judith Hurwitz.
2. "Cloud Computing: Principles and Paradigms", Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, John Wiley and Sons Publications, 2011.
3. "Cloud Computing: Insights into New-Era Infrastructure", Dr Kumar Sourabh, John Wiley and Sons Publications, 2011.
4. "Cloud Computing: Black Book", Kailash Jayaswal, Jagannath Kallakurchi, Donald J. Houde Deven Shah, Kogent Learning Solutions, Dreamtech Press.
5. Krutz , Vines, "Cloud Security " , Wiley Pub
6. James E Smith, Ravi Nair, "Virtual Machines", Morgan Kaufmann Publishers, 2006.
7. http://cloud-standards.org/wiki/index.php?title=Main_Page
8. "Mastering Cloud Computing", Rajkumar Buyya, C. Vecchiola & S. Thamarai Selvi, McGRAW Hill Publication

Course Outcomes:

- Training the students on non-technical skills necessary to enable their successful transition into corporate roles.
- Learn the underlying principles of Cloud Technology and various types of cloud computing architecture and types.
- Learn to evaluate between different cloud solutions offered by various providers based on their merits and demerits.
- Gain the knowledge about cloud computing companies and migrating to cloud.

List of Experiments

1. To study in detail about cloud computing.
2. Implementation of Virtual Box for Virtualization of any OS.
3. Configuration and Installation of VMware.
4. Configuration and Installation of KVM.
5. Configuration and Installation of oVirt.
6. Configuration and Installation of Hyper-V.
7. To Case Study about Hadoop Technology.
8. Installation and Configuration of Hadoop.
9. To Case Study Salesforce.com.
10. To Case Study about Map Reduce in Hadoop Technology.
11. To Case Study Google App Engine.
12. Study and implementation of Infrastructure as a Service.
13. Study and implementation of Software as a Service.

14. To Case Study AWS Amazon.com.
15. Create Account in AWS and Implement All Services.
16. To case Study Microsoft Azure.
17. Creating an Account in Azure Cloud.
18. Configuring A Custom Domain Name For An Azure Website.
19. Virtual Machine In Microsoft Azure Step by Step - Part One.
20. Creating a Virtual Disk Virtual Machine in Microsoft Azure Step by Step: Part Two.

Subject Name	L	T	P	Credits
Linux Administration Lab	-	-	8	4

Course Objectives:

- Introduces the UNIX/Linux operating system
- To study task scheduling and management, memory management, input/output processing, internal and external commands, shell configuration, and shell customization.
- Explores the use of operating system utilities such as text editors, electronic mail, file management

List of Experiments

1. Study of Directory structure of Unix & Linux
2. Installation of Linux Operating System
3. Managing software with RPM :- Installing, Uninstalling, Upgrading
4. Study of Linux File System concept ext3, ext2.
5. Study of Basic Linux commands like: alias, cat, cd, chroot, cp, cpio, dc, df, dir, du, fdformat, find, finger, grep, gunzip, gv, gvim, gzip, halt, hostname, ifconfig, kill, logout, lpc, lpd, lp, rm, ls, man, mcopy, mformat, mkdir, more, mount, mt, mv, passwd, ping, ps, pwd, quota, quotaoff, rm, rmdir, route, set, shut down, sort, stat, strings, su, tar, tree, umount, unzip, vdir, vi, view, wc, who, whoami, zip.
6. Study of File systems: - mount, fsconf and other related commands
7. Study of Files and Directory handling Commands - ls, cd, cp, mv, rm, mkdir, rmdir
8. Study of Commands for Creating and Viewing ordinary files – cat, more, pg.
9. Study of Filter Commands – wc, head, tail, cut, tr, grep (with regular expressions)
10. Adding a new user, Modifying and Removing User accounts.
11. Managing users and managing Groups and managing passwords.
12. Working with vi text editor
13. Providing permission to file and directories
14. Setting up DHCP Server.
15. Setting up NFS File Server.
16. Setting up samba Server
17. Setting up FTP server
18. Setting up to DNS & Apache web server
19. Interface with ifconfig, ping, netstat, traceroute, telnet
20. Write a shell script to find factorial of a given integer.
21. Write a shell script to list all of the directory files in a directory.

Reference Books

- 1 Bill Ball, David Pitts, “Red Hat Linux 7 Unleashed”, Techmedia SAMS Publication
2. Evi Nemeth, Garth Snyder, Scott Seebass, Trent R. Hein, “UNIX System Administration Handbook” Person Education Asia (LPE) (IIIrd Edition)
- 4 Red hat Linux & fedora unleashed Authors Bill Ball & Hoyt Dust.

Course Outcomes:

- To be able to learn basic commands in Linux.
- To write linux shell programs in Linux environment.
- Identify and use UNIX/Linux utilities to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks.
- Effectively use the UNIX/Linux system to accomplish typical personal, office, technical, and software development tasks. Monitor system performance and network activities.
- Effectively use software development tools including libraries, preprocessors, compilers, linkers, and make files.

Subject Name	L	T	P	Credits
Bridge Course-II	3	1	-	4*

Unit I

Sets, Relation's and Functions: Set; Cartesian product of sets; Relations; Functions; Binary operations. **Trigonometrical Functions :** Angles; Circular functions or Trigonometrical functions; Trigonometrical identities; Cosine of the difference of two angles; Tables of trigonometric functions; Graphs of . trigonometrical functions; Conditional identities involving the angles of triangles; Trigonometric Equations.

Unit II

Cartesian System of Rectangular Coordinates: Cartesian Coordinate system The number plane; Distance formula; Area of triangle; Section formula; Slope of Line; Locus- and equations. **Straight Line :** Find the equation of a straight line parallel to an axis; The point-slope form; Two point form; intercept form; Slope-intercept form; Normal form; Symmetric form; General form; Angle between two lines; condition for concurrency of three straight. Lines, **Family of Lines :** Equation of family of lines; Pair of straight lines through origin; Angle between the pair of straight lines Angles between two lines.

Unit III

Circle and Family of Circle: Standard form of the equation of a circle General form of the equation of a circle; Equation of a curve in parametric form. Equation of a circle when the end points of a diameter are given: Point of intersection of a line and a circle with centre at origin condition of Tangency; Equation of a tangent to a circle and length of the tangent; Families of circles through the intersection of two circles; Condition for two intersecting circles to be orthogonal.

Unit IV

Complex Numbers : The algebra of complex numbers; The Arg and Diagram and the Polar form; Polar representation ; Powers and Roots of Complex numbers. **Quadratic Equations :** Solution of quadratic equations; Symmetric functions of roots, Graph of a quadratic polynomial; Applications. **Inverse trigonometric functions:** Inverse trigonometric functions; Properties of inverse trigonometric functions.

Unit V

Sequences and Series: Sequences; Arithmetic progression (A.P.) Examples of A.P. and insertion of Arithmetic means; Geometric Progression (G.P.); Sum to infinity of a G.P., Arithmetic – geometric sequence; Sum to n terms of special Sequences. **Binomial Theorem:** The Binomial Theorem; Some applications of Binomial theorem, Binomial theorem for any index. **Exponential and Logarithmic Series:** Exponential Series; Logarithmic Series.

Reference Books:

1. Mathematics by M. S. Rangachari.